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LIST OF ABBREVIATIONS

BBBEE = Broad Based Black Economic Empowerment
BCDA = Black Communities Development Act (Act 4 of 1984
BNG = Breaking New Ground
BRT = Bus Rapid Transit / Transport
CBD = Central Business District
CIMS = Capital Investment Management System
CoJ = City of Johannesburg
CS = Community Survey
DoT = Department of Transport
DPUM = Department of Development Planning and Urban Management
EMM = Ekurhuleni Metropolitan Municipality
EPWP = Expanded Public Works Programme
EPWP = Expanded Public Works Programme
ESKOM = Electricity Supply Commission
GDS = Growth and Development Strategy
GMA = Growth Management Areas
GMS = Growth Management Strategy
IDP = Integrated Development Framework
JMOSS = Johannesburg Metropolitan Open Space System
JMPD = Johannesburg Metro Police
JRA = Johannesburg Road Agency
LEDA = Learn, Envision, Design and Act
MOE = Municipal Owned Entities
MPCC = Multi-Purpose Community Centres
NDOT = Department of Transport
NDPG = Neighbourhood Partnership Development Grant
NEPAD = New Partnership for Africa's Development
NHTS = National Household Travel Survey
NMT = Non=motorised Transport
NSDF = National Spatial Development Framework
NSDP = national Spatial Development Perspective
PPRR = President Park/Rabie Ridge
RDP = Reconstruction and Development Policy
RIFSA = Road Infrastructure Strategic Framework for South Africa
RSDF = Regional Spatial Development Framework
SARTS = South African Traffic Signs Manual, 1999
SDF = Spatial Development Framework
SETA = Sector education and Training Authority
TOD = Transport Oriented Development
UDF = Urban Development Framework
UMAP = Upgrading of Marginal Areas
USEPA = U.S. Environmental Protection Agency
WWTW=Waste Water Treatment Works
YSUV = Youth Spatial Urban Vision

EXECUTIVE SUMMARY

In viewing urban reconstruction, upgrading, renewal and integration in South Africa, the fundamental objective of Local Government can be highlighted as the promotion, facilitation and provision of the improvement of the quality of life of the less fortunate residents within a city, the planning and facilitation of the re-development and renewal of marginalized areas within the larger urban area and the increasing of the revenue base of the city. This is especially applicable to areas and communities, such as Ivory Park, which were negatively affected by the previous policies prevalent in South Africa, and especially the policy of spatially segregating marginalised communities in areas on the periphery of metropolitan areas.

In recent years the overall impact on improving the quality of life of the residents of Ivory Park has been generally slow and largely unstructured. This document strives to formulate an integrated and structured approach to the further upgrading and development of Ivory Park which is in line with the notion of creating sustainable human settlements.

This document considered the current development level of Ivory Park whilst also taking into account submissions of residents, Councillors, Provincial Departments, parastatals as well as the City of Johannesburg's internal departments. From very early on it became clear that baseline data for this area is sketchy. This was supported by recent appointments of service providers to survey, verify and audit current datasets. Engineering infrastructure, or the lack thereof, will be sited as the single most important element inhibiting economic activity.

In addition to the similar frameworks within the study area in recent years this study have introduced seven additional focal areas / nodes spread across all wards in order to boost local economic development in a structured and sustainable manner. These areas should also be seen as catalyst for urban restructuring, creating identity and a sense of belonging to the community of Ivory Park.

CHAPTER 1: INTRODUCTION & BACKGROUND

1.1 INTRODUCTION

The purpose of this project is to formulate a comprehensive Urban Development Framework and Business Plan in order to achieve a holistic vision and plan for the development of the Greater Ivory Park area, which is in line with the notion of creating sustainable and integrated human settlements. The Greater Ivory Park Urban Development Framework (UDF) and Business Plan have to consolidate a list of current and proposed projects of all relevant spheres of government.

In viewing urban reconstruction, upgrading, renewal and integration in South Africa; the fundamental objective of Local Government can be highlighted as the promotion, facilitation and provision of the improvement of the quality of life of the less fortunate residents within a city, the planning and facilitation of the re-development and renewal of marginalized areas within the larger urban area and the increasing of the revenue base of the city. This is especially applicable to areas and communities, such as Ivory Park, which were negatively affected by the previous policies prevalent in South Africa, and especially the policy of spatially segregating marginalised communities in areas on the periphery of metropolitan areas. In general the components afflicting such areas are a lack of suitable appropriate formal housing, lack of supportive social facilities, lack of appropriate engineering infrastructure, lack of access to public transport, lack of access to economic opportunities and lack of access to good quality public space.

In recent years the overall impact on improving the quality of life of the residents has been generally slow and largely unstructured. This has not been assisted by the lack of co-ordination between the different levels of government and the different entities within the City involved in development related initiatives in the area. This project is possibly the first attempt by the City to provide a co-ordinated basis for the entire Ivory Park by which the City can begin to consolidate all existing development related information pertaining to the said area and use it as a basis on which to begin to formulate an integrated and structured approach to the further upgrading and development of Ivory Park.

1.2 BACKGROUND & STUDY BRIEF

The City of Johannesburg called for proposals for the formulation of an all-inclusive spatial overview of the Greater Ivory Park area as well as compiling of an associated Business Plan to identify and prioritize projects accordingly.

This project, “The Formulation of an Urban Development Framework and Business Plan for Ivory Park” was initiated by the Department of Development Planning and Urban Management (DPUM) of the City of Johannesburg Metropolitan Municipality.

Aurecon South Africa (Pty) Ltd was appointed in February 2011 to undertake the project following a public call for proposals by the City of Johannesburg Metropolitan Municipality in December 2010.

The main objective is to:

- Ensure equal access to proper services and facilities;
- Ensure that the benefits of growth are shared more broadly;
- Accomplish settlement restructuring;
- Promote economic development;
- Evaluate social facilities and services;
- Upgrade and expand services infrastructure, including
    - Integration with Eskom’s services plan and programme;
    - Addressing storm water problems;
    - Completion of gravel roads programme;
    - Continued provision of basic services;
- Improve environmental management;
- Improve public transport linkages;
- Implement marginalised areas development programme.

Ultimately, the objective of the project is to compile a well-researched, well balanced, locally relevant, easily understandable urban development framework and business plan.

1.3 PROJECT METHODOLOGY AND VISION

The overall purpose of the project is to develop a comprehensive Urban Development Framework and Business Plan in order to achieve a holistic development vision and plan for the development of the Greater Ivory Park area into a sustainable human settlement.

The project is to be undertaken in two portions:

- Firstly, by the development of an Urban Development Framework (UDF) for the area that will provide a spatial overview of development in Ivory Park and depict the desired urban spatial and infrastructure pattern for the area,
- Finally, by the compilation of a comprehensive business plan providing a co-ordinated and integrated approach for the implementation of development initiatives in Ivory Park.

The methodology followed in completing the project is illustrated in **Figure 1** below:

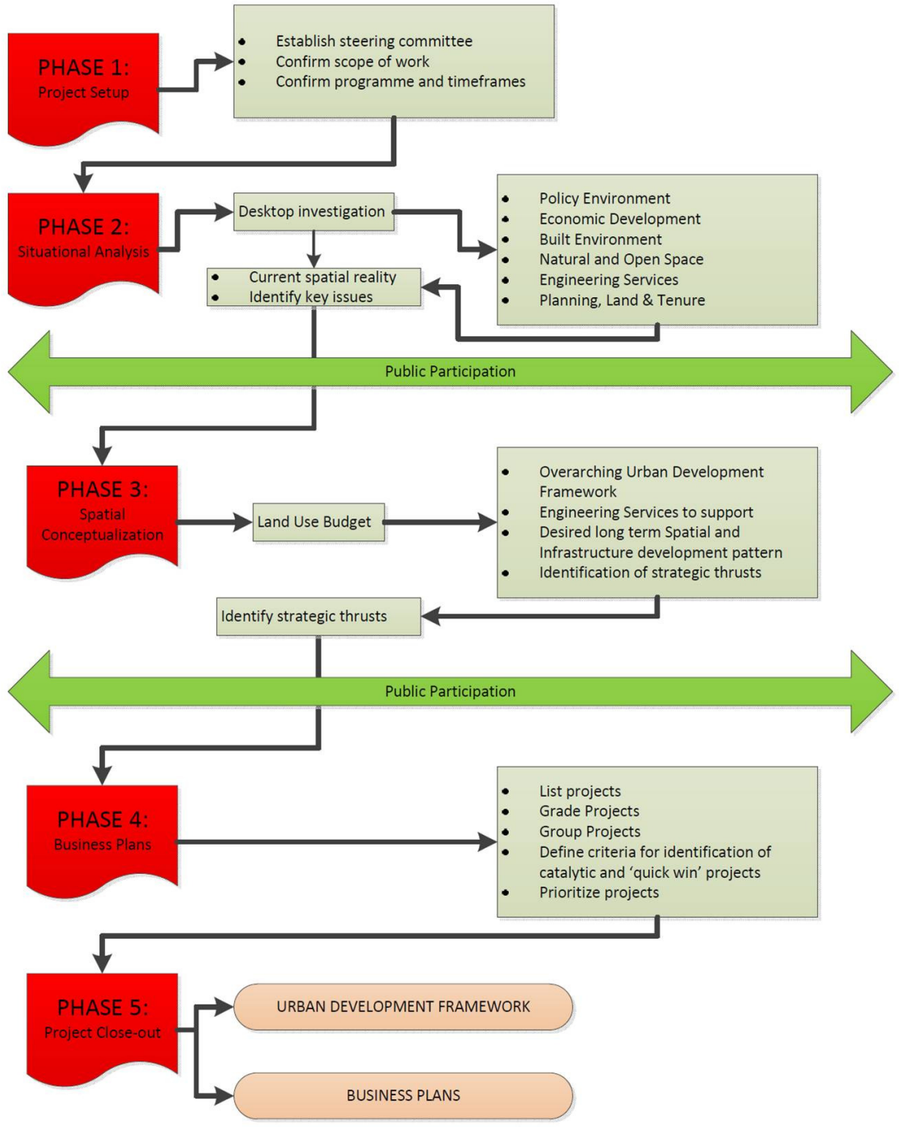


Figure 1*: Study methodology*

The Aims of the UDF are to:

- Review and consolidate existing development proposals, plans and policies by the various spheres of Government. This will cover planned and completed projects;
- Provide a high level analysis of adjacent planned initiatives, such as the City's Youth Plan, Bambanani Industrial Node, Swazi Inn UDF and Tembisa Strategic Development Framework (July 2007), and any other initiatives in the adjoining urban areas, in order to analyse the current sub regional challenges and spatial dynamics in the area;
- Analyse the engineering infrastructure and conditions of services in the area, including roads and storm water, public transport/pedestrian movement, sewerage and water, waste management, and electricity;
- Identify key opportunities and associated land parcels in the area as well as any development and/or infrastructure "gaps" in the area;
- Propose a spatial representation of the long-term vision for the area; and
- List the overall engineering infrastructure and services requirements for the area.

The analysis of the existing development proposals, plans and policies is to be in the form of a "desk top" study in which existing information will be collected, analysed and interrogated. The information collected will primarily be sourced from existing reports and interviews from selected individuals who have a special knowledge of a specific aspect of development in the area.

The Aims of the Business Plan are to:

- Provide a consolidated list of (completed, current and planned) projects in the area;
- Identify the main projects;
- Identify catalytic projects, including any "quick win" projects;
- Prioritise the projects into short-, medium- and long-term projects;
- Identify possible project sponsors;
- Estimate the implementation cost per project; and
- Prepare Business Cases for selected (preferably catalytic) projects that can benefit from programmes such as the NDPG fund.

A Public Participation Process formed a critical backbone during this project where inputs from the community were incorporated into the development of the UDF and Business Plan. In this instance Aurecon followed our LEDA© methodology where the central focus lies with the community.

Leda© Methodology

During the course of the project two public participation sessions were held with representatives of the community. During this same time project meetings were also held with representatives of Council Departments and Municipal Owned Entities (MOE's). During these sessions the draft UDF and Business Plan were presented to the Departments and MOE's and where they were given the opportunity to comment on and give input into the process and proposals. These meetings were held on completion of the different phases according to the study methodology above. The meetings were complemented by focussed "One-on-One" meetings with specific departments and MOE's at which the details of their projects and programmes in Ivory Park were clarified. In addition, the project was introduced to the Ivory Park Ward Councillors and representatives of their Ward Committees as well as senior Regional officials. During the time of compiling this study the following Wards and Ward Councillors were included:

- **Ward 93**: Councillor MS Ramakhula
- **Ward 77**: Councillor TM Mabotja
- **Ward 78**: Councillor JP Mahlanga
- **Ward 79**: Councillor P Zitha

- **Ward 80**: Councillor DL Lichaba

During the recent Local Government Elections held on 18 May 2011, new ward boundary alignments within the study area were tabled and will have to be demarcated on plans and in future projects within Ivory Park.

1.4 PROJECT CONTEXTUAL SETTING

1.4.1 LOCALITY

Ivory Park is located in the north-eastern corner of the City of Johannesburg area of jurisdiction (Region A) as indicated on the locality plan. The area is situated approximately 29 km from the Johannesburg CBD, 10 km for Midrand CBD and 27 km from Tshwane CBD. It is situated south and west of and abutting Tembisa, east of and abutting Midrand and north of and abutting Phomolong. Both Tembisa and Phomolong fall within the Ekurhuleni Metropolitan Municipality's area of jurisdiction.

Broadly speaking the study area is situated approximately 9 km east of the N1 (Ben Schoeman Highway) and 6 km west of the R 21 highway, ± 4 km south of Olifantsfontein road (Provincial route R562) in Midrand and north of Modderfontein Road (Route 38).

Physically, the area forms part of the Tembisa urban complex. Functionally, it however displays stronger links with Midrand in terms of transportation links, employment, and administrative structures.

For the purposes of this Project, "Ivory Park" includes the various extensions of Ivory Park, Ebony Park, Kaalfontein and Rabie Ridge within the City of Johannesburg's (City of Johannesburg) area of jurisdiction. The project area measures some 1920ha. (**Refer to Figure 2).**

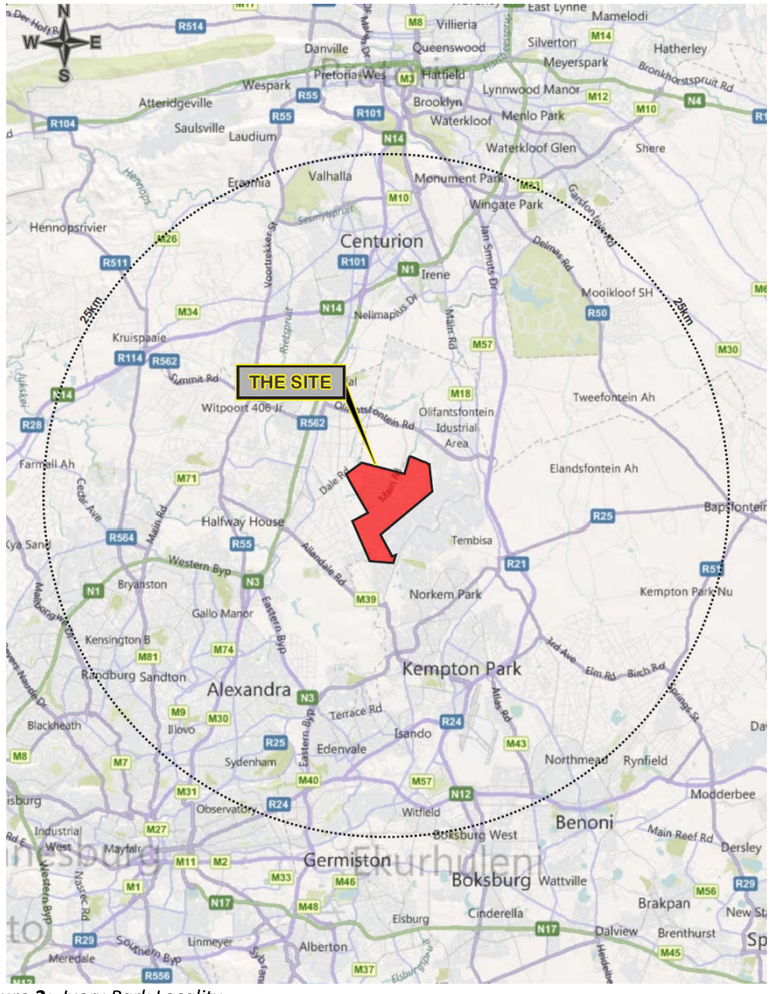


Figure 2: *Ivory Park Locality*

1.4.2 SURROUNDING LAND USES

The study area is situated on the north eastern boundary of the City of Johannesburg's municipal area and consists of four townships, namely Kaalfontein (in the north west), Ivory Park (in the east), Ebony Park (in the center west) and Rabie Ridge (to the south), all of which are mainly residential townships. The northern boundary of Ivory Park abuts on vacant undeveloped farm land (Olifantsfontein 410-JR) and a part of Tembisa which is also a residential township. Further to the north-west is the industrial township of Clayville (Olifantsfontein). They are all situated in the Ekurhuleni municipal area.

On the west Ivory Park abuts on Tembisa and to the south, Rabie Ridge abuts on Phomolong (also a residential township). The industrial areas of Chloorkop and Commercia are further to the south and west of Rabie Ridge all in the Ekurhuleni municipal area.

The Glen Austin and President Park Agricultural Holdings (used mainly for agricultural purposes) are on the western boundary of the study area as indicated below and which is in the City of Johannesburg (Midrand) municipal area.

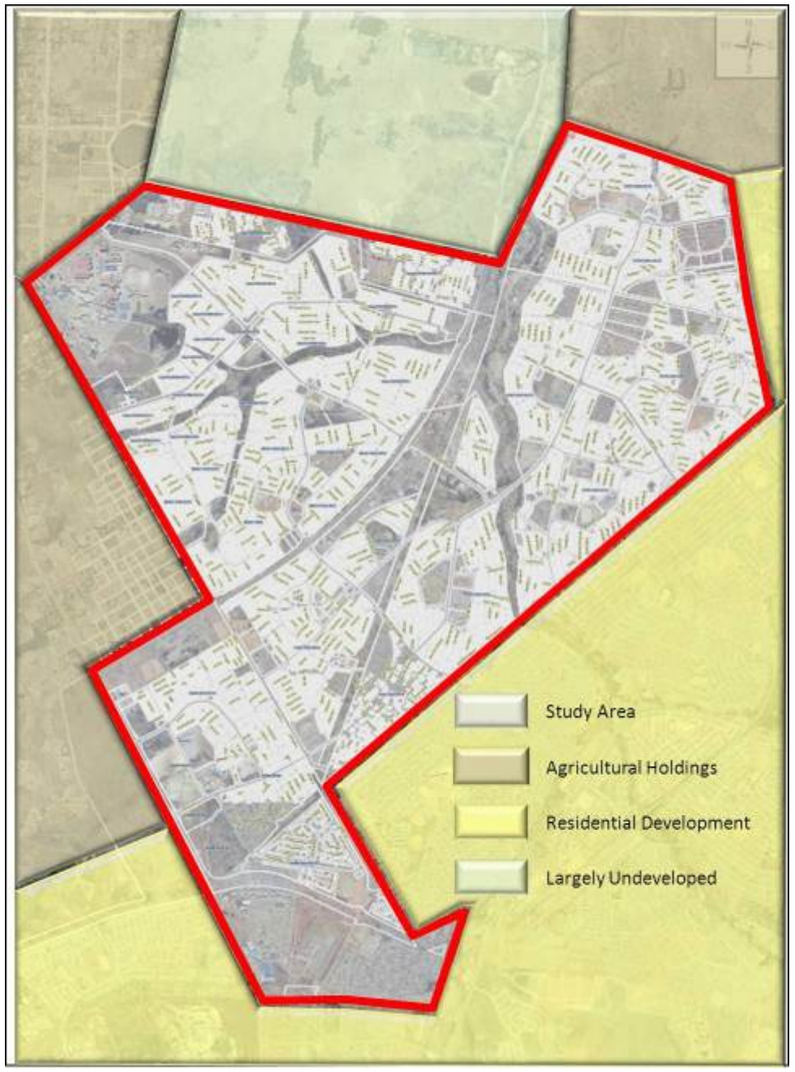


Figure 3*: Surrounding Land Uses*

1.4.3 DEMOGRAPHICS

The demographic and socio-economic information set out below, is based on the Statistics SA Mid-year population estimates, 2010 (further projected at the current growth rate to 2015), Community Survey 2007, current GIS data, data in various reports submitted to the City of Johannesburg Metropolitan Municipal Council and the Census 2001 data.

It is important to have a regional perspective when describing the demographic and socio-economic environment within which Ivory Park, Ebony Park (Kaalfontein) and Rabie Ridge exists. Ivory Park is situated in the City of Johannesburg Metropolitan Municipality. The surrounding Gauteng Province that impact the study area is also taken into consideration.

The greater Ivory Park study area is located on the north-eastern periphery of the City of Johannesburg Metropolitan Municipality situated in Region A of the City's Regional Spatial Development Framework (RSDF, 2008) which is east of Midrand. The study area constitutes a densely marginalized area, where major backlogs are still a reality in terms of infrastructure and housing provision to previously disadvantages communities.

The information obtained for this purpose is mainly drawn from Community Survey (CS) conducted by Statistics South Africa in 2007 which is currently the most updated information available. In some instances where Community Survey 2007 data are not available, the Census 2001 data will be used for indicative purposes. The statistical data used for the study area of greater Ivory Park was obtained from the Bambanani Urban Development Framework (UDF) completed in 2008.

<u>Community Survey:</u>

The Community Survey is a large-scale household survey conducted by Statistics South Africa to bridge the gap between censuses. It served as a mini census and its purpose is to collect information on the trends and level of demographic and socio-economic data; the extent of poor households; access to facilities and services; and levels of employment / unemployment in order to assist the government and private sector in planning, evaluation and monitoring of programmes and policies.

The Community Survey 2007 yields more up-to-date information than Census 2001 for selected items and the data is also aligned to the new municipal boundaries.

It should however be noted that Community Survey 2007 is not a replacement of the Census (Statistics South Africa, 2007a) and that there are certain limitations inherent to the study that should be taken into consideration when interpreting the results (Statistics South Africa, 2007b):

- The scope of the study only included households and individuals. Institutions such as military bases, national parks, prisons, hotels, hospitals, military barracks, etc. were excluded from the field work. The institutional population is an approximation based on 2001 figures and not new data.
- The measurement of unemployment is higher and less reliable due to the differences in questions asked relative to the normal Labour Force Surveys.
- The income includes unreasonably high income for children probably due to misinterpretation of the question, e.g. listing parent's income for the child.
- The distribution of households by province has very little congruence with the General Household Survey or Census 2001. It is not yet clear whether these changes are real or whether they are due variables that could be ascribed to the study.
- Since the Community Survey is based on random sample and not a Census, any interpretation should be understood to have some random fluctuation in data, particularly concerning the small population for some cells. It should be understood that the figures are within a certain interval of confidence. This applies in particular to cross-tabulations on municipal level where small numbers are likely to give an under or overestimation of the true population (due to group not present in sample or number realised for sample very small).

The aggregated total number per municipality however provides more reliable estimates (Statistics South Africa, 2007a).

- Further, it should be noted that the estimates were done with the use of the de-facto population (the group of population who were enumerated according to where they stayed on a specific night) and not the de-jure population (the group of population who were enumerated according to where they usually live). These results are presented as the de-jure population. Based on this the results should be viewed as indicative of the population characteristics in the area and should not be interpreted as absolute. In some instances where Community Survey 2007 data are not available, the Census 2001 data will be used for indicative purposes.

1.4.3.1 Population Profile

According to the Community Survey 2007 the population of South Africa is approximately 48.5 million and has shown an increase of about 8.2% since 2001. The household size for the country is estimated at approximately 3.87 people per household which is slightly down from the 2001 average household size of 4 people per household.

Gauteng Province is home to 10,5 million people (2007 South African Community Survey), approximately 20% of the total South African population. Gauteng Province is also the fastest growing province, experiencing a population growth of over 20% between the 1996 and 2001 censuses, thus Gauteng is likely to soon have the highest population of any province in South Africa. About 22.1% of all households are made up of single individuals. The average household size is 3.29.

The population growth rate for the Gauteng Province for the period 2001 to 2007 is well above the national average. **(Refer to Table 1).**The population of the City of Johannesburg has increased by more than 20%.

	Gauteng (CS 2007)	City of Johannesburg (CS 2007)
Approximate Population Size	10,451,713	3,888,180
Estimated Growth since 2001	13,87%	20,55%
Average Household size	3.29	3.34

Table 1: Population growth and household estimates (Source: CS 2007)

1.4.3.2 Ivory Park Population and Population Density

Ebony Park (Kaalfontein), Rabie Ridge and Ivory Park are adjoining low income townships near Midrand, Johannesburg. According to the 2001 census data the listed population for this area is 150,920 although the population has ballooned considerably since then.

The area is approximately 20km2 as set out below.

Ebony Park (Kaalfontein), Rabie Ridge and Ivory Park make up more than 80% of the Midrand population at an average population density of 8,261 people per km^2. To put this in perspective, 93% of the Midrand population lives on 7% of the land. Ebony Park and Ivory Park flows into Tembisa, with an additional 500 000+ people, making for a sprawling impoverished township with a combined population of close on a million people.

IVORY PARK POPULATION								
	POPULATION							
AREA	CENCUS 2001	CS 2007	MY 2010	DIFF	%	AREA (km^2)	DENSITY / km^2	HOUSEHOLDS @ 3.34/HH
IVORY PARK	112,518	123,770	136,147	23,629	21.00%	9.6900	14,050	40,763
EBONY PARK (KAALFONTEIN)	16,206	17,827	19,609	3,403	21.00%	6.6420	2,952	5,871
RABIE RIDGE	22,196	24,416	26,857	4,661	21.00%	3.4520	7,780	8,041
TOTAL	**150,920**	**166,012**	**182,613**			**19.7840**	**8,261**	**54,675**
Projected								

Table 2: Ivory Park Population

Although it must again be emphasized that the above statistics will probably be significantly different after the 2011 census, the above data was used to project a realistic future population growth which can be refined upon receipt of new census data. The significance of this growth rate is to evaluate the appropriateness and quantity of mainly social and civic infrastructure services to allow the community of Ivory Park to have access to and enjoy the benefits of supporting infrastructure. This will allow the said community with the best chance to strive towards social upliftment as well as being a sustainable and integrated South African community.

PROJECTION @	3.2%/YEAR					
AREA	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
IVORY PARK	136,147	140,504	145,000	149,640	154,428	159,370
EBONY PARK (KAALFONTEIN)	19,609	20,236	20,884	21,552	22,242	22,954
RABIE RIDGE	26,857	27,716	28,603	29,519	30,463	31,438
TOTAL	**182,613**	**188,457**	**194,487**	**200,711**	**207,134**	**213,762**

Table 3: Population projections for Ebony and Ivory Park

1.4.3.3 Income

Although the Gauteng Province is the economic hub of South Africa, more than 40% of the population between the ages of 15 and 65 years do not have any income. This figure may be inflated by those people choosing to finish school or engage in tertiary education (given Gauteng's urban character and the greater number of tertiary educational institutions available), rather than seeking to enter paid employment.

	Gauteng Province	City of Johannesburg
No income	43.5%	42.1%
R1- R800	9.2%	9.5%
R801- R1600	12.7%	12.9%
R1601- R3200	10.4%	10.9%
R3201- R6400	8.2%	7.9%
R6401- R12800	7.1%	6.5%
R12801+	7.4%	8.8%
Response not given	1.7%	1.4%

Table 4*:* Monthly Household Income distribution (shown in percentage, Source: CS 2007)

POPULATION: INCOME												
2001												
HOUSEHOLD	No income	R1 - R4 800	R4 801 - R 9 600	R9 601 - R 19 200	R19 201 - R 38 400	R38 401 - R 76 800	R76 801 - R153 600	R153 601 - R307 200	R307 201 - R614 400	R614 401 - R1 228 800	R1 228 801 - R2 457 600	R2 457 601 and more
EBONY PARK (KAALFONTEIN)	1298	181	344	733	1030	925	398	59	4	0	5	0
IVORY PARK	12536	2034	4157	8652	6134	2193	433	61	38	7	50	15
RABIE RIDGE	1903	180	559	1312	1560	1026	393	59	14	0	6	0
TOTAL	15737	2395	5060	10697	8724	4144	1224	179	56	7	61	15

Table 5: Population income within Ebony and Ivory Park

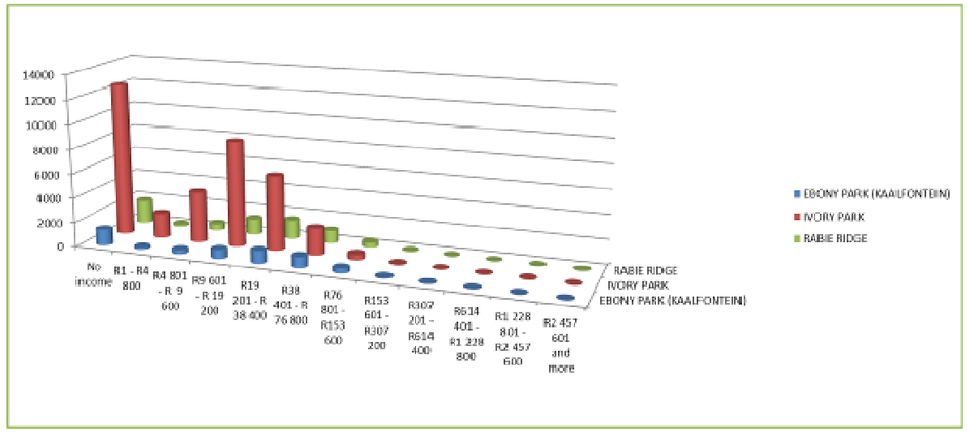


Figure 4: *Population income within Ebony and Ivory Park*

High levels of unemployment, drawn from statistics in 2000, explains the rise in poverty levels in the Ebony and Ivory Park study area with over 65% of the population earning less than R850 per month.

1.4.3.4 Employment and Occupation

More than half of the people in the Gauteng Province of an economically active age (aged between 15 and 65 years) have indicated that they are employed. The figures for City of Johannesburg are very similar (approximately 53, 6%).

Statistics listed in 2007 indicated that in Ebony and Ivory Park it can be assumed that **47% of the population is unemployed.** This suggests that almost half of the population residing in Ebony and Ivory Park are homemakers, students or scholars, retired or pensioners, or not actively seeking employment opportunity.

	Gauteng Province	City of Johannesburg
Employed	52.2	53.7
Unemployed	21.6	22.6
Not Economically Active	26.3	23.7

Table 6*:* Employment distribution (shown in percentage, Source: CS 2007)

POPULATION: EMPLOYMENT			
2001			
AREA	Employed	Unemployed	Not Economically Active
EBONY PARK (KAALFONTEIN)	4,507	3,847	2,623
IVORY PARK	26,981	32,315	21,672
RABIE RIDGE	6,332	5,832	3,767
TOTAL	37,820	41,994	28,062

Table 7: Employment figures

According to the Regional Spatial Development Framework 2007/08 the unemployment rate is high in places like Diepsloot, ***Ivory Park, Rabie Ridge, Ebony Park and Kaalfontein***. Information suggests that residents are using rental accommodation to provide income. There are small-scale business initiatives evident in these areas, however these are mainly informal businesses and in Ivory Park a light industrial manufacturing sector development. (RSDF, 2007/08)

	Ebony and Ivory Park
Employed	47.7
Unemployed/ Not Economically Active	47.1

Table 8*:* Employment distribution (shown in percentage, Source: Bambanani UDF 2008)

The biggest proportion of the employed people in Gauteng are working in elementary occupations such as domestic workers, street vendors, shoe cleaners, building caretakers, messengers, porters, garbage collectors, agricultural workers, mining and construction labourers, manufacturing labourers, transport labourers and freight handlers. **(Refer to Table 9).** This holds for the other areas as well, especially for the Ebony and Ivory Park study area where the majority of the employed population is working in elementary occupations (33,5%).

According to the Bambanani UDF of 2008, only 15% of residents residing in the study area have successfully completed Grade 12, the majority of individuals are employed within the elementary occupations (33, 5%). Other significant areas of employment include craft and related trade workers (16, 7%), plant and machine operators and assemblers (16, 5%) and services, shop and market sales workers (13,0%). Information also suggests that residents are using rental accommodation to provide an income.

	Gauteng Province (%)	City of Johannesburg (%)
Legislators, Senior Officials and managers	11.5	12.2
Professionals	12.4	13.3
Technician, associate Officials	7.4	7.4
Clerks	8.6	8.2
Service workers, shop and Market sales workers	9.7	10.0
Skilled Agricultural and Fishery workers	1.5	1.2
Craft and Machine operators and assemblers	11.0	9.7
Plant and Machine Operators and Assemblers	7.3	6.2
Elementary occupations	15.7	15.3
Undetermined	14.6	16.6

Table 9*:* Occupation distribution of the employed population (shown in percentage, source: CS 2007)

	Ebony and Ivory Park (%)
Service workers, shop and Market sales workers	13.0
Craft and Machine operators and assemblers	16.7
Plant and Machine Operators and Assemblers	16.5
Elementary occupations	33.5
Undetermined	20.3

Table 10*:* Occupation distribution of the employed population (shown in percentage, source: CS 2007)

POPULATION: OCCUPATION										
2001										
AREA	Legislators; senior officials and managers	Professionals	Technicians and associate professionals	Clerks	Service workers; shop and market sales workers	Skilled agricultural and fishery workers	Craft and related trades workers	Plant and machine operators and assemblers	Elementary occupations	Undetermined
EBONY PARK (KAALFONTEIN)	143	194	476	714	736	23	511	546	932	231
IVORY PARK	454	442	864	2026	3524	259	5676	4091	7629	2016
RABIE RIDGE	193	153	419	872	884	30	970	831	1584	398
TOTAL	**790**	**789**	**1759**	**3612**	**5144**	**312**	**7157**	**5468**	**10145**	**2645**

Table 11: Population occupation within Ebony and Ivory Park

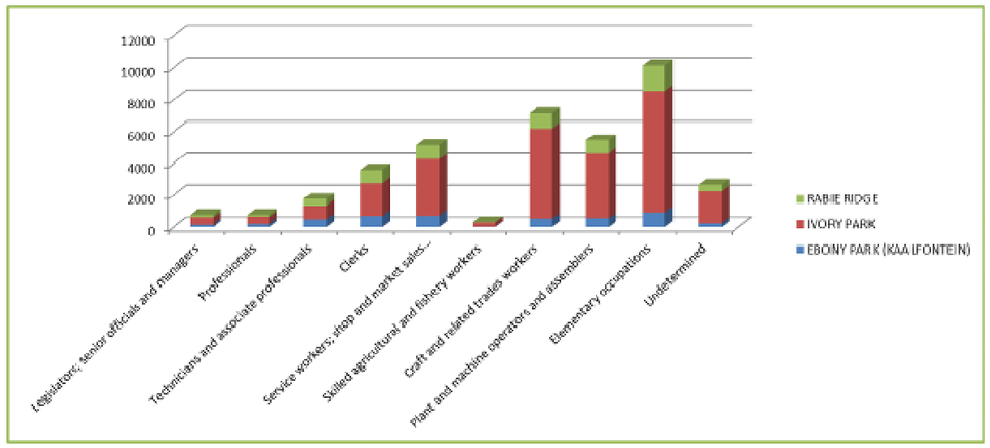


Figure 5: *Occupation distribution within Ebony and Ivory Park*

In Gauteng proportionately more people are employed in the Manufacturing sector than any other sector. **(Refer to Figure 5).** The second largest employment sector in Gauteng is the Financial, insurance, real estate and business services sector followed by the wholesale and retail trade sector. The community, social and personal services sector is also a large employer and includes public administration, health and social work among others.

The second biggest employment category in Gauteng is professionals, followed by Legislators, senior officials & managers and Craft & related trades workers. The profile for the City of Johannesburg is very similar, except that slightly more people are employed as Service workers, shop & market sales workers than as Craft & related trades workers.

While the main sector of employment in the City of Johannesburg is the financial, insurance, real estate and business services sector, it can be surmised that the employment sector profile in Ebony and Ivory Park is dominated by the light industrial manufacturing sector and informal businesses as indicated in the Regional Spatial Development Framework of 2007/08.

The other sectors dominating the local economy (in terms of economic activity) in Ivory park include wholesale and retail trade (18,9%), manufacturing (16,5%), community, social and personal services(12,4%), construction (11,2%), and financial, insurance, real estate and business services (10,4%). Importantly this salient features provide clues as to what kind of economic activities should be provided/catered for within the Ivory Park District.

	Gauteng	City of Johannesburg (%)
Agriculture, hunting, Forestry and Fishing	0.7	0.5
Mining and Quarrying	1.7	0.9
Manufacturing	16.7	14.1
Electricity, Gas and Water Supply	0.9	0.9
Construction	6.0	5.6
Wholesale and Retail Trade	14.6	15.5
Transport Storage and Communication	4.8	4.8
Financial Insurance Real Estate and Business services	15.2	18.0
Community Social and Personal Services	13.4	13.1
Private households	9.6	9.2
Undetermined	16.4	17.4

Table 12*:* Industry sector distribution of the employed population (shown in percentage, Source: CS 2007

	Ebony and Ivory Park (%)
Manufacturing	16,5
Construction	11,2
Wholesale and Retail Trade	18,9
Financial Insurance Real Estate and Business services	10,4
Community Social and Personal Services	12,4
Private households	
Undetermined	30.6

Table 13*:* Industry sector distribution of the employed population (shown in percentage, Source: CS 2007)

POPULATION: INDUSTRY SECTOR												
2001												
AREA	Agriculture; hunting; forestry and fishing	Mining and quarrying	Manufacturing	Electricity; gas and water supply	Construction	Wholesale and retail trade	Transport; storage and communication	Financial; insurance; real estate and business services	Community; social and personal services	Other and not adequately defined	Private Households	Undetermined
EBONY PARK (KAALFONTEIN)	46	11	572	43	225	794	418	519	1,293	0	236	348
IVORY PARK	505	107	4,662	165	3,496	5,317	2,009	2,576	2,344	5	2,425	3,369
RABIE RIDGE	107	25	1,062	49	486	1,069	498	832	1,051	0	490	665
TOTAL	**658**	**143**	**6,296**	**257**	**4,207**	**7,180**	**2,925**	**3,927**	**4,688**	**5**	**3,151**	**4,382**

Table 14: Population per industry sector

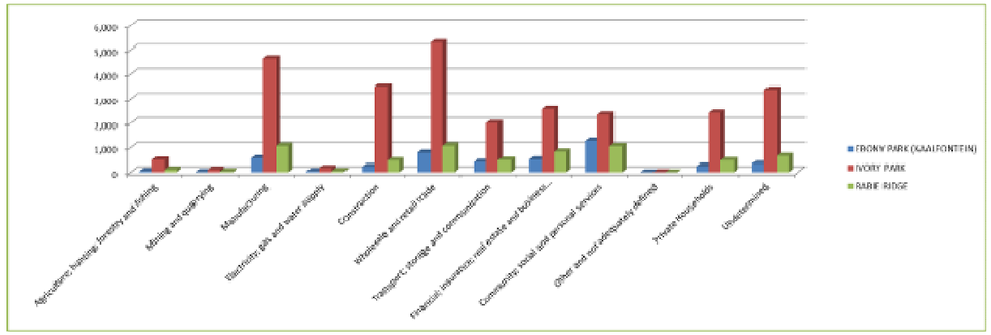


Figure 6: *Population per industry sector*

1.4.3.6 Population Age Profile

The average age in Gauteng is 29 years and the profile for the Johannesburg Metropolitan Municipality is very similar. **(Refer to Table 15).** Such a young population holds the potential for high future population growth.

	Gauteng	City of Johannesburg
Approximate average age (in years)	29.21	29.53

Table 15*:* Average population age (Source: CS 2007 data)

A closer look at the age distribution **(Refer to Figure 7)** reveals that more than a quarter of the population in the areas under discussion is children below the age of 15 years. Just over 40% of the population in the area is below the age of 25 years.

Age in years	Gauteng	City of Johannesburg
0-14	25.4	24.8
15-24	18.0	17.7
25-34	20.0	20.7
35-49	21.5	21.2
50-64	10.6	10.7
65+		

Table 16*:* Age distribution of population (shown in percentage, Source: CS 2007)

POPULATION: AGE																		
2001																		
AREA	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
EBONY PARK (KAALFONTEIN)	1,987	1,709	1,471	1,246	1,646	2,079	2,170	1,763	1,015	554	295	135	62	31	21	9	10	5
IVORY PARK	12,171	9,765	8,755	9,314	15,086	16,450	11,868	10,185	7,577	5,099	2,943	1,444	890	439	248	115	98	71
RABIE RIDGE	2,359	1,906	1,750	1,754	2,735	3,159	2,614	2,115	1,447	965	599	317	195	120	84	41	25	12
TOTAL	16,517	13,380	11,976	12,314	19,467	21,688	16,652	14,063	10,039	6,618	3,837	1,896	1,147	590	353	165	133	88

Table 17: Age distribution of population (shown in years, Source: CS 2007)

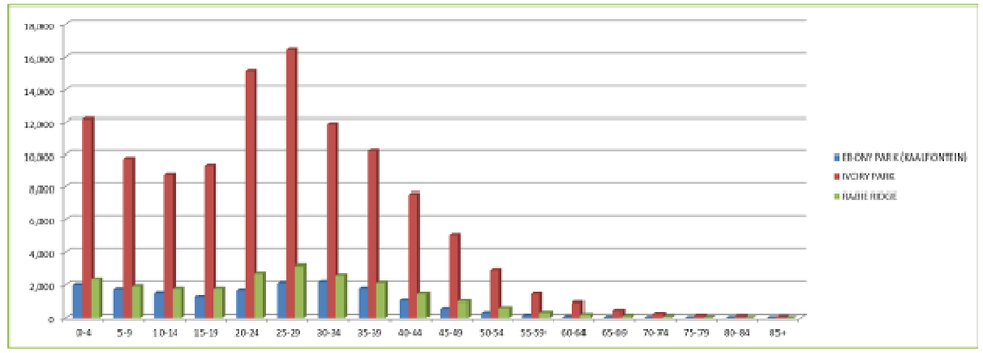


Figure 7 : *Age distribution of population (shown in years, Source: CS 2007)*

1.4.3.8 Education Profile

Although the Gauteng Province has an urbanisation level of 97% (www.gauteng.net), and access to schools should thus be relatively easy, more than 50% of adults in Gauteng aged 20 years or older have not completed secondary school **(Refer to Table 18)**. This figure is similar for the City of Johannesburg. About a fifth of the people in the City of Johannesburg older than 20 years obtained a qualification after completing high school.

Due to its high unemployment rate and township location, it can safely be surmised that the education profile for Ebony and Ivory Park, although situated in the Metro municipality, would tend to be lower than the Johannesburg Metro area as a whole.

	Gauteng	City of Johannesburg
No Schooling	4.7	3.9
Some primary	10.7	9.8
Completed Primary	4.7	4.7
Some Secondary	36.1	36.5
Std 10/Grade 12	23.9	23.3
Higher	18.5	20.4
Unspecified	1.5	1.4

Table 18*:* Highest education level – people 20 years or older (shown in percentage, Source: CS 2007)

POPULATION: EDUCATION						
2001						
AREA	No schooling	Some primary	Complete primary	Some secondary	Std 10/ Grade 12	Higher
EBONY PARK (KAALFONTEIN)	536	877	548	3,896	3,090	847
IVORY PARK	10,399	11,491	5,905	28,237	14,285	2,195
RABIE RIDGE	1,704	1,618	923	5,382	4,150	648
TOTAL	12,639	13,986	7,376	37,515	21,525	3,690

Table 19: Education levels

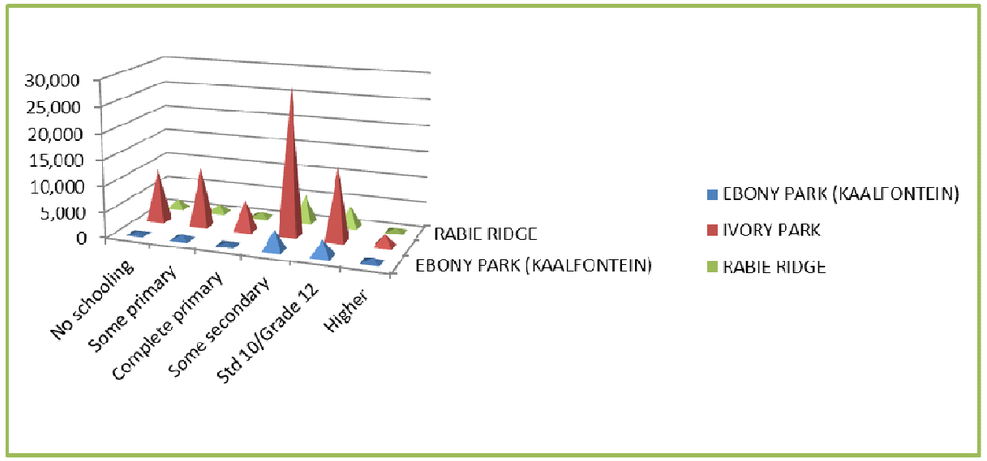


Figure 8: *Education levels*

1.4.3.9 Conclusions

The following general conclusions on the demographic profile of Ebony Park (Kaalfontein), Rabie Ridge and Ivory Park can be drawn from the information presented above:

- While it is acknowledged that it is difficult to estimate the population growth for Ebony and Ivory Park for 2010 and 2015 using the data available in the census 1996 and 2001 and the Community Social Survey of 2007, it is estimated that the current 2010 population is approximately **182,613** which will increase to a projected **213,762** in 2015, some 31 149 people (approximately 9 326 dwelling units).
- Between 43 and 50% of the population between 15 and 65 years of age have no income, while an additional approximately 15% of the same population sector have a monthly income of between R 1 and R 1 600.
- Approximately 33,5% of the employed population are in elementary (lower paid) occupations, with between 16 to 17 % in craft and market related occupations, and approximately 13% are in service, retail and sales positions, 10 to 12% in professional positions, and 10 to 13% in legislator, senior official and managerial positions.
- The average age for the Province and the Metro is 29 years, which indicates a proportionally younger population with a greater propensity for future growth in the study area.
- Approximately 80% of the adult population over 20 years of age residing in the Ivory Park study area has not completed their secondary education.
- The population is therefore largely young, impoverished and unskilled.

It should be noted that all figures are merely estimates that were concluded from the Census Data CS 2007 of the Johannesburg Metropolitan Municipality and Gauteng Province and should not be regarded as final.

CHAPTER 2: SITUATIONAL ANALYSIS

2.1 POLICY ENVIRONMENT

2.1.1 EXISTING SPATIAL POLICY FRAMEWORK

2.1.1.1 National Spatial Development Perspective (NSDP)

The value of national spatial development perspectives such as the NSDP is located within the broader developmental environment. The principles, approach and application of the NSDP should be incorporated in this project. Ultimately, all government programmes and activities find expression in space. The spatial dispensation and nature of the space economy of a region have important implications for meeting the social, economic and environmental objectives of the government. In cases where human settlements are scattered and fragmented over vast distances, servicing becomes expensive, both in terms of initial capital investment and subsequent maintenance. A pressing preoccupation of policy is the dismantling of spatial distortions of apartheid and construction of new spatial forms and arrangements that are more conducive to the objectives of nation-building and social and economic inclusion. 'National spatial perspectives' refer to overarching national strategic perspectives providing a comprehensive and incisive analysis of current and future trends, the factors, forced driving these trends and the strategic implications thereof in spatial terms. It is invoked as crucial instruments to support integrated development through the coordination of policies and programmes.

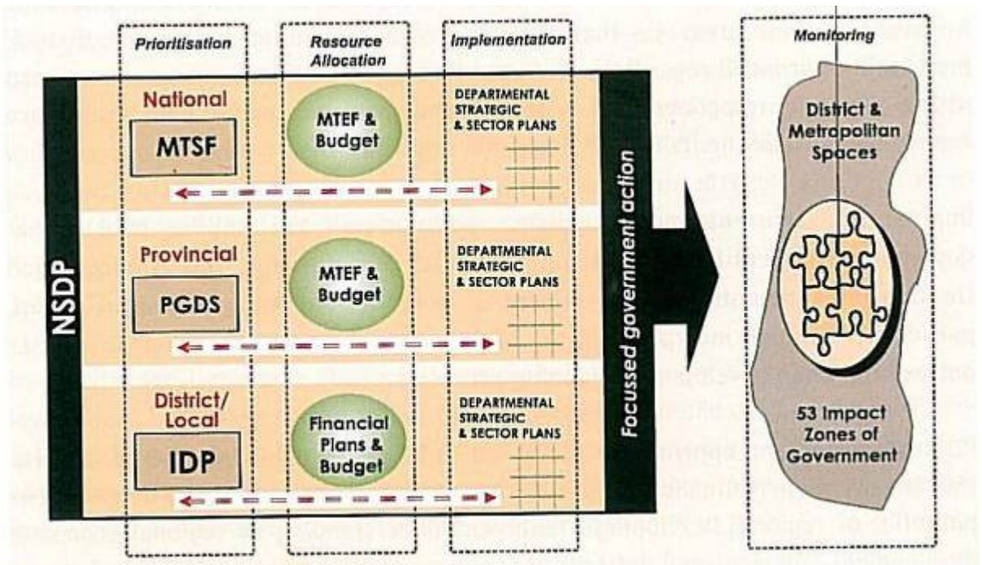


Figure 9: *National Spatial Development Perspective* (*Source: NSDP 2006)*

- *All government programmes and activities find expression in space*
- *The spatial dispensation and nature of the space economy of a region have important implications for meeting the social, economic and environmental objectives of the government.*
- *Construction of new spatial forms and arrangements that are more conducive to the objectives of nation-building and social and economic inclusion*
- *Overarching national strategic perspectives providing a comprehensive and incisive analysis of current and future trends, the factors, forces driving these trends and the strategic implications thereof in spatial terms.*

It is the intention of this study to give effect to the principles of development of integrated and sustainable human settlements advocated by the NSDP through the identification of projects which would address the elements listed above.

2.1.1.2 Gauteng Growth and Development Strategy (GDS)

Many of South Africa's achievements of its first decade of democratic governance are symbolized in Gauteng.

The Province continues to experience the challenges of high levels of unemployment and poverty. Uneven and skewed growth and development has resulted in some geographic areas and some sections of our population benefiting from our successes more than others.

This Growth and Development Strategy (GDS) aims to address the abovementioned issues. It recognizes the leadership role of government in driving integrated, holistic, sustainable and participatory growth and development. Simultaneously, it acknowledges and identifies the role of other sectors of society in ensuring socio-economic transformation. Therefore the GDS seeks to achieve a shared vision, amongst all sectors of our society, for the achievement of our goal of improving the quality of life for all our citizens. The principle of integrated, holistic, sustainable and participatory development as a critical pillar in addressing poverty and unemployment is being reinforced – and as a principle that encompasses meeting all the needs of our people, ensuring community or beneficiary involvement and ownership, long-term sustainability on all levels, equitable socio-economic development with equitable benefits for all.

The GDS is an action-oriented strategy and not a policy document, neither is it only a government strategy, but it is a strategy for all sectors of society in Gauteng. The intention is to build a sense of provincial unity and responsibility amongst all sectors of society towards reducing poverty and unemployment, creating jobs and ensuring socio-economic transformation of the Province.

The main mechanisms identified in the GDS are:

a. Investment & support to targeted economic growth sectors
b. SMME Support
c. Skills Development
d. Broad Based Black Economic Empowerment (BBBEE)
e. Social Grants and Social Services
f. Expanded Public Works Programme (EPWP)
g. E-Governance
h. Multi-Purpose Community Centres (MPCC's)
i. Intergovernmental Relations
j. Integrated City Region Strategy
k. Engaging with NEPAD
l. Mainstreaming of transversal issues

Two of the key principles underlying the GDS are the:

- recognition and identification of the specific and complementary role of each sector of society in achieving socio-economic transformation; and
- implementation of the principles of participatory democracy and good governance including accountability and transparency.

The principle of integrated, holistic, sustainable and participatory development as a critical pillar in addressing poverty and unemployment is being reinforced – and as a principle that encompasses meeting all the needs of our people, ensuring community or beneficiary involvement and ownership, long-term sustainability on all levels, equitable socio-economic development with equitable benefits for all.

It is the intention of this study to give effect to the principles of the development of integrated and sustainable human settlements advocated by the Growth and Development Strategy (PGDS).

2.1.1.3 CoJ Growth and Development Strategy (GDS) 2006

The City's Growth and Development Strategy (GDS) is the City's long-term plan to ensure sustainable delivery of services, deal with social and economic development, involve residents in local government and promote a safe and healthy environment. It encompasses the ideas expressed in all other City strategies, and takes into account the Province's Growth Development Strategy, the National Spatial Development Perspective, the Accelerated and Shared Growth Initiative for South Africa (Asgisa) and the strategies of surrounding municipalities, particularly Tshwane and Ekurhuleni.

There are a number of reasons why long-term City strategies have been gaining prominence, both internationally and locally. Briefly these reasons include:

- The accelerated growth of urban settlements and populations in the developing world has led to the realisation that national planning frameworks must be supplemented with local level strategies that speak to the particular urban development challenges within individual cities;
- In part driven by currents in planning theory, and in part by the accumulation of cities' own practical urban development experience, it has been concluded that traditional master plans, dealing primarily with spatial design and physical infrastructure extension, do not provide adequate answers to increasingly complex social and economic development challenges;
- Closely related to this is the understanding that cities are not 'built from above' by professional planners, but 'from below' by the discreet activities of a myriad of local actors. Plans cannot control the city. More open-ended strategic frameworks, that forge a rough

citywide consensus through participatory planning processes, are more likely to reflect what this multiplicity of actors actually wants, and are therefore, ironically, often more robust and effective at directing development;

- The end of the 20th Century saw a growing perception that as capital becomes more mobile across the world, cities as well as countries compete for investment. This inevitably led to the understanding that cities can and should be seen in 'comparative and competitive perspective', and therefore need strategies to 'position themselves' *vis-à-vis* other cities, nationally and internationally;
- There is now a growing awareness of the need for balance between city leaders' concerns with 'competitiveness' and residents' concerns with 'liveability issues', that is with social and urban environmental conditions in the areas where people live; security; dignity and rights; quality of community-life in 'decent' neighbourhoods; access to social amenities; and even with urban culture. This balance needs to be carefully struck, and this has called forth the need for more sophisticated strategies that enable decision makers to weigh increasingly difficult choices about how best to allocate scarce resources;
- There is a deepening understanding of the function of cities in the evolution of a country's population, space economy, social structure and, more recently, knowledge base. Life-cycle processes like demographic transitions and shifts in national settlement patterns play out

Programme	Capital Budget
Upgrade of Marginalized Areas Programme (UMAP)	R1 063 415 973
Regeneration Programme	R498 049 440
Nodal Programme	R138 750 142
Strategic Transportation Intervention Programme (STIP)	R321 515 000
Corridor Development Programme	R215 736 792
Strategic Infrastructure Investment Programme (SIIP)	R394 981 275
Sustainable Environment Programme	R70 000 000
2010 Programme	R496 417 000
Housing Programme	R240 823 193

Table 20: *Capex Breakdown (Source: CoJ IDP 2010/2011)*

over many decades. They cannot easily be managed within a medium-term planning horizon. Strategies with a much wider and longer term view, that take account of large and protracted structural processes shaping the context within which cities operate, are essential; and

- Last, as global environmental risks have become better understood and as public concern with the impact that urban activities have on the envelope of natural resources sustaining life has grown, a consciousness has developed around the need to plan for the long-term future sustainability of cities.

The City of Johannesburg Growth Development Strategy has certain principles in the development paradigm. This Development Paradigm is based on the following six principles:

- ***Proactive absorption of the poor***

  The City of Johannesburg will not plan on the basis that the poor, vulnerable and excluded will eventually go somewhere else. It will proactively help new households, new internal and circular migrants, those in hostels, informal settlements and historical ghettoes, unemployed youth, refugees, and others *negotiate access to the city and get onto the ladder of urban prosperity*.

- ***Balanced and shared growth***

  The City will continue to promote economic growth by keeping the unnecessary costs of doing business in the city as low as possible. But it will also work to change structural dynamics in the local economy that prevent all residents from enjoying the fruits of economic growth. In future, 'accelerating economic growth' and 'ensuring that the benefits of growth are shared more broadly' will not be separate priorities: instead *the rate of economic growth will itself be driven up via a process of spreading the benefits of growth*.

- ***Facilitated social mobility and equality***

  As a post-apartheid city, Johannesburg has a non-negotiable obligation to 'absorb' the poor. But this does not mean just taking in more poor people to end up carrying a bigger 'welfare burden'. A bigger middle-strata of society is crucial for future stability and growth. *So we don't just want to help people in poverty; we want to help people out of poverty*. This means working to enable residents to aspire, to unblock obstacles to rapid social mobility, and ultimately to reduce social inequality.

- ***Settlement restructuring***

  The City of Johannesburg must *accelerate the spatial restructuring of settlements still distorted and divided by apartheid*. At the very least this will require changing city form to bring jobs closer to people and people closer to jobs, *city fabric* to ensure more liveable neighbourhoods, and *city functioning* to improve urban efficiency. A pre-requisite for this is a fundamental change in planning approach, away from simply facilitating spatial development towards actively directing it.

- ***Sustainability and environmental justice***

  Johannesburg must become a more *'sustainable city'* by anticipating global environmental shocks and managing the environmental impacts of its own processes of urban production and consumption. It must also promote *'environmental justice'* by ensuring that poorer communities do not suffer most from the effects of urban-environmental risks and disasters, and that quality of life is enhanced by extending green infrastructure to grey, featureless dormitory townships.

- ***Innovative governance solutions***

  The worldwide long-term trend is for citizens and stakeholders to demand more from government while wanting to contribute less to the public purse. Internal efficiency improvements are critical. So is improved participatory governance, both to prioritise needs and to moderate social expectations. But over the long term, complex development challenges will only be met if the *resources and energies of all parts of government, as well as citizens, communities, civil society organisations and business can be orchestrated to forge commonly agreed innovative solutions*.

- *Sustainable delivery of services,*
- *Deal with social and economic development,*
- *Involve residents in local government and promote a safe and healthy environment.*
- *More open-ended strategic frameworks,*
- *Participatory planning processes,*
- *Proactive absorption of the poor;*
- *Balanced and shared growth;*
- *Facilitated social mobility and equality;*
- *Settlement restructuring;*
- *Sustainability and environmental justice and*
- *Innovative governance solutions.*

It is the intention of this study to give effect to the principles of development of integrated and sustainable human settlements advocated by the Growth and Development Strategy (City GDS) through the identification of projects which would address the elements listed above.

2.1.1.4 CoJ IDP 2010/2011

A pledge was made during the 2006 elections that local government will be improved. The major challenges of urbanisation and migration, economic development and job creation, service delivery, globalisation, poverty and urban renewal will be dealt with, with greater urgency.
The IDP seeks to implement the GDS by linking the physical, social, institutional and economic components of planning the City within a management and implementation structure across departmental divisions, as well as across spheres of government.

A critical aspect of the IDP is to bridge the divide between the City's first and second economies; to ensure that balanced, equitable and shared growth is attained; and to prioritise the development of marginalised areas and disadvantaged communities. The programme seeks to provide critical infrastructure to marginalised areas by addressing the backlogs within the shortest possible time period. The key marginalised areas are Soweto, Diepsloot, Orange Farm and **Greater Ivory Park**, (including the areas of Kaalfontein and Rabie Ridge). The CAPEX breakdown according to the City's SDF programme for 2010 provided for an amount of R 1 063 415 973, earmarked for **upgrading of marginal areas (UMAP)**.

- *The major challenges of urbanisation and migration, economic development and job creation, service delivery, globalisation, poverty and urban renewal will be dealt with, with greater urgency.*

- *A critical aspect of the IDP is to bridge the divide between the City's first and second economies;*
- *to ensure that balanced, equitable and shared growth is attained;*
- *and to prioritise the development of marginalised areas and disadvantaged communities.*

It is the intention of this study to give effect to the principles of development of integrated and sustainable human settlements advocated by the IDP through the identification of projects which would address the elements listed above.

2.1.1.5 City of Johannesburg Growth Management Strategy (GMS)

In terms of the GMS, Ivory Park falls within a marginalised area. The City has a continued commitment to the theses areas in terms of the physical upgrading and economic upliftment. The transformation of these areas from previously dormitory townships to vibrant integrated communities is central to the principles of the GDS to 'facilitate social mobility' and 'settlement restructuring'. Increased economic development and labour-intensive industries will be promoted and supported via incentives and infrastructure provision. The concept of environmental justice needs to be embraced and implemented by the greening and landscaping of marginalised areas.

The continued City commitment to the upgrading and economic upliftment of the following locations places them within the highest priority category of the five Growth Management Areas (GMA) and reinforces the commitment to service upgrading (e.g. gravel roads upgrading, eradication of informal settlements etc.).

A full suite of incentives is still being developed but they could include Fast-Tracking of applications, Application Fee and Bulk Contributions exemptions and in relation to industrial and commercial development, rates holidays. The following localities are defined as Marginalised Areas (refer to SDF):

- Orange Farm
- **Greater Ivory Park** (including Rabie Ridge and Kanana Gardens)
- Greater Soweto
- Diepsloot
- Zandspruit
- Alexandra
- Informal settlement upgrading priority areas (e.g. Kya Sands / Lion Park)

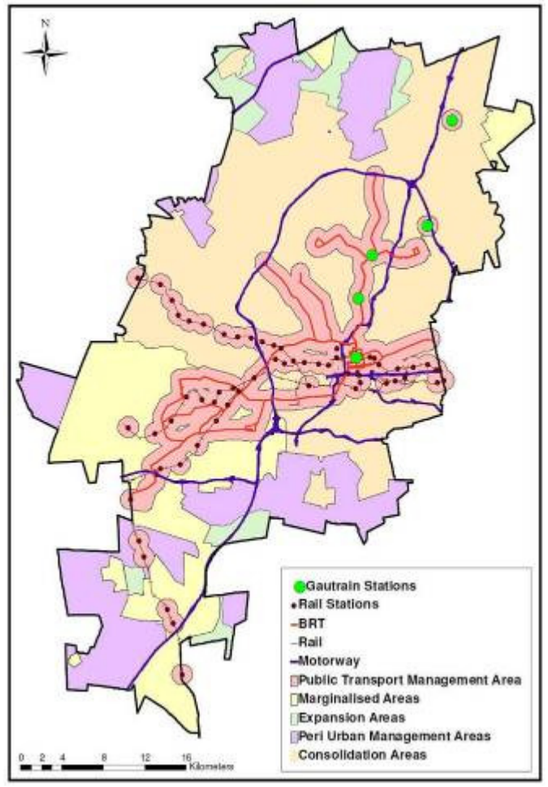


Figure 10 *Johannesburg Growth Management Strategy (Source: GMS, 2008)*

- *Ivory Park falls within a marginalised area.*
- *Committed to physical upgrading and economic upliftment;*
- *Fast-tracking applications;*
- *Application fee and bulk contribution exemptions.*
- *Commitment to service upgrading (e.g. gravel roads upgrading, eradication of informal settlements etc.).*

It is the intention of this study to give effect to the principles of development of integrated and sustainable human settlements advocated by the GMS through the identification of projects which would address the elements listed above.

2.1.1.6 Spatial Development Framework Region A

The SDF is the legislated component of the City's IDP that prescribes development strategies and policy guidelines to restructure the City's urban form.

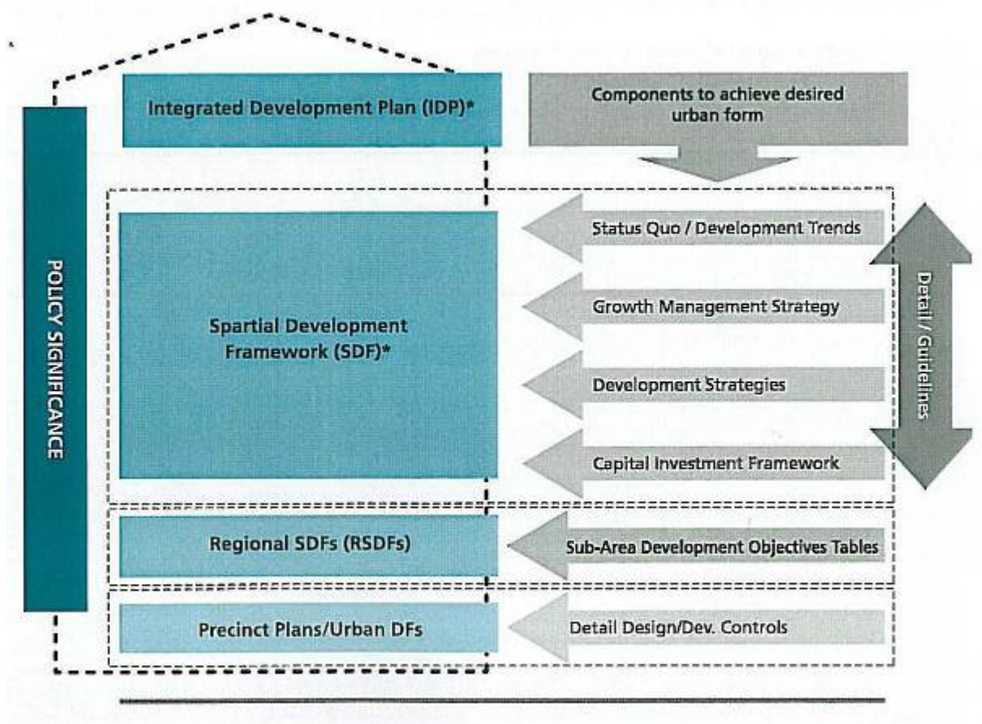


Figure 11 *Policy Significance (Source: CoJ IDP2010/2011)*

There is a hierarchy of priority areas and according to this information Ivory Park is defined as a **marginalised area**. Changes in land use and information related to town planning and building applications indicate that the marginalised areas remain a tertiary location for most new investments. If it is compared to the consolidation and Public Transport Management Areas, they remain largely underdeveloped. Many of the land uses in these areas are informal. The marginalised areas are furthermore identified as **unemployment hot-spots**.

Projects in marginalised areas should:

- Upgrade existing infrastructure in order to support more intensive land uses and higher density residential development;
- Facilitate the implementation of Phase 1a and 1b of the BRT system;
- Facilitate mobility along important arterials;
- Provide quality pedestrian and cycle facilities integrated with public transportation facilities;
- Offer economic opportunities to the poor and marginalised;
- Provide necessary public amenities; and
- Integrate transportation modes, especially the existing rail network with the BRT and Gautrain Stations.

- *Ivory Park is defined as a marginalised area*
- *Marginalised areas remain a tertiary location for most new investments*

- *Remain largely underdeveloped*
- *Identified as unemployment hot-spots*
- *It is the intention of this study to give effect to the principles of development of integrated and sustainable human settlements advocated by the SDF through the identification of projects which would address the elements listed above.*

2.1.1.7 Regional Spatial Development Framework – Region A

There are seven RSDFs for the City's seven administrative regions. The RSDF aims to be a concise and user-friendly document that comprises the following six (6) sections:

- Provides an introduction and overview to the document.
- Summarises the current state of the Region that includes regional characteristics, issues, trends and implications.
- Sets outs the regional applicability of the city-wide structuring elements, policies, strategies and precinct plans and relates this to the regional context.
- Includes the development management tables per Sub Area that sets parameters for future development.
- Describes the development Focus Areas and their contribution to the Growth and Development Strategy.
- Explains terms, definitions and abbreviations used throughout the document.

The RSDF subscribes to the vision, planning principles, strategies, policies, and bylaws of the City. It is an annexure to the SDF that is a component of the IDP.

Areas of employment within the area include the Fourways Regional Mode, the industrial area of Kya Sands, Commercia (in the City of Ekurhuleni Municipality) and Centurion (in the Tshwane Municipality), the Northgate Regional Node (in Region C), Woodmead and Rivonia Regional Nodes (in Region E).

The Gautrain station in Midrand offers opportunity for intensification of land use and urban regeneration within the Midrand CBD.

The Greater Ivory Park (including Kaalfontein and Rabie Ridge) is one of the marginalised areas in Region A. These areas require integration into the broader urban network. Employment opportunities, business sites and local retail are some of the most urgent needs.

The development objective for this area is to ensure the socio-economic integration, consolidation and long-term sustainability of this Sub Area. Increased densities and pressure for development in the area are causing capacity constraints on infrastructure.

The Greater Ivory Park area in Region A is identified as a marginalised area and is classified as a high priority area for the City of Joburg in terms of the GMS (i.e. 2008 – 2011 Capital Investment and Immediate Service Upgrading)

Development strategies proposed in the RSDF include the following:

- Supporting efficient movement system
- Ensuring strong viable nodes
- Increased densification of strategic locations
- Facilitating sustainable housing environments in appropriate locations
- Initiating and implementing corridor development
- Supporting sustainable environmental management
- Managing urban growth and delineating an Urban Development Boundary

- *The Greater Ivory Park (including Kaalfontein and Rabie Ridge) is one of the marginalised areas in Region A;*
- *These areas require integration into the broader urban network. Employment opportunities, business sites and local retail are some of the most urgent needs;*
- *The area is classified as a high priority area for the City of Johannesburg in terms of the GMS (i.e. 2008 – 2011 Capital Investment and Immediate Service Upgrading)*

It is the intention of this study to give effect to the principles of development of integrated and sustainable human settlements advocated by the RSDF through the identification of projects which would address the elements listed above.

2.1.1.8 Swazi Inn UDF

Introduction and Background

Swazi Inn node has quickly emerged as a public transportation interchange, with commercial activities growing along Malibongwe Street/ George Nyanga Drive and Rev RTJ Namane Drive. The Swazi Inn Urban Development Framework (UDF) recognises that the vibrant energy, together with the activities taking place within this node is guiding it towards becoming a more formalised nodal development. By formalising a node, growth can be focused and take place in a sustainable manner.

The **main objective of the Swazi Inn UDF** is "to provide a set of development principles, as well as specific development guidelines and interventions to enable the sustainable development of the Swazi Inn community".
The framework seeks to obtain the following five (5) outcomes, namely:

- To meet public sector policy outcomes;
- To ensure integrated and sustainable development;
- To enhance land value;
- To improve pedestrian and vehicle movement;
- To promote the development of a compact, pedestrian-friendly environment.

Figure 12 *Swazi Inn UDF (Source: Swazi Inn UDF, 2009)*

Proposed Interventions and Remarks

Street space is extremely popular within the study area, because of the high demand, it is very valuable. The UDF suggests that street space will have to be included in space planning proposals. Informal traders need formalised trading facilities.

The uses of open spaces need to be investigated. The spaces should be flanked by buildings and attention must be given to landscaping in order to create a sense of place. Currently, these spaces are used by taxis and private vehicles for parking. It is suggested that Erf 8505 should be converted to a formal public open space. Community gardens could provide access to fresh produce and plants.

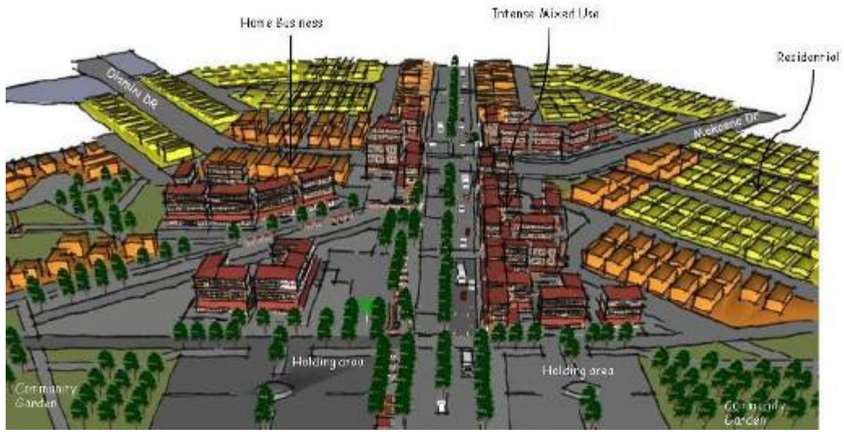


Figure 13 *Swazi Inn 3D perspective (Source: Swazi Inn UDF, 2009)*

The Swazi Inn UDF proposes a phased approach to transform the node from the current land use situation to an environment that can support redevelopment and investment:

Phase	Options
Phase 1	The first phase comprises the most basic use of a site i.e. the site is used for residential purposes in terms of the existing land use policy.
Phase 2	In terms of the current land use policy the occupier/owner of the site can develop a second dwelling or a home business provided that they reside on the site and that the character is still predominantly residential.
Phase 3	To redevelop a site or sites, application need to be submitted in accordance to applicable legislation, Ordinance or DFA, and incorporated into the relevant scheme or land use management system. Due to the small size of current sites it is proposed that site assembly take place.

Table 21: Phased approach proposed by Swazi Inn

Several important issues were raised by the Swazi Inn UDF, ranging from:

- Recommending that land-use mixes be done with a Transport Orientated Development approach in mind.
- Replacing the v-shaped storm water drainage system.
- Upgrading and management of roads.
- Exploit the strategic location of Swazi Inn.
- The need for economic development, public transport facilities, community facilities, commercial facilities and accommodation of pedestrian movements.

It is essential to consider the abovementioned issues, the perception has been drawn with the community and any new plan, design, and framework should take cognizance of the expectation/perception/interventions as described by this document.

- *The framework has emerged as public transportation interchange, with commercial activities*
- *It seeks to obtain the following five (5) outcomes, namely:*
  - *To meet public sector policy outcomes;*
  - *To ensure integrated and sustainable development;*
  - *To enhance land value;*

- *To improve pedestrian and vehicle movement;*
- *To promote the development of a compact, pedestrian-friendly environment.*

2.1.1.9 Bambanani UDF

Introduction and Background

The Greater Ivory Park is regarded as one of the most densely populated areas within the region and is characterized by a concentration of people with very low income levels. A very diverse urban environment currently characterizes the Bambanani node situated in the Greater Ivory Park area. Low-intensity light industrial activities are situated on a large individual erf with some informal settlement activities also taking place in the same area and strong business nodal developments in the Midrand area.

The node is surrounded by high-density residential developments, consisting of informal settlements and subsidized / conventional RDP houses.

The main objectives of the Bambanani UDF are to:

- Provide a common vision for the area, which the community can relate to.
- Create a safe and secure environment.
- Stimulate economic generation.
- Promote urban structure and pedestrian movement between uses.
- Promote multi-modal transport.
- Improve legibility and functionality of Bambanani node.
- Consolidate and extend social facilities.
- Assess the broad infrastructure implications of redevelopment and investment.
- Introduce and appropriate urban management system.

Figure 14 *Bambanani UDF proposals (Source: Bambanani UDF, 2008)*

Figure 15 *Layout (Source: Bambanani UDF, 2008)*

Proposed Interventions and Remarks

The interventions consist of a number of catalytic projects which have been identified as necessary for creating the conditions needed to stimulate the development of the Bambanani node. The following projects were identified in the Bambanani UDF:

- Electricity infrastructure.
- Rezoning, Subdivision and Consolidation.
- Relocation of existing Informal Settlements.
- Resolve Ownership and Lease Agreements with existing tenants.
- Establishing anchor tenants in Functional Area C (Industrial Precinct).
- Planning of a formalized Public Transport facility.
- Call for tenders for a Filling Station.
- Call for tenders for a Retail Facility.
- Detailed planning of a factory Shop facility.
- Bambanani Stakeholders Forum.
- Facilitating SETA involvement in the Bambanani node.
- Alignment with the Expanded Public Works Programme (EPWP).

It is essential to consider the abovementioned projects, the perception and undertakings have been drawn with the community and any new plan, design, and framework should take cognizance of the expectation/perception/interventions as described by this document.

- *Ivory Park is a concentration of people with very low income levels*
- *Bambanani has very diverse urban environment*
- *It stimulates economic generation*
- *It promotes urban structure and pedestrian movement between uses*
- *It promotes multi-modal transport*

2.1.1.9 The City Youth Spatial Development Vision

The City has considered youth policies at national, provincial and city level, in particular the Revised Joburg Youth Strategy (2010); however the focus is predominantly on socio-economic problems and programmatic solutions.

The youth are important users and agents of the physical environment. It is therefore important to investigate, analyse and prescribe solutions to their spatial, social, cultural, economic and political needs. The Youth Spatial Urban Vision (YSUV) is an initiative, policy and implementation programme uniquely tailored to appropriately respond to spatial challenges confronted by the youth. The YSUV is directed toward the ***spatial*** needs and functioning of young people within their own communities, utilising Ivory Park as a pilot project.

- *The youth are important users and agents of the physical environment*
- *It addresses the **spatial** needs and functioning of young people within their own communities*

2.1.2 OTHER POLICY FRAMEWORKS

2.1.2.1 Breaking New Ground

The development of Ivory Park, as a largely dormitory residential area, can be aligned with the New Housing Vision and Policy, as approved by the National Cabinet, and recorded in a document entitled "Breaking New Ground". The new human settlements plan of the Government reinforces the vision of the Department of Housing, namely, to promote the achievement of non-racial, integrated society through the development of sustainable human settlement and quality housing.

As can be extracted from the Cooperation and Alignment Agreement (28 Nov. 2008) this policy includes the following specific objectives:

- "accelerating the delivery of housing as a key strategy for poverty alleviation;
- utilizing the provision of housing as a major job creation strategy;
- ensuring property can be accessed by all as an asset for wealth creation and empowerment;
- leveraging growth in the economy and providing social amenities such as schools, police stations, clinics and other social and recreational facilities.
- combating crime, promoting social cohesion and improving quality of life for the poor and others who fall within the lower to middle income and more affordable housing schemes and who wish to rent as opposed to purchase,
- utilizing housing as an instrument for the development of sustainable human settlements, in support of spatial restructuring.
- Providing poverty alleviation to areas where people can qualify for either individual or institutional subsidies."

The "Breaking New Ground" policy document, promotes the view that: "The present and future inhabitants of sustainable human settlements located both in urban and rural areas, live in a safe and a secure environment and have adequate access to economic opportunities, a mix of safe and secure housing and tenure types, reliable and affordable basic services, educational, entertainment and cultural activities and health, welfare and police services. Land utilization is well planned, managed and monitored to ensure the development of compact, mixed land-use, diverse, life-enhancing environments, with maximum possibilities for pedestrian movement and transit via safe and efficient public transport in cases where motorized means of movement if imperative. Specific attention is paid to ensuring that low-income housing is provided in close proximity to areas of opportunity. Investment in a house becomes a crucial injection in the second economy and a desirable asset that grows in value and acts as a generator and holder of wealth. Sustainable human settlements are supportive of the communities which reside there, thus contributing towards greater social cohesion, social crime prevention, moral regeneration, support for national heritage, recognition and support of indigenous knowledge systems and the on-going extension of land rights."

- *Accelerating the **delivery of housing** as a key strategy for **poverty alleviation***
- *Using the above as major **job creation** strategy*
- *Growth in the economy and providing social amenities*
- *Combating crime, promoting social cohesion and improving quality of life*
- *Sustainable human settlements, in support of spatial restructuring*
- *The present and future inhabitants of sustainable human settlements located both in urban and rural areas, live in a safe and a secure environment and have adequate access to economic opportunities, a mix of safe and secure housing and tenure types, reliable and affordable basic*

services, educational, entertainment and cultural activities and health, welfare and police services.

2.1.2.2 The Neighbourhood Development Partnership Grant Programme

The Neighbourhood Partnership Development Grant (NDPG) administered by the National Treasury Department plays a key role in unlocking resources and initiating property developments required to transform target areas into vibrant and economically functioning neighbourhoods that are pleasant to live in and provide residents with access to shops, markets, recreational and community facilities and public transport rather than just targeting poverty alleviation. This speaks directly to what kind of environment is to be enabled in Ivory Park. The main focus of grants such as the NDPG is: township areas; strategic economic development projects; land use restructuring; stimulating property markets; purchasing power retention; public sector investment as a catalyst; leveraging non-governmental investment; ensuring municipal support and kick-starting township regeneration.
All NDPG target areas are characterised by low levels of community facilities and commercial investment, high unemployment, low household incomes and poverty and extends to include all metropolitan councils, district councils and incorporated local municipalities, where technical assistance funding and capital grant funding are available. Various facets of focus as is identified in the vision for Ivory Park are also primary thrusts of the NDPG, which includes: funding community infrastructure, public places and facilities, building capacity, social capital and institutional robustness and; contribution to neighbourhood creation.

- *Unlock resources and initiate property developments;*
- *Transform target areas into vibrant and economically functioning neighbourhoods pleasant to live in and provide residents with access to shops, markets, recreational and community facilities and public transport*
- *The main focus of these grants is: township areas; strategic economic development projects; land use restructuring; stimulating property markets; purchasing power retention; public sector investment as a catalyst; leveraging non-governmental investment; ensuring municipal support and kick-starting township regeneration;*
- *Funding community infrastructure, public places and facilities, building capacity, social capital and institutional robustness and;*
- *Contribution to neighbourhood creation.*

2.1.2.3 City of Johannesburg Environmental Policies

The City has various environmental policies of which the Johannesburg Metropolitan Open Space System (JMOSS) is probably the most prominent. The purpose of JMOSS is to develop an approach for the establishment of a Metropolitan Open Space System for the City. The JMOSS is a decision support tool and a spatial planning tool to assist in the promotion of sustainable management of open space within the City. The aim is to facilitate the establishment and maintenance of an efficient open space system that will link established and potential conservation areas within the City. Of importance for this project is that JMOSS prescribes the implementation of storm water attenuation measures for larger sites.

Other policies that must be taken note of are policies related to catchment management and the management of ridges. The Catchment Management Policy prescribes amongst others the following:

- No reclamation of land or construction of permanent structures are permitted within the riparian zone or within its 30 m buffer zone;
- No development are permitted within the 1:100 year flood line, within the riparian zone or its 30m buffer; and
- Areas below the 100 year flood line are to be zoned as open space.

The implications of the catchment management policy for development in Ivory Park in terms of water resources, is that wetlands and water courses, riparian zones and their 30m buffer zones are no-go areas. It must be noted that the provincial authority (Minimum Requirements for Biodiversity Assessments, November 2009, Gauteng Department of Agriculture and Rural Development, Biodiversity Directorate) has a policy similar to the City's policy explained above. These policies are based on national environmental legislation, in specific the National Water Act (Act 36 of 1998) and as such compliance is compulsory.

- *It develops an approach for the establishment of a Metropolitan Open Space System for the City;*
- *It aims to facilitate the establishment and maintenance of an efficient open space system that will link established and potential conservation areas within the City;*
- *JMOSS prescribes the implementation of storm water attenuation measures for larger sites.*

2.1.3 EKHURULENI SDF

Ivory Park abuts on Tembisa in Ekurhuleni in the east. The following strategic planning documents of the Ekurhuleni Metropolitan Municipality were consulted in the planning process:

- The Ekurhuleni Metropolitan Municipality Spatial Development Framework 2005 (which is currently under review and will be finalised in June 2011)
- Master Plan Framework 2010
- Regional Spatial Development Framework - Northern Spatial Development Framework 2005
- Ekurhuleni Metropolitan Municipality Integrated Development Plan 2006 – 2011 (4th Review)
- The Ekurhuleni Growth and Development Strategy 2025
- Tembisa Urban Management Plan 2009
- Swazi Inn Urban Development Framework 2009

The structure of the major planning elements in Ivory Park conforms to those in Tembisa. The major transportation routes and mobility spines in Ivory Park and Tembisa line up and the development corridors and activity nodes also corresponds between the two urban areas.

Land uses on both sides of the boundary, which is mainly residential land uses, corresponds and follow the same patterns. The erf sizes align and there is no major conflict between the land uses or the erf sizes or the pattern of development in Ivory Park and Tembisa in Ekurhuleni.

As far as engineering services are concerned, the Ekurhuleni Metropolitan Council's Northern Spatial Development Framework (NSDF) has identified Tembisa as one of its Service Upgrading Priority Areas similar to the prioritization of the City of Johannesburg Metropolitan Municipality in Ivory Park. Such a strategy implies that the municipality should focus its capital expenditure and operational programmes on upgrading services and facilities in these areas. The goal in doing so would be to raise service and facility levels in these areas to the extent that they compare well with those of the rest of the Metro. Furthermore the Ekurhuleni NSDF (Figure 16) acknowledges that although there are other nodes in the vicinity, the Swazi Inn node in particular can play a significant role in the local economy through the clustering of informal trading activities, the provision of tourism facilities and the development of a flea market.

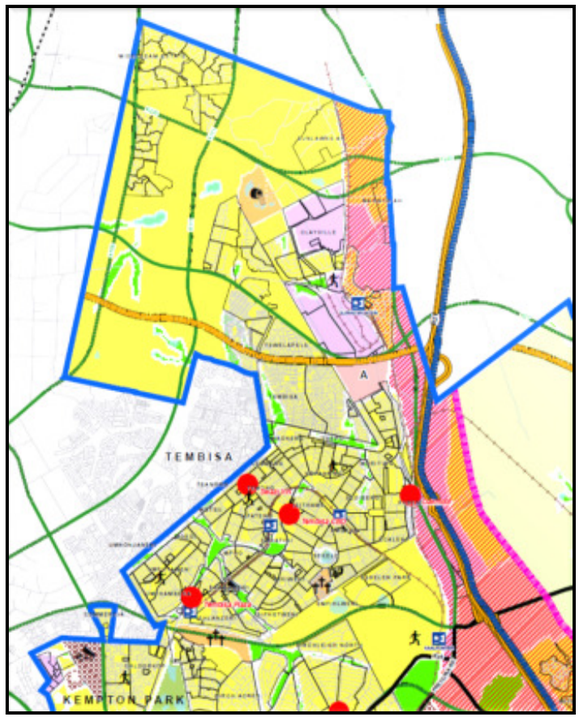


Figure 16: *Ekurhuleni Northern SDF*

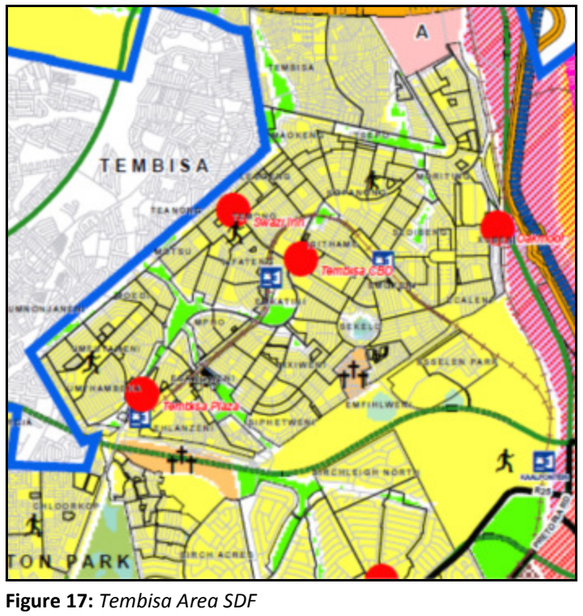


Figure 17: *Tembisa Area SDF*

The Northern SDF proposes the following:

- The management of conflict between vehicular and pedestrian movement;
- The provision and proper utilization of support facilities such as ablution blocks, storage facilities etc;
- A better functioning design of trading stalls;
- The provision of appropriate street furniture e.g. refuse bins, seating, street lighting etc.

- *The structure of the major planning elements in Ivory Park conforms to those in Tembisa;*
- *The major transportation routes and mobility spines in Ivory Park and Tembisa line up and the development corridors and activity nodes also corresponds between the two urban areas;*
- *Land uses on both sides of the boundary, which is mainly residential land uses, corresponds and follow the same patterns;*
- *It acknowledges the Swazi Inn node in particular can play a significant role in the local economy through the clustering of informal trading activities, the provision of tourism facilities and the development of a flea market.*

2.1.4 CONCLUSIONS

The following conclusions can be drawn from the above outlined policy environment applying to Ivory Park:

- The current project can be seen as being the next component of the "package of plans" approach adopted by the City in its planning process: that is progressing from the higher level IDP and GDS processes, through the City's SDF and the RSDF for the Administrative Region A to the current Urban Development Framework.
- The existing development policies of the City detail a number of overriding initiatives that need to be incorporated into the current Urban Development Framework such as:
  - Addressing the needs of the poor;
  - Managed urban growth in relation to the provision and capacities of service infrastructure;
  - Improved mobility for residents through the improvement of public transport, and the development of movement corridors, to provide equal access to facilities, services and job opportunities;
  - Settlement restructuring, including the establishment of activity nodes and the densification of low density area;
  - Sustainable environmental management especially with respect to conservation and management of open areas and the impact of storm water;
  - The addressing of local housing needs;
  - The focused investment in the upgrading of infrastructure; and
  - Increased local economic development.
- The BNG and NDPG policies present the potential opportunity for projects aligned to these policies receiving funding that is additional to the "normal" Council funding sources.

If one considers all the above mentioned policies, frameworks and strategies, the main initiatives relevant to this area can be summarised as the following:

- *Job creation*
- *Integrated and sustainable development*
- *Stimulation of economic development*
- *Community infrastructure provision and maintenance*
- *Open Space areas to be conserved*
- *Stormwater management*
- *Development control and management within wetland areas*
- *Settlement restructuring in problem areas*

- *Delivery of housing*
- *Create neighbourhoods*
- *Address spatial needs of youth*
- *Promote urban structure and pedestrian movement between uses*
- *Promote multi-modal transport*

2.2 TOWN PLANNING, LAND OWNERSHIP AND TENURE ENVIRONMENT

2.2.1 TOWN PLANNING

2.2.1.1 Existing Situation Analysis

a. Existing Zoning

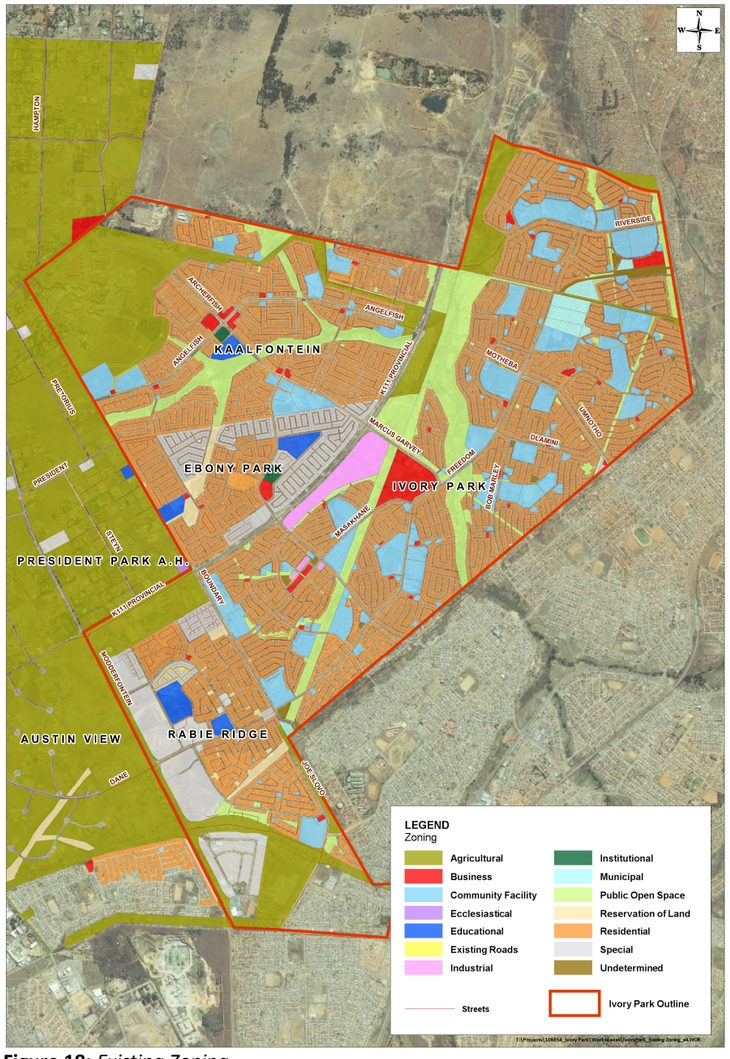


Figure 18: *Existing Zoning*

The properties within Ivory Park are zoned in accordance with either Annexure F of the Less Formal Townships Establishment Act, Act 13 of 1991 or the Black Communities Development Act (Act 4 of 1984) (BCDA).

As indicated in **Figure 18**, the main zoning in the area is Residential.

A large part of the area is zoned Public Open Space in order to cover all the flood areas and streams running through the area.

Provision is made in the central area for a Business zoning, with many smaller Business zonings scattered through the area.

Educational sites are mainly situated in the mid and southern part of the area.

Public Open Space zoned sites are situated around the existing stream areas with a few scattered, smaller sites, providing small park areas for children to play in.

Ample provision is made for Community Facilities throughout the area.

The area west of the study area is mainly zoned Agricultural, with Agricultural zoned land also to the northern, north-western and southern part within the area.

There is also a large area zoned for Special purposes to the south-western side as well as in the centre of the area.

Provision is also made for erven with a Reservation of Land zoning in the southern part of the area as well as towards the western side of it.

b. Township Establishment Status:

The study area can be broken down into the following established township areas.

	TOWNSHIP NAME	PROVINCE	LOCAL AUTHORITY	FIRST ERF	LAST ERF	NO OF ERVEN
1	**Rabie Ridge EXT1**	Gauteng	City of Johannesburg	1072	1075	7
2	**Rabie Ridge EXT 2**	Gauteng	City of Johannesburg	1082	1348	1178
3	**Rabie Ridge EXT 4**	Gauteng	City of Johannesburg	1349	2339	991
4	**Rabie Ridge EXT 5**	Gauteng	City of Johannesburg	2340	3273	934
5	**Ivory Park**	Gauteng	City of Johannesburg	0	0	0
6	**Ivory Park EXT 1**	Gauteng	City of Johannesburg	0	0	0
7	**Ivory Park EXT 10**	Gauteng	City of Johannesburg	10891	12966	2076
8	**Ivory Park EXT 12**	Gauteng	City of Johannesburg	12894	14392	1426
9	**Ivory Park EXT 13**	Gauteng	City of Johannesburg	14400	18162	1332
10	**Ivory Park EXT 2**	Gauteng	City of Johannesburg	475	2800	2174
11	**Ivory Park EXT 5**	Gauteng	City of Johannesburg	2690	3653	964
12	**Ivory Park EXT 6**	Gauteng	City of Johannesburg	2786	4909	1241
13	**Ivory Park EXT 7**	Gauteng	City of Johannesburg	4921	6155	1235
14	**Ivory Park EXT 8**	Gauteng	City of Johannesburg	6160	8536	2378
15	**Ivory Park EXT 9**	Gauteng	City of Johannesburg	5822	10888	2343
16	**Ebony Park**	Gauteng	City of Johannesburg	1	1969	1230

	TOWNSHIP NAME	PROVINCE	LOCAL AUTHORITY	FIRST ERF	LAST ERF	NO OF ERVEN
17	**Ebony Park EXT 1**	Gauteng	City of Johannesburg	1015	2975	256
18	**Ebony Park EXT 2**	Gauteng	City of Johannesburg	1270	1606	402
19	**Ebony Park EXT 3**	Gauteng	City of Johannesburg	1607	1967	361
20	**Ebony Park EXT 4**	Gauteng	City of Johannesburg	1970	2198	278
21	**Ebony Park EXT 5**	Gauteng	City of Johannesburg	2199	2567	369
22	**Ebony Park EXT 6**	Gauteng	City of Johannesburg	2568	2974	536
23	**Kaalfontein EXT 1**	Gauteng	City of Johannesburg	100	876	777
24	**Kaalfontein EXT 10**	Gauteng	City of Johannesburg	3979	4100	122
25	**Kaalfontein EXT 11**	Gauteng	City of Johannesburg	4101	4246	146
26	**Kaalfontein EXT 12**	Gauteng	City of Johannesburg	4247	4408	162
27	**Kaalfontein EXT 13**	Gauteng	City of Johannesburg	4409	4412	4
28	**Kaalfontein EXT 14**	Gauteng	City of Johannesburg	4413	4551	139
29	**Kaalfontein EXT 15**	Gauteng	City of Johannesburg	4552	4630	79
30	**Kaalfontein EXT 16**	Gauteng	City of Johannesburg	4631	4756	126
31	**Kaalfontein EXT 17**	Gauteng	City of Johannesburg	4757	4914	158
32	**Kaalfontein EXT 18**	Gauteng	City of Johannesburg	4915	5078	164
33	**Kaalfontein EXT 2**	Gauteng	City of Johannesburg	877	1503	627
34	**Kaalfontein EXT 22**	Gauteng	City of Johannesburg	5083	6054	972
35	**Kaalfontein EXT 23**	Gauteng	City of Johannesburg	6055	6449	395
36	**Kaalfontein EXT 4**	Gauteng	City of Johannesburg	1506	2349	844
37	**Kaalfontein EXT 5**	Gauteng	City of Johannesburg	2350	3114	765
38	**Kaalfontein EXT 6**	Gauteng	City of Johannesburg	3115	3119	5
39	**Kaalfontein EXT 7**	Gauteng	City of Johannesburg	3120	3850	731
40	**Kaalfontein EXT 8**	Gauteng	City of Johannesburg	3851	3856	6
41	**Kaalfontein EXT 9**	Gauteng	City of Johannesburg	3858	5978	121
						28 054

Table 22*:* Township Application Status of Townships in Ivory Park

c. Land use Rights:

All the townships in Ivory Park have been developed in terms of either the erstwhile Black Communities Development Act (Act 4 of 1984) (BCDA) or the Less Formal Townships Establishment Act (Act 113 of 1991). The land use rights for such townships are assigned according to Annexure F to the regulations for the BCDA. The applicable rights in terms of the various land use zonings are given in Table A of the Annexure and are shown in **Table 23**.

USE ZONE	PERMITTED USES	USES PERMITTED ONLY WITH THE CONSENT OF THE RESPONSIBLE AUTHORITY	PROHIBITED USES
(1)	(2)	(3)	(4)
Residential	Residential buildings	Places of public worship, places of instruction, social halls, sports and recreational purposes, institutions, medical suites, special purposes	Use not under column (2) or (3).
Business	Shops, business purposes, residential buildings, places of public worship, places of instruction, social halls, sports and recreational purposes, institutions.	Uses not under column (2) or (4)	Noxious Industries
Industrial	Industry, business purposes, shops, public garages, scrapyards, parking	Noxious Industries, special purposes	Use not under column (2) or (3).
	areas.		
Community facility	Places of public worship, places of instruction, social halls, sports and recreational purposes, institutions.	Residential buildings, special purposes.	Use not under column (2) or (3).
Municipal	Municipal purposes	Residential buildings, special purposes.	Use not under column (2) or (3).
Undetermined	Nothing	Uses not under column (4)	Noxious Industries
Public Open Space	Parks, sports and recreational facilities and buildings used in connection therewith	Residential buildings, special purposes.	Use not under column (2) or (3).

Table 23*:* Land Use Rights in terms of Table A of Annexure F of BCDA

The following are two notable features of the land use rights in Annexure F of the BCDA which differ from most other town planning schemes:

- The lack of a separate Educational zoning. Provision has to be made for both educational and community facilities under the Community Facility land use zoning. The large number of erven zoned "Community Facility" is accordingly a predominant feature of townships zoned in terms of Annexure F of the BCDA.
- Multiple dwelling units permitted on land zoned "Residential": Annexure F of the BCDA expressly permits multiple units on land zoned "Residential" provided that the coverage (60%) and height (2 storeys) restrictions adhered to.

d. Township Layout:

It is clear from an examination of the layout of the various townships in Ivory Park that each township was planned with little or no attention given to its relationship to adjacent existing or future townships. In addition the townships appear to have been developed in the absence of any overall development framework: no provision was made for the development of a hierarchy of nodes or business centres, or the grouping of higher order facilities in a viable location. Provision of sites for the future development of supportive community facilities such as schools, parks, community facilities and business sites has been done in an arbitrary manner with the various sites being spread throughout the residential areas.

2.2.1.2 Capacity Availability Statement

Very little undeveloped land remains within the Ivory Park area for new township development, and further development will have to rather concentrate on the subdivision of vacant Public Open Space and Community Facility sites within existing townships that will not be required for these uses. The spatial form of Ivory Park is largely determined by physical features in the form of river and wetland delineations traversing the study area.

Future expansion will have to be towards the agricultural holdings in the south, west and north.

When comparing the current number of households with the estimated projected number of households in (1.4.3.2) it is clear that attempts will need to be made for the accommodation of an additional 31 149 households in the future planning of Ivory Park.

2.2.2 CURRENT ECONOMIC CONDITIONS

The study area comprises of a scattered pattern of business zoning as can be seen in Figure 19 below. The set uses are generally found to be on small erven with limited large business developments visible within the study area. Given the current population figures and future

predictions it is submitted that the current number of stand benefiting from an existing Business zoning, is underprovided for a development of this scale. There seems to be no set pattern of business activity relating to the existing zoning. Furthermore, the current zoning does not seem to take into account current land use. Visual observations in the study area seems to suggest that formal business activities are located on stands not zoned for business uses. Current reality however is that business activity within the study area is largely informal in character which to a large extent undermines the provision of formal business sites. A good example of this is the informal trading in the Swazi Inn area. Current macro-economic conditions and the need for job creation can be sited as a possible explanation for the tendency. Another possible explanation could be the lack of enforcement by Council officials in combating excessive informal trading.

Figure 20 shows the reality of economic activity within the study area. The plan would suggest that economic activity is mainly focused along main transport routes. Given the fact that most of these intersections are also of a relatively high order, the study area boasts with a few prominent focal areas.

In considering economic activity in the study area, one has to take account of the form-giving elements of the township layout with specific reference to the wetland areas which traverse the site from the north. These natural buffers force economic activity into isolated pockets with limited east-west linkages especially towards Tembisa in the east. Also worth noting is the perceived growing demand of business activities from residential dwellings. Opinion is held that in specific areas such home business uses should be allowed which could support and enhance the business/job creation/retail activities in certain areas. These areas can then act as catalysts unlocking the development potential of its surroundings.

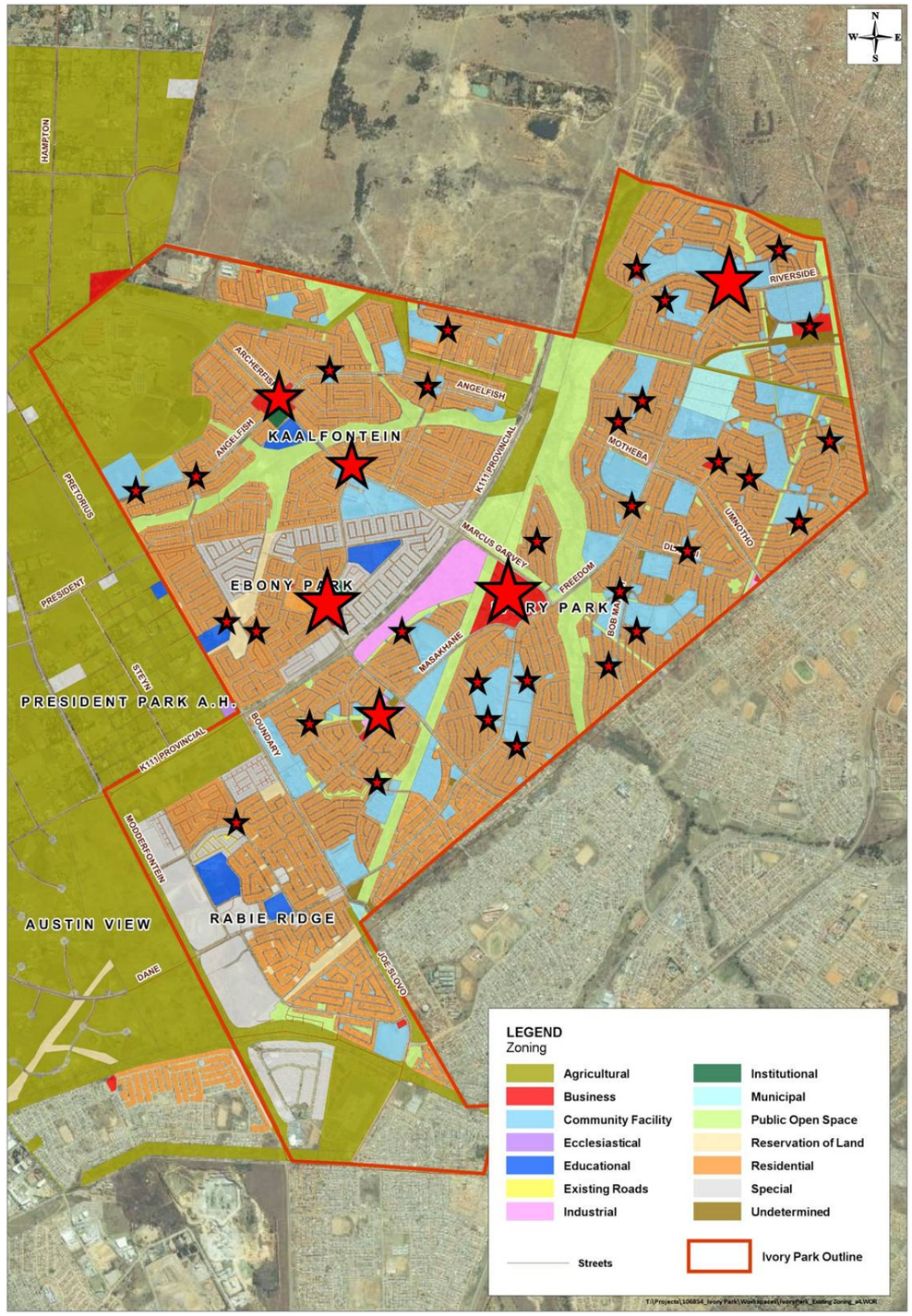


Figure 19 : *Current zoning - Business*

Figure 20: *Current Economic Activity*

2.2.3 CURRENT HOUSING CONDITIONS

Ivory Park is a well designed and developed township comprising in excess of 28 054 stands of which some 13 500 stands have not been transferred to beneficiaries. The Provincial Department of Human Settlements are currently in the process of undertaking various projects ranging from the compilation of business plans to Treasury (with an estimated value of R 700 million) to the appointment of a service provider for the compilation of an occupancy audit relating to the informal settlements within the study area.

Previously the estimate number of households (informal settlers) were thought to be in the region of 5 000, however recent projections indicate that the number could increase to 7 500. The said audit is anticipated to be completed by mid-July. The map showing the identified sites and affected areas could not be obtained from the Provincial Department of Human Settlements during the course of this project. The final report should be annexed to this study as an annexure.

The Provincial Department of Human Settlements have identified redundant school sites and have earmarked these sites for formalisation of the informal settlements. Although the enthusiasm and political drive is not questioned, the long term sustainability in terms of supporting facilities to this community is concerning.

This study has not evaluated the effect of informal settlements on current infrastructure. Given the fact that this study is a forward planning tool areas were identified with projected densities. Where these areas fall within the focus areas and nodes (see Chapter 3) it is submitted that these are consistent with initial studies from the Provincial Department of Human Settlements.

Backyard dwellings are not considered to be in line with current town planning scheme conditions and although the effect on infrastructure is noted, this cannot be accommodated in design upgrades prior to the amendment of scheme conditions. This occurrence is a management and enforcement issue and any over design in terms of engineering infrastructure would undermine the notion of development of sustainable human settlements.

2.2.4 DEVELOPMENT POTENTIAL

The development potential within the study area was considered in terms of land parcels with a stand size exceeding 5000m². As can be seen in Figure 16 below, most of the land parcels within the study area is currently zoned “Community Facility” or “Municipal”. With further inspection it should be noted that almost all these parcels are currently being occupied by or developed for its intended use. However, there are four areas where development potential exists in the form of greenfield development, urban regeneration and formalisation. Ivory Park does not benefit from a significant amount of vacant land. This is also evident if one considers the informal and illegal settlements within the wetland areas which were discussed in section 2.2.3 above.

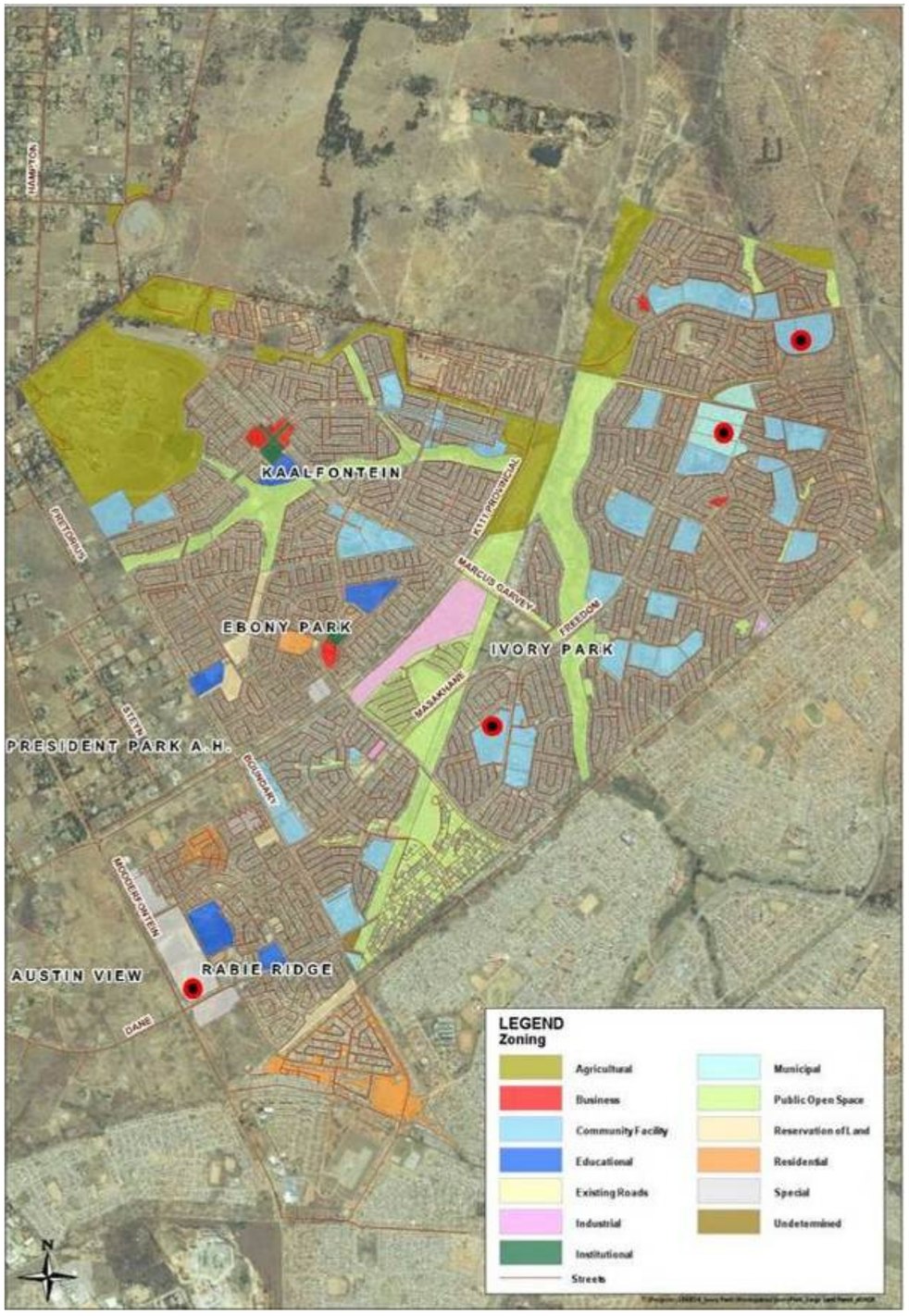


Figure 21: *Development Potential (Stands >5000m2)*

2.2.5 ANALYSIS OF COMMUNITY FACILITIES

With an estimate population size of 182 613 one should expect to find the following breakdown of social and civic social infrastructure within the study area.

FACILITIES / AMENITIES CALCULATOR									
CURRENT POPULATION									
CLASS	CATEGORY	TYPE	DU/FAC	POP/FAC	ha/FAC	NO OF FAC	TOTAL (ha)	DISTANCE (m)	WALKING / TRAVELING TIME (min)
FACILITIES	Educational	Créche / Pre-primary / Nursary School	938	7,500	0.1000	29	2.85	1,000	20
		Primary School	938	7,500	2.4000	29	68.40	1,500	30
		Secondary School	1,250	10,000	4.6000	21	98.33	2,250	30
		Tertiary Education	5,625	45,000	1.5000	5	7.13		
	Health	Clinic	625	5,000	0.1000	43	4.28	1,000	20
		Day-Hospital	1,250	10,000	0.5000	21	10.69	2,000	40
		Community Health Centre	7,500	60,000	2.0000	4	7.13		
		Community Hospital	10,000	80,000	1.5000	3	4.01	5,000	
		Regional Hospital	40,000	320,000	4.0000	1	2.67		
		Old Age Homes	5,000	40,000	1.0000	5	5.34		
	Social	Community Centre / Social Hall	2,750	22,000	0.5000	10	4.86	1,500	30
	Cultural	Place of Worship	250	2,000	0.1500	107	16.03	1,500	20
		Library / Museums	2,500	20,000	0.2500	11	2.67	1,500	30
	Public Service	Post office	1,375	11,000	0.0500	19	0.97	2,000	40
		Police Station / Courts / Correctional Facilities	3,125	25,000	0.7500	9	6.41	1,500	20
		Fire Station	7,500	60,000	1.2000	4	4.28		
		Municipal Service Centre	6,250	50,000	0.3000	4	1.28		30
		Market	6,250	50,000	0.5000	4	2.14		
	Transport	Filling Station / Service Centre	2,500	20,000	0.7500	11	8.02		
		Parking Garages	2,500	20,000	0.2000	11	2.14		
		Taxi Ranks / Bus Stations / Depots	2,875	23,000	0.3000	9	2.79		
AMENITIES	Sport	Sportsfields	963	7,700	0.6000	28	16.66		
		Mini-soccer	1,563	12,500	0.5000	17	8.55		
		Basketball	1,563	12,500	0.0420	17	0.72		
		Sports Stadium	6,250	50,000	3.0000	4	12.83		
		Public open space	125	1,000	0.5800	214	123.98		
	Recreation	Recreation Centres	2,500	20,000	0.5000	11	5.34		

Table 24: Facilities Calculator – Current Population

In considering the above it should be noted that first world standards were used to determine the expected quantity of social and civic facilities within the study area. The current spatial reality as well as historical economic development (or lack thereof) should be taken into account in order to reach a realistic provision of the said facilities. This is by no means as clear cut as it may seem. The strength of the institution as well as other important elements to ensure a sustainable delivery of a service must not be forgotten. This said, the above calculator have been modified to a more realistic blueprint which was used to guide the over/under provision of these important facilities. Ultimately, the Ivory Park community will determine what their specific needs area.

FACILITIES / AMENITIES CALCULATOR									
PROJECTED POPULATION									
CLASS	CATEGORY	TYPE	DU/FAC	POP/FAC	ha/FAC	NO OF FAC	TOTAL (ha)	DISTANCE (m)	WALKING / TRAVELING TIME (min)
FACILITIES	Educational	Créche / Pre-primary / Nursary School	938	7,500	0.1000	24	2.43	1,000	20
		Primary School	938	7,500	2.4000	24	58.44	1,500	30
		Secondary School	1,250	10,000	4.6000	18	84.00	2,250	30
		Tertiary Education	5,625	45,000	1.5000	4	6.09		
	Health	Clinic	625	5,000	0.1000	37	3.65	1,000	20
		Day-Hospital	1,250	10,000	0.5000	18	9.13	2,000	40
		Community Health Centre	7,500	60,000	2.0000	3	6.09		
		Community Hospital	10,000	80,000	1.5000	2	3.42	5,000	
		Regional Hospital	40,000	320,000	4.0000	1	2.28		
		Old Age Homes	5,000	40,000	1.0000	5	4.57		
	Social	Community Centre / Social Hall	2,750	22,000	0.5000	8	4.15	1,500	30
	Cultural	Place of Worship	250	2,000	0.1500	91	13.70	1,500	20
		Library / Museums	2,500	20,000	0.2500	9	2.28	1,500	30
	Public Service	Post office	1,375	11,000	0.0500	17	0.83	2,000	40
		Police Station / Courts / Correctional Facilities	3,125	25,000	0.7500	7	5.48	1,500	20
		Fire Station	7,500	60,000	1.2000	3	3.65		
		Municipal Service Centre	6,250	50,000	0.3000	4	1.10		30
		Market	6,250	50,000	0.5000	4	1.83		
	Transport	Filling Station / Service Centre	2,500	20,000	0.7500	9	6.85		
		Parking Garages	2,500	20,000	0.2000	9	1.83		
		Taxi Ranks / Bus Stations / Depots	2,875	23,000	0.3000	8	2.38		
AMENITIES	Sport	Sportsfields	963	7,700	0.6000	24	14.23		
		Mini-soccer	1,563	12,500	0.5000	15	7.30		
		Basketball	1,563	12,500	0.0420	15	0.61		
		Sports Stadium	6,250	50,000	3.0000	4	10.96		
		Public open space	125	1,000	0.5800	183	105.92		
	Recreation	Recreation Centres	2,500	20,000	0.5000	9	4.57		

Table 25: Facilities calculator - Projected Population

Taking into account the projected population of 213 762 it is clear that the number of facilities will marginally increase

FACILITIES / AMENITIES CALCULATOR							
PROJECTED SHORTFALL							
CLASS	CATEGORY	TYPE	DU/FAC	POP/FAC	ha/FAC	NO OF FAC	TOTAL (ha)
FACILITIES	Educational	Créche / Pre-primary / Nursary School	938	7,500	0.1000	4	0.42
		Primary School	938	7,500	2.4000	4	9.97
		Secondary School	1,250	10,000	4.6000	3	14.33
		Tertiary Education	5,625	45,000	1.5000	1	1.04
	Health	Clinic	625	5,000	0.1000	6	0.62
		Day-Hospital	1,250	10,000	0.5000	3	1.56
		Community Health Centre	7,500	60,000	2.0000	1	1.04
		Community Hospital	10,000	80,000	1.5000	0	0.58
		Regional Hospital	40,000	320,000	4.0000	0	0.39
		Old Age Homes	5,000	40,000	1.0000	1	0.78
	Social	Community Centre / Social Hall	2,750	22,000	0.5000	1	0.71
	Cultural	Place of Worship	250	2,000	0.1500	16	2.34
		Library / Museums	2,500	20,000	0.2500	2	0.39
	Public Service	Post office	1,375	11,000	0.0500	3	0.14
		Police Station / Courts / Correctional Facilities	3,125	25,000	0.7500	1	0.93
		Fire Station	7,500	60,000	1.2000	1	0.62
		Municipal Service Centre	6,250	50,000	0.3000	1	0.19
		Market	6,250	50,000	0.5000	1	0.31
	Transport	Filling Station / Service Centre	2,500	20,000	0.7500	2	1.17
		Parking Garages	2,500	20,000	0.2000	2	0.31
		Taxi Ranks / Bus Stations / Depots	2,875	23,000	0.3000	1	0.41
AMENITIES	Sport	Sportsfields	963	7,700	0.6000	4	2.43
		Mini-soccer	1,563	12,500	0.5000	2	1.25
		Basketball	1,563	12,500	0.0420	2	0.10
		Sports Stadium	6,250	50,000	3.0000	1	1.87
		Public open space	125	1,000	0.5800	31	18.07
	Recreation	Recreation Centres	2,500	20,000	0.5000	2	0.78

Table 26: Facilities calculator - Projected shortfalls

From the table above it is clear that there will be a significant shortage of land with regards to the provision of basic social and community facilities. Currently Ivory Park is well catered for in terms of the provision of these sites, however what is of grave concern is the fact that some of these sites have been identified as redundant with change of use proposals to be expected. The political drive to build houses seems to outweigh the provision of supporting services, which will be detrimental in the long term. **Table 26** above suggest that within the next five years a total of 47.05ha will be needed to provide for the development of schools, churches, sports fields and open spaces. Given the fact that the study area is well provided for in terms of open spaces a realistic total of 28.98ha will be needed. It will however be very irresponsible to be too analytical about such provisions since other alternatives do exist. The 'doubling-up' of uses must be considered. Examples of this are the use of school sport fields and facilities to be used by the general public and another, the combination of primary and secondary school facilities.

Spatially the following (main) facilities can be identified within the study area represented in the figure below:

Figure 22: *Existing facilities - Schools*

The figure above shows the provision of schools within the study area. These sites are both formally developed school sites as well as informal (temporary classrooms) as far as could be determined. Using a 1000m buffer from each school site the study area seems to be very well developed in terms of school infrastructure. During each site visit it became clear that the demographic profile of Ivory Park is very young, hence, whether there are currently enough primary schools and crèches to cater for the needs of the community is doubted. It is however very difficult to predict and even more difficult to get the right balance within a large area like this. The Gauteng Department of Education is currently busy with site assessments for schools (primary and secondary) within the wider area and although no additional school has been identified in the Ivory Park study area there are a few additional schools within Tembisa.

Figure 23: *Existing facilities - Libraries*

Only 3 formal libraries could be found within the study area. In applying a 1500m buffer from each of these libraries it is clear that the current Ward 93 is underdeveloped with this facility. According to the community the existing libraries have reached their capacity. Given that the existing libraries are spatially well distributed one could consider possible upgrading of existing infrastructure rather than redeveloping new libraries from the outset.

Figure 24: *Existing facilities - Clinics*

The study area does not seem to have an adequate provision of healthcare in the form of hospitals and/or clinics. Although the existing clinics are well distributed in relation to main roads it is anticipated that all these facilities are overcrowded. Given the current socio-economic development nature of the Ivory Park community this lack of provision of social facilities are worrying. With the current population demographics being of a very young age one would have expected to find more of these facilities. If one then considers that a community of this size would have merited in excess of 37 clinics (refer to **Table 25** above) more clinics must be developed within this area in order to meet the health needs of this community.

2.2.6 REGULARISATION OF COUNCIL OWNED LAND AND CURRENT PLANNED PROJECTS

The Council, due to it being the custodian of public land within townships developed by either the provincial authorities or private sector developers, and as the landowner in townships it developed itself, owns a large number of properties in the Ivory Park study area and its associated townships. Only a few of these are vacant while others have been developed for its intended purpose albeit with temporary structures as is the case with some of the community development sites whilst there are also sites that have been illegally invaded.

According to the Johannesburg Property Company (JPC) property plan, of the 28 054 stands within the study area some 13 500 stands have not been transferred to beneficiaries. JPC in May 2011 initiated a new regularisation project including the re-survey of the entire study area.

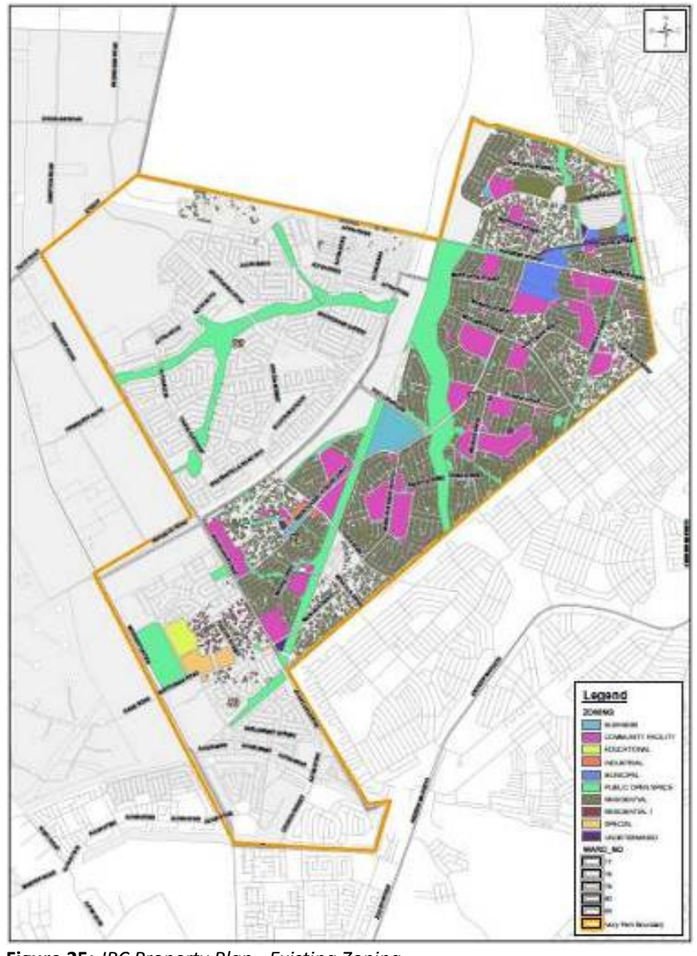


Figure 25: *JPC Property Plan - Existing Zoning*

The existing zoning per the JPC property plan above correlates well with the current zoning information of the City of Johannesburg. Unfortunately the JPC property plan does not cover the entire study area to make a detailed investigation of the matter. During the course of the study JPC appointed service providers to undertake another survey of the entire area. The outcome of this survey is only expected after completion of this report.

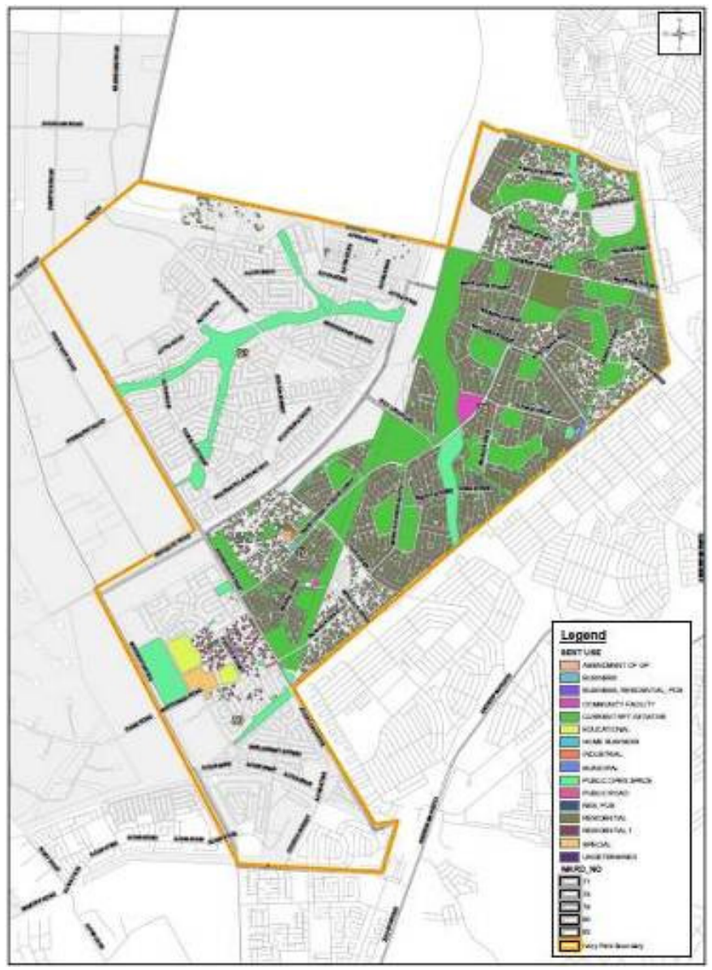


Figure 26: *JPC Property Plan - Best Use*

The same property plan also identified, through previous as well as ongoing studies, specific best use proposals for parts of the study area. These best use proposals are shown in Figure 26 above. However, this plan should be read with another plan which identifies the current RPT initiatives. Essentially it is understood that the land use proposals (part of the RPT initiative) is an ongoing initiative tasked in the identification of land parcels as well as the evaluation of best land use proposals thereon.

Currently the following identification and proposals have been submitted to JPC (**Figure 27** below). Given the fact that the proposals seems to be localised in micro areas within the study area it is uncertain how and what the holistic vision is. Together with the fact that these studies are being conducted by various consultants the continuity of this initiative is questioned. The reality of this situation is undesirable since land use proposals are directly paired to the provision of engineering infrastructure and transport. In Chapter 3 this study will propose a development framework which could assist in developing a shared vision which can be developed based on sustainability principles.

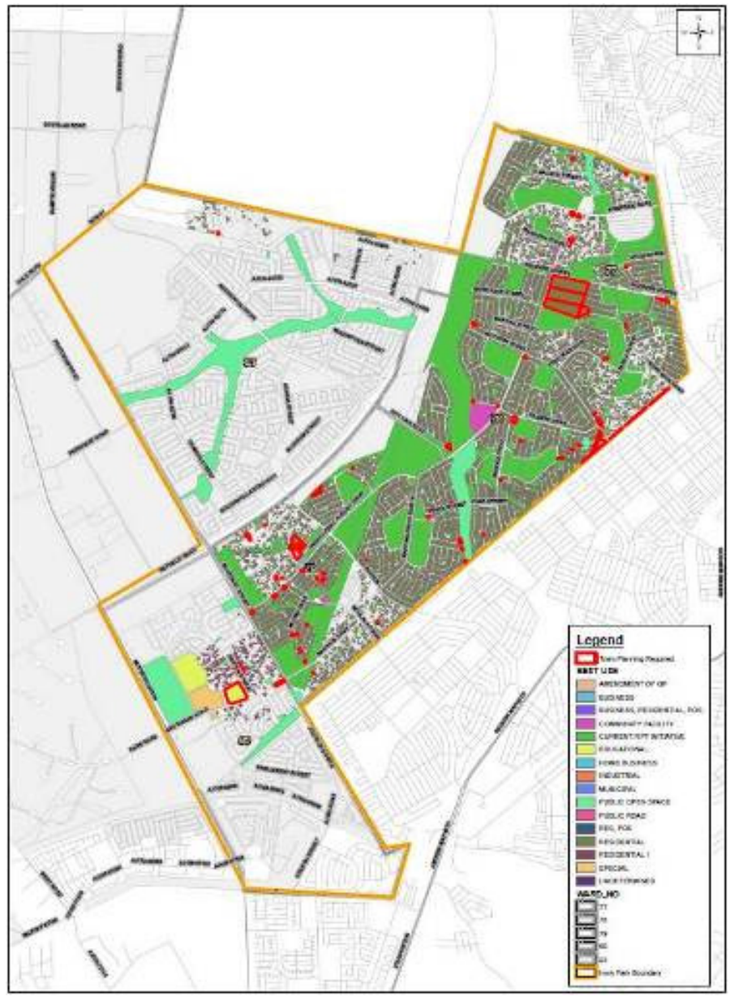


Figure 27: *JPC Property Plan – Best Use with pending studies*

2.2.7 CONCLUSIONS

The following conclusions can be drawn from the above regarding the town planning, land ownership and tenure environment in Ivory Park:

- A projected population growth of 3,2 % per annum will result in a projected growth quantum of some 31 149 people by 2015. If the average household size is applied to this

number a total of 9 326 additional housing units will have to be developed in this time in order to saturate the expected demand;

- A variety of housing typologies must be considered, however the specific details will have to be confirmed by means of detailed socio-economic studies;
- The retention of currently zoned community uses is considered to be a crucial aspect in ensuring that the basic fabric of community life is preserved;
- Economic activities in terms of existing "business" zonings are limited within the study area. Many examples of illegal land use activities can be found throughout Ivory Park, suggesting that statutory processes were either not followed, that development pressure changed quickly and/or that enforcement of these uses are not undertaken;
- Economic activity is scattered throughout the study area, however can be tied to main transport routes. The said activity is mainly informal in nature which can also relate to the lack of formal business areas;
- Current initiatives driven by JPC is questioned without a shared vision and spatial framework, since *ad hoc* land use proposals will put strain on current infrastructure which is in direct contrast to the notion of sustainable and integrated development planning as well as lead to the creation of unsustainable human settlements.

2.3 THE NATURAL AND OPEN SPACE ENVIRONMENT

2.3.1 ENVIRONMENTAL CONSIDERATIONS:

Green open space is found within the study and extended study area. Most of these spaces are restricted to areas adjacent to perennial and non-perennial rivers. Green corridors are important as they perform ecological processes and contribute to the protection of biodiversity and the movement of species. These areas are highly sensitive with a low threshold, which makes them vulnerable to disturbances. These areas should be considered as no go areas and is classified under JMOSS II as ecological open space.

Environmental constraints will be high around green corridors and will reduce with an increase in distance.

2.3.2 HYDROLOGICAL CONSTRAINTS

Perennial and non-perennial rivers traverse the site. Riparian areas are found adjacent to rivers. Riparian zones support numerous species from all major groups of organisms. Riparian areas can reduce damage caused by flooding and preserve water quality. They form an important part of the urban landscape and should therefore be protected.
Hydrological constraints will be high around perennial and non-perennial rivers and will reduce with an increase in distance.

2.3.3 HERITAGE CONSTRAINTS

Historic locations for red data species are located towards the northern border of the study area. This area also contains primary vegetation, which increases the conservation value. Development in these specified areas should accommodate means of protecting highly sensitive zones.

Heritage constraints will be high in selected areas adjoining the northern study area boundary; the remainder of the study area holds no heritage constraints.

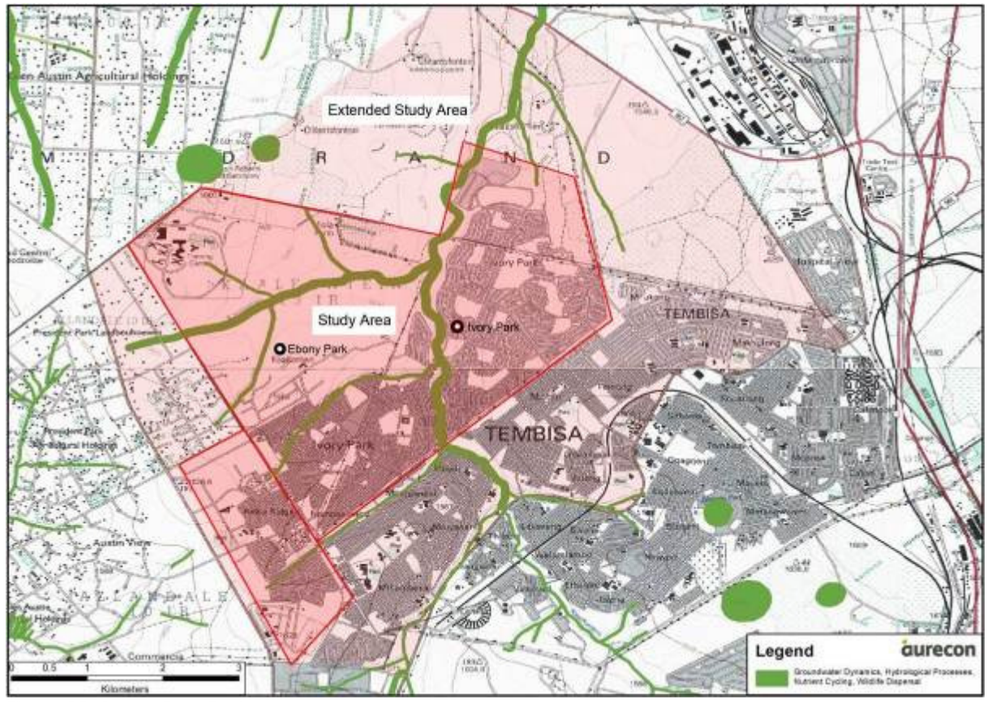


Figure 28 *Status Quo: Environmental*

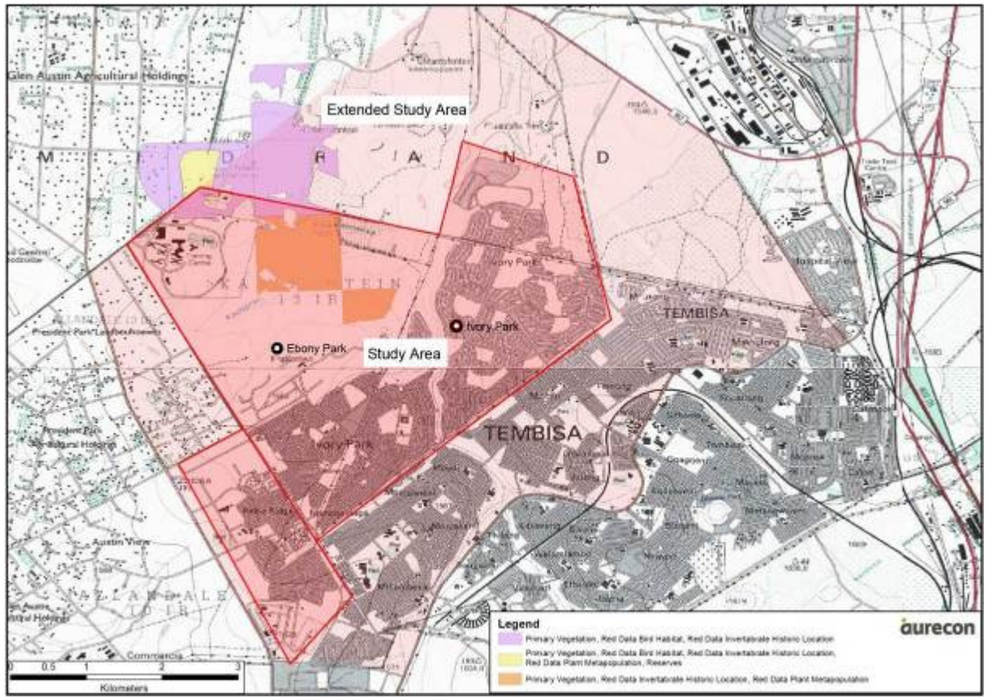


Figure 29 *Vegetation types*

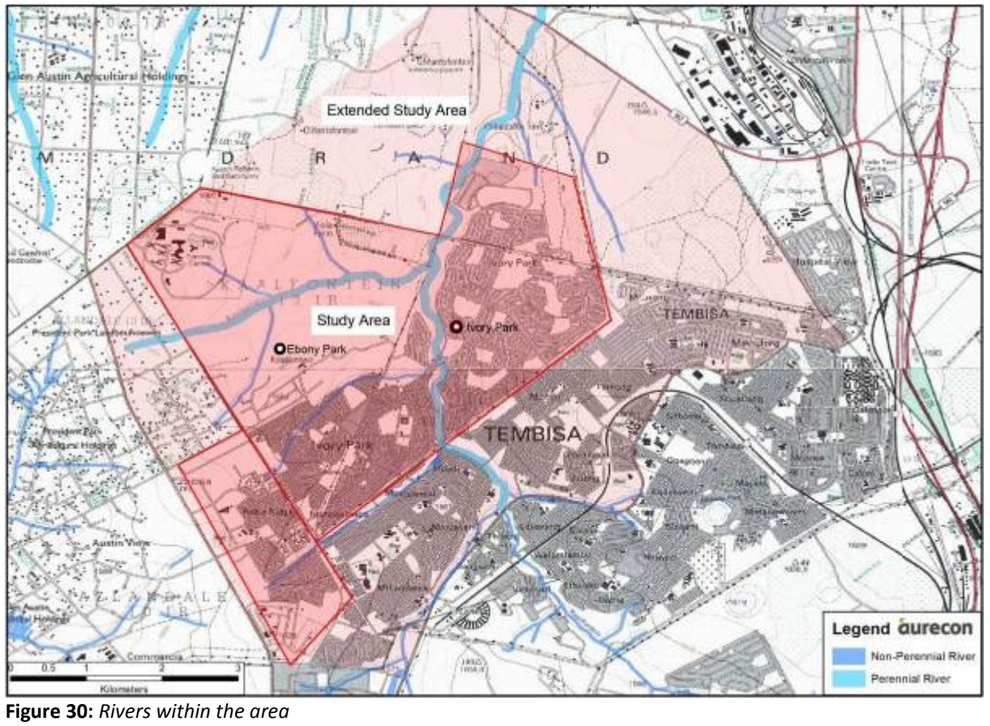


Figure 30: *Rivers within the area*

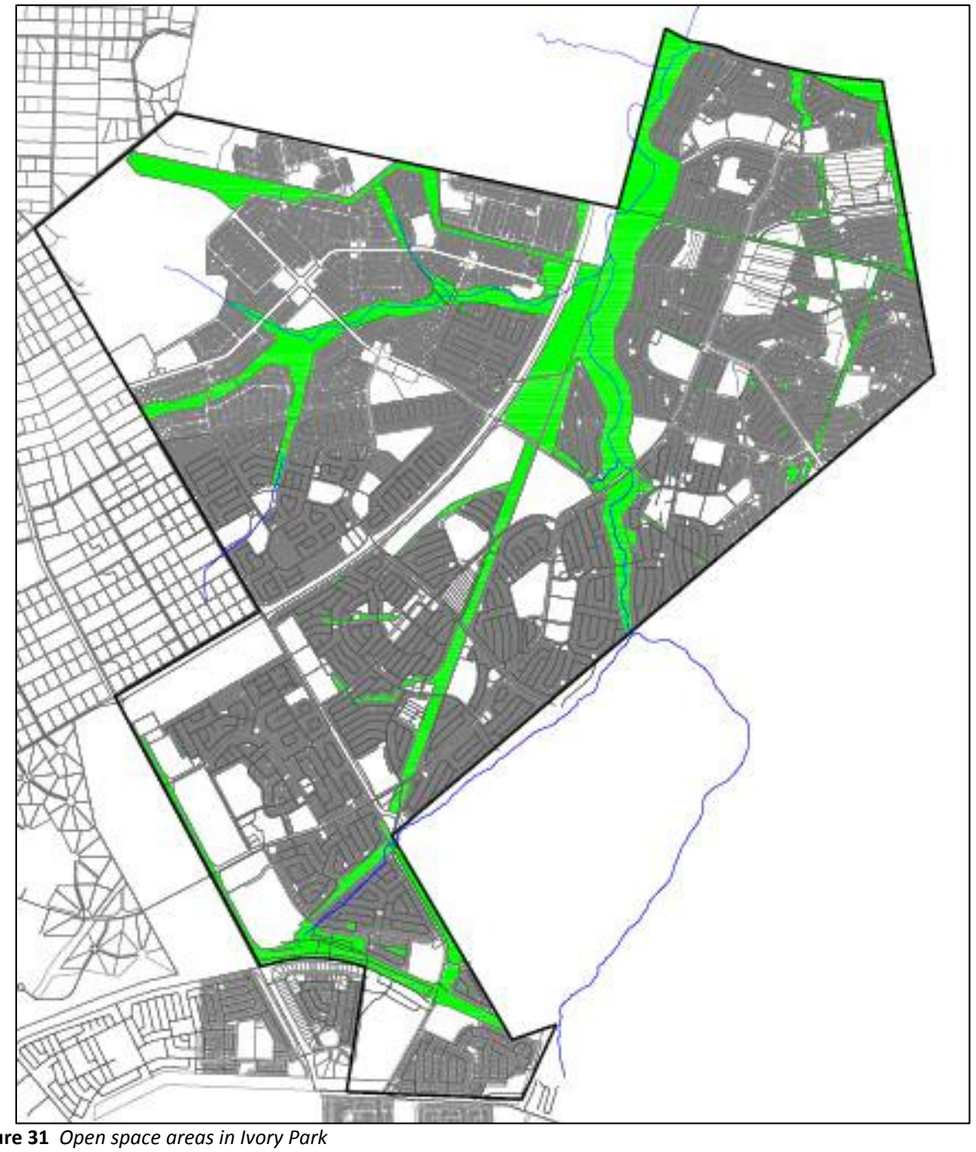


Figure 31 *Open space areas in Ivory Park*

2.3.4 THE OPEN SPACE ENVIRONMENT

2.3.4.1 Situation Analysis

Open space exists in a variety of forms. Open space includes space around buildings, the landscape, plazas, recreational parks, bodies of water, rivers and streams, flood plains, institutional lands, farmlands and even cemeteries (Gobster 2001). Each of these forms of open space has their own characteristics, qualities and functions that determine who will use it and how it will be utilized.
Valuable open space areas located on the edge of urban areas, such as Johannesburg, is especially threatened by economic development. Due to the scarcity of land within the urban area and the high demand for it, land is considered to be valuable. There is currently a realisation that open space

should also be considered of value. Each type of open space has specific benefits. Considering various benefits reiterate the fact that urban open space should be viewed as an extremely valuable commodity, and should reflect community values and respond to the needs of the citizens (Ptersa 2008).
Traditionally "green space" was perceived to be areas set aside for parks, rivers, corridors and sports fields. According to Cervera (1999), open space is defined as an outdoor area within the metropolitan region which could include parks or unfenced vacant lots. The City defines open space as "any undeveloped vegetated land within and beyond the urban edge, belonging to any of the following six open space categories: ecological, social, institutional, heritage, agricultural and prospective land" (Strategic Environmental Focus, 1997). The City of Johannesburg does not recognize within this definition any "hard" open space areas, such as streets, pavements etc. the focus is only on ecological "green" areas (Ptersa 2008).

Globally, the perception is that any open space system found within a city should enable the ecological processes to meet the absorptive, extractive, economic and amenity demands of the population of that city, i.e. lead to sustainable development. This requires for a fine balance to be achieved between human settlement demands and that of the ecological processes. Sustainable development seeks to revitalize the urban environment, by promoting efficient development within the built environment, and simultaneously creating more liveable communities (Scarlet et al. 1997). It centres on the containment of urban development, which threatens open space and prime agricultural lands at the urban edge (Ptersa 2008).

There is a need to improve the quality of life within urban areas such as Ivory Park. Van Niekerk (2004) stated that every urban dweller needs to have access to some form of open space. If open space is not well cared for, certain services which it can provide are therefore threatened, e.g. recreational space, storm water attenuation and pollution mitigation (Ptersa 2008).

a. Current state of rivers and parks within the study area

Through detail observation it has been noted that parks and rivers are underutilised by the local community. This is mainly due to issues of safety and lack of amenities provided within these open spaces. Open spaces are used as dumping grounds which increases the feeling of alienation amongst residents. Rivers are also severely polluted which can pose serious health problems to humans and animals alike.

b. Provision of Open Space in Ivory Park

As stated in 2.2.1 above, the development of Ivory Park has occurred in the absence of any overall development framework. This is especially applicable to the provision of areas of open space specifically designated as "Public Open Space" in Ivory Park in that open spaces are scattered in an apparent random fashion throughout the townships without any consideration of creating a hierarchical open space system of linked open spaces. The only evidence of the existence of such open space systems are where land cannot be developed for other purposes, such as the central wetland area and smaller areas of natural drainage channels. Currently the open space system within Ivory Park measures approximately 260ha of the total 1920ha area. This equates to some 13,5% of the total study area. In addition to these areas there are numerous smaller sized stands zoned for Public Open Space.

2.4 CIVIL ENGINEERING SERVICES

2.4.1 INTRODUCTION TO CIVIL ENGINEERING SERVICES

The purpose of this section is to describe in broad terms the current status of the existing civil engineering infrastructure. Information regarding the state of civil engineering infrastructure was obtained from JW, JRA, site investigations and desktop studies. No detailed analysis of the sewer, water or stormwater networks was conducted as this was beyond the scope of the assignment.

During discussions with officials from JW the consultant were referred to the following two documents, which formed the basis for the sewer and water:

- Johannesburg Sewer Network Analysis, Olifantsfontein Basin, December 2008;
- Johannesburg Water Network Analysis, President Park & Rabie Ridge Reservoir Water District, December 2008,

For the storm water it was also determined that no stormwater master plan exists, or is planned in the near future, for the Ivory Park area. Here follows the consultant's assent of the Civil Engineering services.

2.4.2 STORMWATER

2.4.2.1 Situational Analysis

Bulk and Link Stormwater

The Ivory Park catchment area, in general, drains towards the Kaalspruit and its tributaries. The Kaalspruit flows from the south to the north roughly through the middle of the study area. Currently there is a Stormwater Master Plan being conducted that is applicable to the Kaalspruit. The Master Plan is being compiled by Aurecon for EMM with the Kaalspruit being addressed in the Tembisa report, as the Kaalspruit originates in Tembisa then flows through Ivory Park and back into Tembisa.

There is no formal bulk stormwater infrastructure in Ivory Park.

Internal Stormwater

According to information provided by JRA it is apparent that stormwater infrastructure is limited within the study area. In general, stormwater infrastructure within Ivory Park consists of lined and unlined v-drains, channels, kerb inlets, and some pipes and culverts.

The majority of the stormwater infrastructure is in isolated local systems and does not form part of an integrated drainage system, with the exception of Rabie Ridge Ext. 1.

According to the JRA key-plan approximately 60% of all roads within the study area are gravel roads. Gravel roads do not present the opportunity for implementation of a conventional underground stormwater system.

2.4.2.2 Capacity Availability Statement

Rabie Ridge ext. 1, within the study area, is the area best serviced by stormwater drainage infrastructure. The northern section of Rabie Ridge drains into stormwater pipes that discharge alongside paved roads which then drain towards the Kaalspruit and its tributaries. Rabie Ridge Ext.1

also has a drainage backbone system conveying run-off from the central area towards a Kaalspruit tributary.

The stormwater infrastructure in the remainder of Ivory Park consists of either no infrastructure or isolated, local systems draining into or along paved roads towards the Kaalspruit and its tributaries.

2.4.2.3 Existing Development Principles and Standards

The stormwater infrastructure within Ivory Park appears to be designed to channel all run-offs along paved roads toward the Kaalspruit and its tributaries. Whilst this is an accepted practice, the infrastructure currently in-place is being damaged during storm events due to reasons including no backbone infrastructure, backbone infrastructure not being designed for the correct storm events or poor or no maintenance on infrastructure. Erosion in channels and damage to road pavements is evident in many locations.

Figure 32: *Underground Storm water infrastructure*

2.4.2.4 Current and Planned Projects

JRA have various projects identified or planned for the Ivory Park area. In general these projects will improve the overall stormwater run-off within Ivory Park. The relevant projects are listed in the table below.

Project Name	Description
Conversion of Open Channels/Drains to underground in Ivory Park for Wards 77, 78 & 79 New Stormwater Management Projects IVORY PARK EXT.9 A	Conversion of open channels/drains to underground as identified through the CBP process.
Emergency, Critical and Urgent Depot Stormwater Improvements	Emergency Stormwater Improvements
Environmental compliance	Emergency repairs to drainage systems and other environmental and structural improvements.
Gravel Roads: Ivory Park	Gravel road upgrade as per IDP priority.

Table 27*:* Current and planned projects (JRA, 2011)

Implementation of these projects appears to be on an *ad-hoc* basis.

2.4.1.5 Identification of Shortfalls/Gaps

It is evident in Ivory Park that due to a lack of stormwater drainage infrastructure, paved roads and maintenance that minor and major storm water event will not be adequately accommodated and poses a safety risk.

JRA specifies criteria for attenuation facilities that are required for all developments larger than 0.8ha. No such attenuation was visible within Ivory Park.

On further investigation, evidence of the stormwater infrastructure contributing to damaging the environment was found. All the above mentioned information suggests that a stormwater master planning exercise and implementation thereof should be carried out as soon as possible. This will help prevent further damage, pollution of the environment and loss of life. This matter will be addressed in chapter 3.

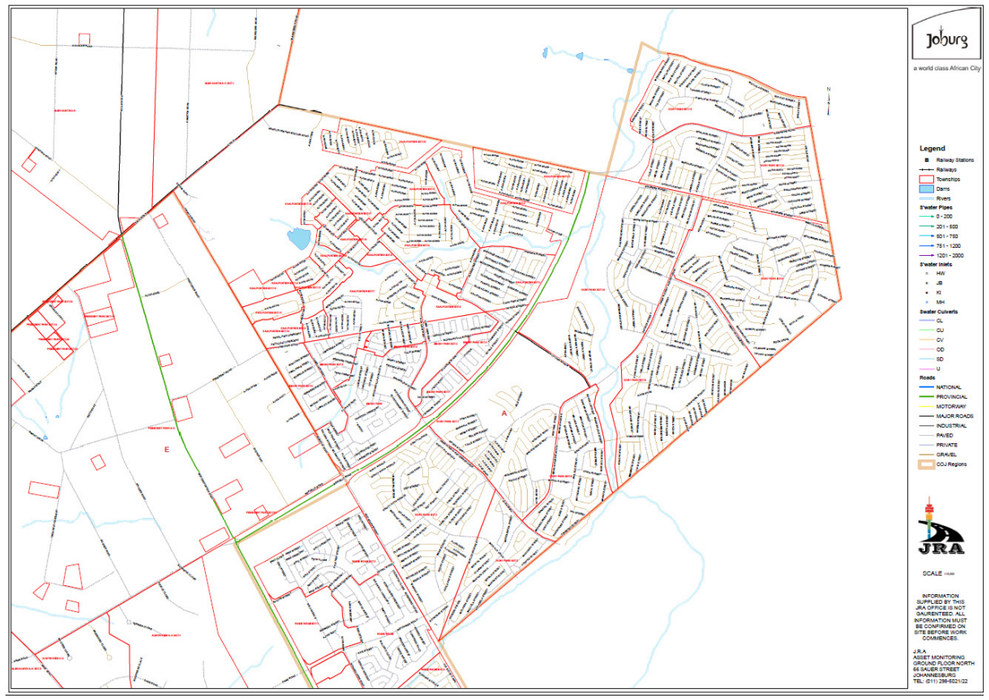


Figure 33: *JRA Road Key-plan*

2.4.3 WATER

2.4.3.1 Situational Analysis

a. Bulk and Link Water

Ivory Park forms part of the sub-district President Park/Rabie Ridge (PPRR). The total potable water demand of PPRR is supplied by the Rand Water bulk supply system through connections RW 3764 and RW 2568. These connections supply President Park reservoir 1, -reservoir 2, -water tower, Rabie Ridge reservoir and water tower. These reservoirs and towers are dedicated to specific supply zones within the sub-district.

b. Internal Water

For the PPRR district there are 20 094 occupied stands listed in the treasury data base where as the total bulk calculated stands were approximately 28213 in 2008. Informal settlements exist in Ivory Park and Rabie Ridge and this could be a contributing factor to this discrepancy.

2.4.3.2 Capacity Availability Statement

The President Park Sub district consists of 28213 stands. Water demand within this area is ± 34612 kℓ/day as measured at the two connections in 2008. All reservoirs appear to be operating close to or above full capacity. The incremental development of the study area was addressed by dedicating supply zones.

From workshops held with Ward Councilors it was determined that certain areas within Ivory Park experienced of low water pressure during weekends. However this is not reflected in the Johannesburg Water Network Analysis for President Park & Rabie Ridge Reservoir Water District.

2.4.3.3 Current and Planned Projects

Johannesburg Water conducted a Network analysis of the sub-district President Park and Rabie Ridge. This network analysis includes a master plan for a 5 year and ultimate water infrastructure development. Please refer to the table below for the current/planned projects by JW.

Project Name	Description
Ivory Park: President park/Rabie ridge district: Upgrade water infrastructure New Water Mains RABIE RIDGE D	Upgrade water infrastructure
Midrand: Water network upgrade :ivory pack New Waterworks IVORY PARK EXT.2 A water network upgrade	Water network upgrade

Table 28: Current and Planned Projects by JW

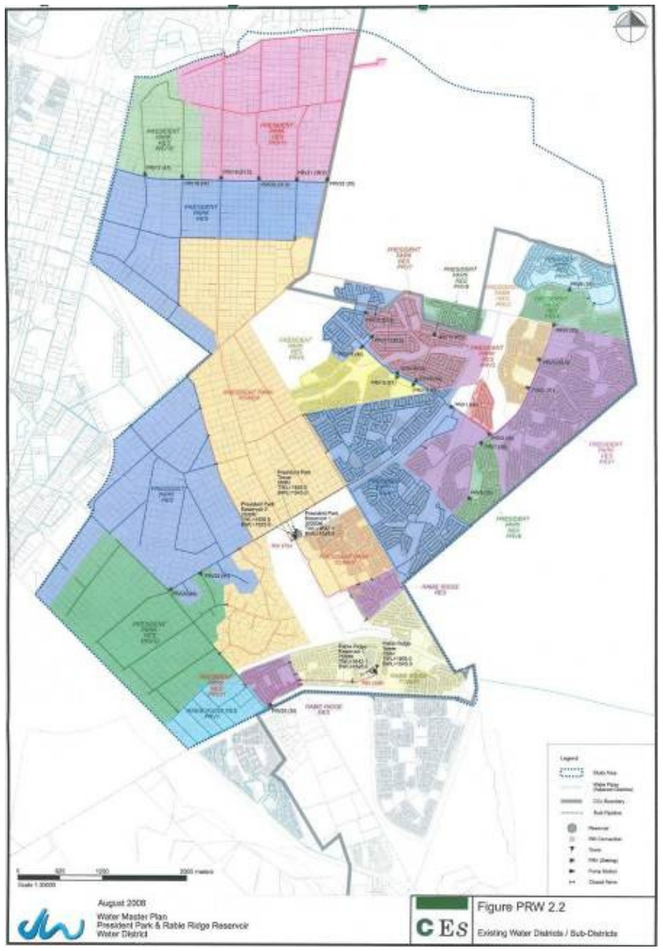


Figure 34: *Bulk Water Supply Zones and Districts.*

2.4.3.4 Identification of Shortfalls/Gaps

In the study area there are areas that experience low pressure during peak demand periods. This can be attributed to inadequate pipe sizes or possible operational issues.

2.4.4 SANITATION

2.4.4.1 Situational Analysis

a. Bulk and Link Sanitation

Ivory Park forms part of the Olifantsfontein basin (OFF). The OFF is served by a number of sewer mains. The following outfall/collectors are relevant to Ivory Park **(**Refer to **Figure 34)**:

- Ivory Park North
- Ivory Park South
- Kaalfontein
- Kaalspruit
- Rabie Ridge
- Tembisa Outfall

The most sewer drainage sub-basins are discussed below:

- Ivory Park North Sub-basin: The Ivory Park North sub-basin comprises the northerly extensions of Ivory Park. The sub-basin is served by the two Tembisa outfalls (600mm Ø and 675mm Ø) that originate in Ekurhuleni and enter the City of Johannesburg near Ivory Park Ext. 6. The outfalls flow parallel along the Kaalspruit whilst the diameter of one of the outfalls gradually increases downstream. The outfalls exit Johannesburg near Ivory Park Ext 13 as a 600mm Ø and 900mm Ø pipe respectively.

- Ivory Park South Sub-basin: The Ivory Park South sub-basin comprises portions of Rabie Ridge Ext. 2 and Ivory Park Ext. 2, 6 and 7. The sub-basin slopes in a northerly direction and is served by the Ivory Park link outfall. This outfall originates as a 200mm Ø in Ivory Park Ext. 2 and flows in a north-easterly direction through Ivory Park Ext. 7. The outfall diameter increase to a 450mm Ø before crossing the Kaalspruit and connecting the Tembisa outfalls.

- Kaalfontein Sub-basin: The Kaalfontein sub-basin comprises the whole Kaalfontein and Ebony Park. The sub-basin slopes in an easterly direction and is served by the Kaalfontein outfall. This outfall originates as a 200mm Ø in Ebony Park and flows in a north-easterly direction whilst its diameter increases downstream as flow from the surrounding areas join. The outfall crosses the Kaalspruit as a 600mm Ø near Kaalfontein Ext. 1 and connects to the Tembisa outfall downstream.

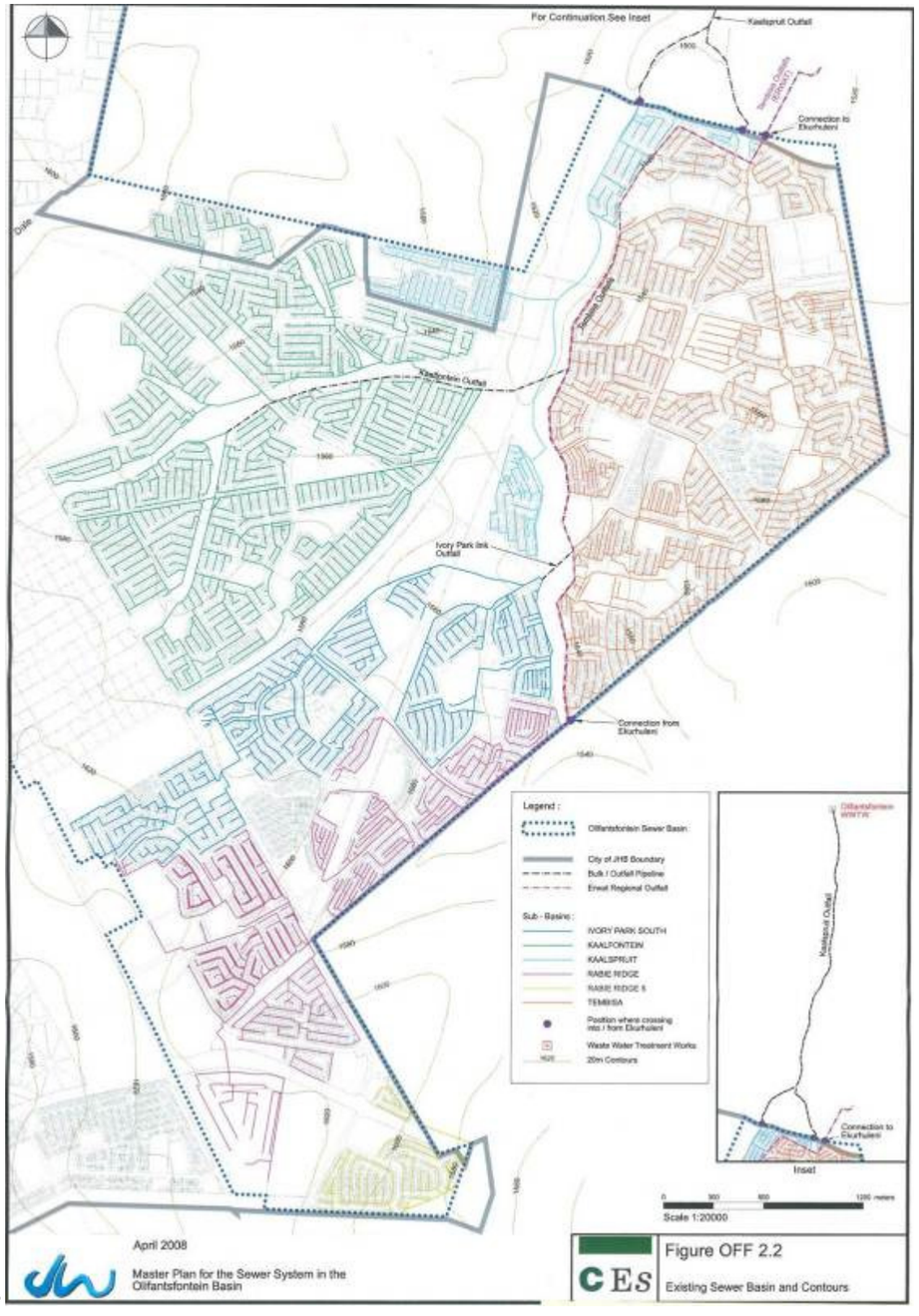


Figure 35: *Internal Sewer Reticulation and Basins*

- Kaalspruit Sub-basin: The Kaalspruit sub-basin serves Kaalfontein Ext. 22 and portions of Ivory Park Ext.'s 10 and 13. The sub-basin slopes in a northerly direction and connects to the Kaalspruit outfall downstream.

- Rabie Ridge Sub-basin: The Rabie Ridge sub-basin serves Commercia Ext. 9, Ivory Park Ext 5 & 6 and Rabie Ridge. The sub-basin slopes in a north-easterly direction and is served by the Rabie Ridge outfall. The Rabie ridge outfall originates as a 250mm Ø near Spreeu Street in Rabie Ridge and flows in a north-easterly direction along the south eastern boundary of Ivory Park. The outfall diameter increases to 300mm Ø downstream before connecting to the Tembisa outfall.

- Rabie Ridge Extension 5 Sub-basin: The Rabie Ridge Extension 5 sub-basin serves the whole Rabie Ridge Extension 5. The sub-basin slopes in an easterly direction and connects directly to the sewer reticulation network of Ekurhuleni.

The above mentioned sub-basins drain towards the north and into Olifantsfontein WWTW. This is outside the CoJ boundary within the EMM and is controlled by ERWAT. The sizes of these outfalls are unknown. The capacity of the WWTW is 108 Ml/day, but current operating rate is not known.

b. Internal Sanitation

Ivory Park consists of five distinct collector systems connected to above mentioned outfalls. The internal sewer collection system appears to be a midblock configuration. Pipe diameters range from smaller than 110mm to larger than 400mm.

2.4.4.2 Capacity Availability Statement

The Olifantsfontein WWTW has a capacity of 108Ml/day and the OFF currently has a modelled contribution of 23ML/day. However, OFF is not the only contributing basin to this WWTW. It is proposed that JW communicate with ERWAT regarding the sewer outfall sizes and the WWTW capacity.

Analysis undertaken by JW is showing a number of possible problems and these are, in principle, confirmed in feedback received from ward councilors. The following problems are either modeled problems or currently experienced:

- Various sections if the Ivory Park South link sewer have low or insufficient spare capacity;
- A section of the sewer along Spreeu Street in Rabie Ridge has insufficient capacity;
- A few sections of the sewer in the Kaalspruit sub-basin have insufficient capacity;
- Daily blockages throughout Ivory Park

The majority of internal pipes have spare capacity even at minimum slope and upgrading of reticulation sewers should only be considered following a detailed analysis using information from previous studies done for Johannesburg Water by GLS consultants.

2.4.4.3 Current and Planned Projects

A Master Plan for the Sewer System in the Olifantsfontein sewer Basin undertaken by JW in 2008 contains within it a phased plan to address all relevant issues within the basin area, but these proposed phased projects are not reflected in the planned or current projects undertaken by JW.

2.4.4.4 Identification of Shortfalls/Gaps

According to the data available from JW the Ivory Park area is comprehensively serviced by five sewer collectors, but at critical points in the system there is insufficient capacity. Sewage tends to overflow at these points.

Most of the outfall sewers are adequate to cater for the existing and future development. However critical areas of insufficient capacity should be addressed as these could be contributing factors to regular overflowing of sewage.

2.4.5 WASTE MANAGEMENT

2.4.5.1 Situational Analysis

- **Refuse collection :**
  Residents in formal areas are provided with a once a week door to door service. This service is done by Boitumelong , a contractor using six (6) REL compactors and 30 employees. Collected refuse is disposed of at the Chloorkop landfill site.
  Residents in informal settlements are required to bring their waste to a centralised collection point where waste is disposed of in communal bulk bins.

- **Illegal dumping :**
  Illegal dumping is cleaned by Dikalala, a contractor with a front end loader and two 10m³ tippers on a daily basis.
  An informal settlement in Ekurhuleni Metropolitan Municipality is bordering Ivory Park and waste is dumped illegally in Ivory Park.

- **Disposal facilities:**
  Due to the close proximity (±5km) all collected waste is disposed of at Chloorkop landfill site belonging to Enviro Waste. Waste disposed of at Chloorkop is approximately 1800t per month.
  The nearest transfer station is situated at Chloorkop.

- **Street Cleaning :**
  Main arterial roads and business modes is done on a daily basis while residential areas is done weekly with RCR services by the contractor Boitumelong with 85 employees.

- **Waste Minimization initiatives:**
  There are no official projects regarding the above from Pikitup entities and NCO's.

2.4.5.2 Capacity Availability Statement

Refer to 2.3.5.1 above.

2.4.5.3 Current and Planned Projects

A project is implemented whereby informal areas are cleaned on a daily basis by a contractor (Boitumelong) but due to budget restrictions this is only done at a 5 hour workday.

2.4.5.4 Identification of Shortfalls/Gaps

- No shortfalls and gaps were identified by Pikitup regarding waste management in Ivory Park.
- There is a major opportunity to introduce waste recycling initiatives in the area that are linked to income generation opportunities for local residents.
- Informal settlements not accessible to introduce a proper waste collection system.
- The current waste collection service of 85l bind to be replaced with 240l in demarcated areas, in line with services rendered within City of Johannesburg Metropolitan Municipality.
- Collection routes to be included into a disposal plan.
- Areas to be identified for transfer stations near informal settlements.

2.5 ELECTRICITY

This section of the report presents the status quo of the electrical infrastructure at Ivory Park.

2.5.1 DISTRIBUTORS

The electricity within the study area is distributed by both Eskom, through the Eskom Central Region, and City Power.

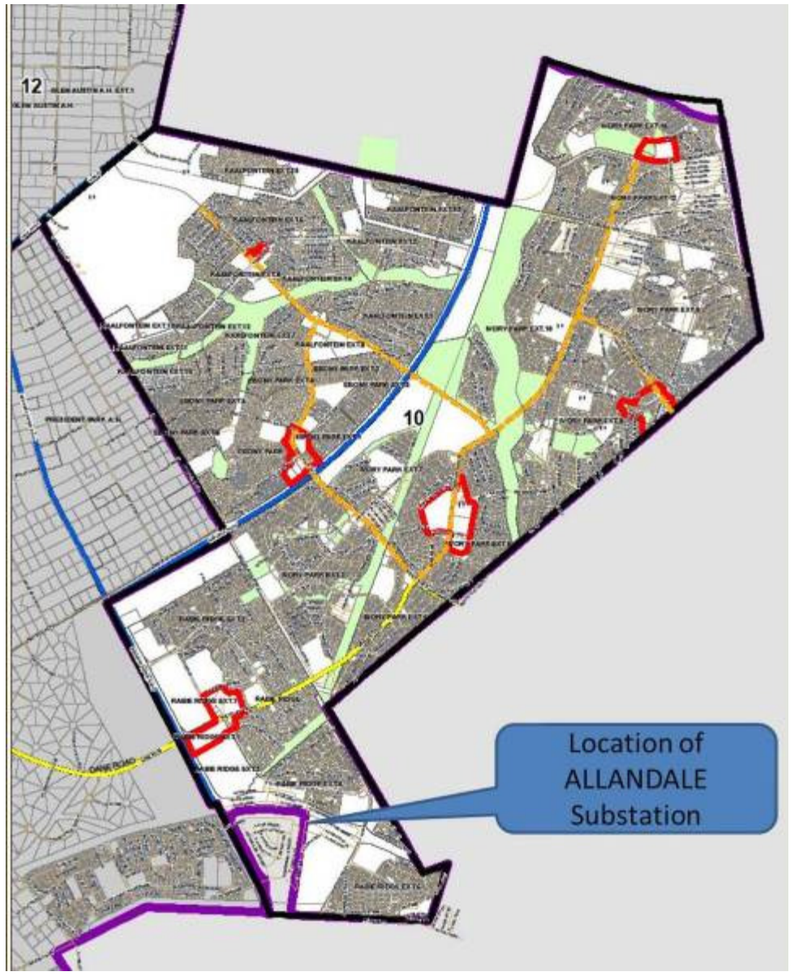


Figure 36: *Location of Allandale Substation*

Figure 37 presents the demarcation of the two distribution areas, in relation to the study area.

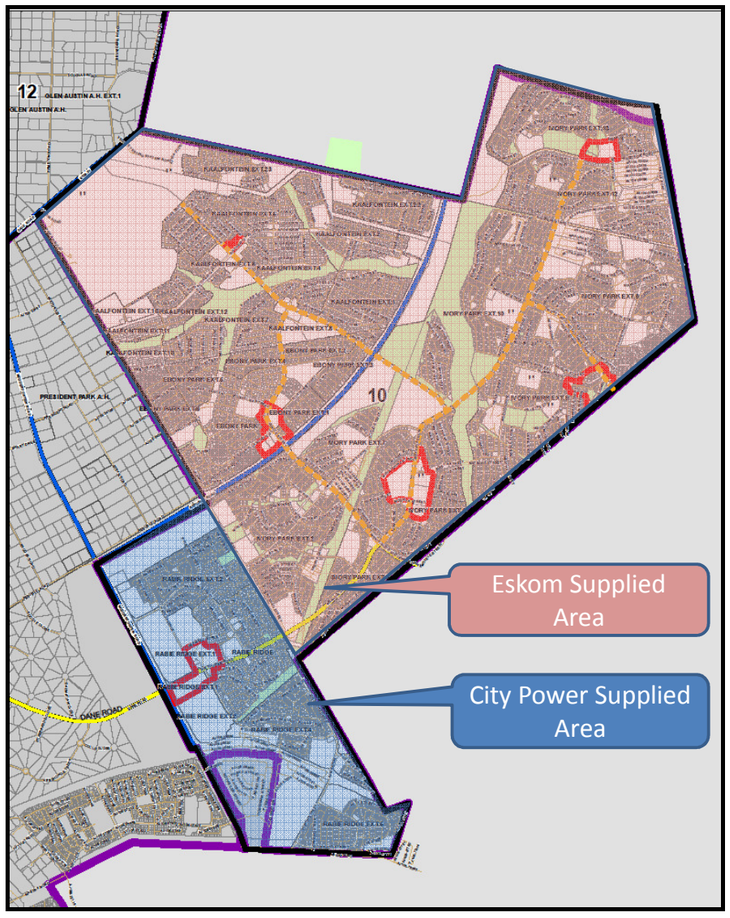


Figure 37*: Supply Area Demarcation*

2.5.2 ESKOM CENTRAL DISTRIBUTION REGION

2.5.2.1 Network Equipment

The Eskom network is centred on the "Ivory Park" main substation, located as depicted in **Figure 38**. The substation consists of the following;

- 2 x 88 kV Incomer Bays
- 2 x 88/11 kV transformers, each rated at 20 MVA with the associated transformer bay equipment
- 1 x 88/11 kV transformer, rated at 40 MVA with the associated transformer bay equipment
- 9 x 11 kV feeder bays, supplying overhead lines, designated as follows;
  - Renoster;
  - Tswelopele;
  - Ebony Park;
  - Dolphin;
  - Tusk;
  - Elephant;
  - Jackal;
  - Hippo;
  - Camel

These are also depicted pictorially in **Figure 38** below.

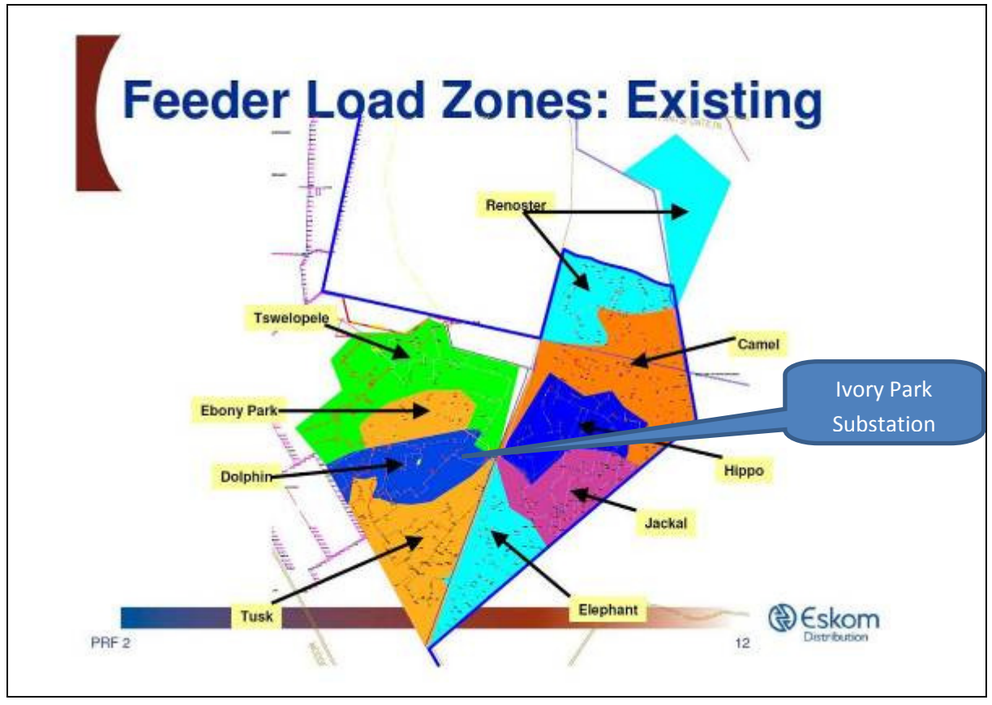


Figure 38*: Existing Eskom Feeder Line Supply Zones*

2.5.2.2 Current Capacity and Utilisation

The current loading of the substation is 80 MVA in winter, thus it is fully loaded.

Each of the feeder lines has a capacity of 9 MVA, thus the lines are also fully loaded.

The power is distributed within the area of study with 11 kV overhead power lines. From the numerous distribution transformers, power is supplied to the households with overhead aerial bundle conductor (ABC) lines. The house connections are also done with overhead airdac conductor.

2.5.2.3 Mitigation Measures and other issues

To mitigate the current overloading condition, Eskom is upgrading another small substation, designated "Eskom College" substation. This will be equipped with an 88/11 kV transformer, rated at 40 MVA. The intention is therefore to transfer some of the electrical load from the Ivory Park substation to the upgraded "Eskom College" substation. The upgraded substation will be commissioned in January 2012.

To further mitigate the overloading of the feeder lines within the study area, Eskom is also planning to implement a project to increase the number of feeders to 17, and these are designated as follows;

- Renoster;
- Tswelopele;
- Kaalfontein 23;
- Kaalfontein 22;
- Ebony Park;
- Kaikai;
- Dolphin;
- Sloth;
- Tusk;
- Elephant;
- Locust;
- Jackal;
- Hippo;
- Macabil;
- Camel;
- Namtap;
- Ogac.

The new zones are depicted in **Figure 39** below. This project is intended to be completed in 2013.

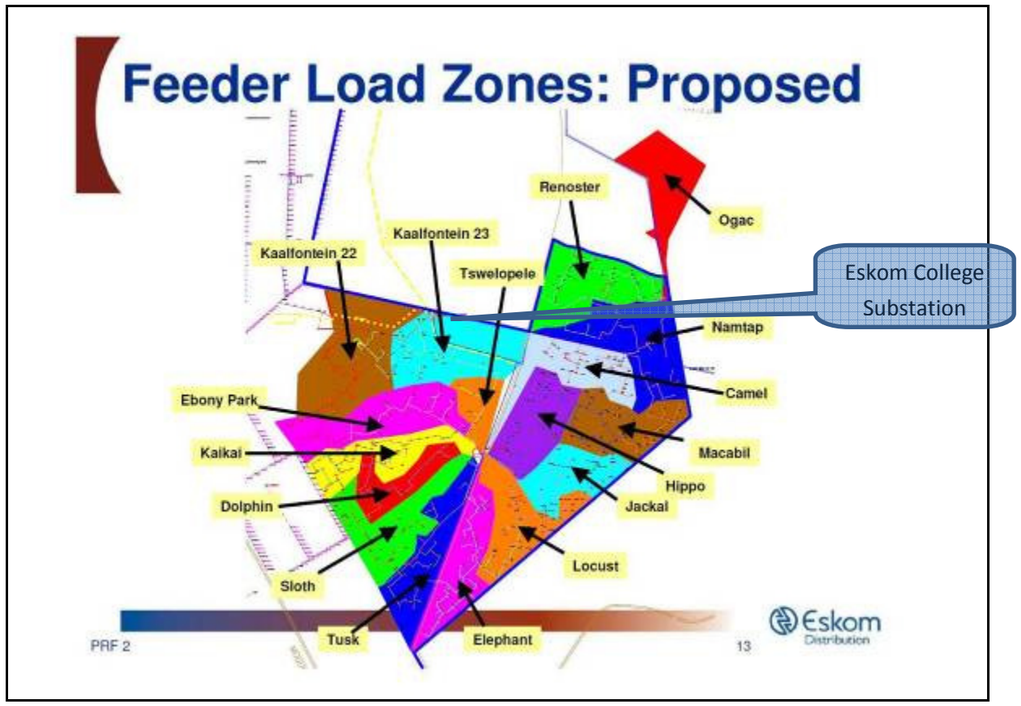


Figure 39*: Proposed Eskom Feeder Line Supply Zones*

In the discussions held with Eskom, they also indicated that the original electrification philosophy was to run the MV and LV lines between the households i.e mid-block networks. However, this has proven to be a challenge for maintenance, as access to the lines or transformers is difficult, impacting on their quality of service from an outage response point of view. Eskom has thus commissioned a project to convert the mid-block distribution lines to run on the street front. This project has commenced and will be undertaken over two years, thus to be completed in 2013.

2.5.3 CITY POWER

2.5.3.1 Network Equipment

The City Power network is supplied from the Allandale substation, which is an 88/11 kV substation, equipped as follows;

- 2 x 88/11 kV transformers, rated at 10 MVA, with the associated transformer bay equipment;
- 1 x 88/11 kV transformer, rated at 20 MVA, with the associated transformer bay equipment;
- 2 x 88 kV Incomer bays;
- 11 kV feeder bays;

The figure below depicts the approximate location of the Allandale substation.

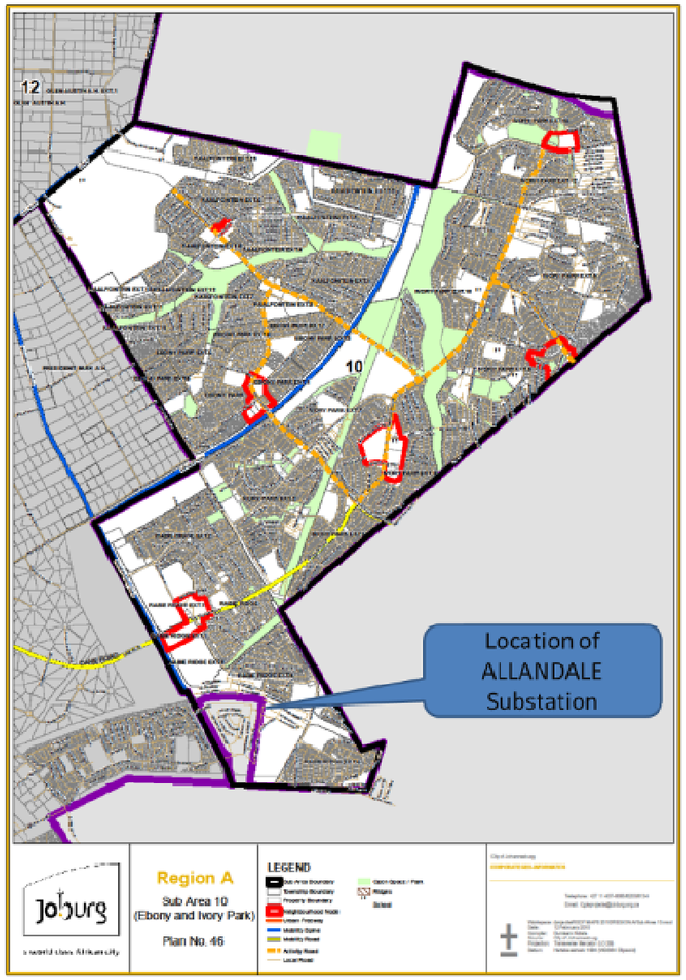


Figure 40: *Allandale Substation Location*

2.5.3.2 Current Capacity and Utilisation

The current loading of the substation is above 20 MVA. Clearly the current loading is well below the maximum capacity of the substation, which is 40 MVA. However, City Power's network design philosophy is to allow a sufficient margin so that the network can provide the maximum capacity under single contingency conditions, or N-1 conditions. In this instance, the largest unit of the substation is 20 MVA, and if this unit is faulty or taken out of service for maintenance, the maximum power that the substation can then provide is 20 MVA. This is then taken as the substation's Firm Capacity. Because the current loading exceeds the substation's Firm Capacity, City Power is already looking at plans to upgrade Allandale Substation, to cater for future developments.

According to City Power, the 11 kV distribution panels are also overloaded, and thus they are looking at upgrading plans to add to the number of existing panels, in order to divide the overall area into a greater number of feeder zones, in a similar fashion to Eskom Central Region as discussed previously.

2.5.3.3 Mitigation Measures and other issues

There is a specific project captured on the CoJ CIMS system for the upgrading of Allandale substation, namely the following;

- Allandale: Upgrade 2 X 10 MVA transformers to 20 MVA

This project will mitigate against the potential exceeding of the substation's Firm Capacity, thus enabling future developments.

The City power reticulation design philosophy is to install the MV and LV lines on the street front, which is the same design as Eskom has adopted for all current and future developments in the area, to ameliorate the previously alluded to maintenance challenges.

2.5.4 STREET LIGHTING

The street lighting within the study area is provided with the City Power A4 standard pole, with a 100 W High Pressure Sodium (HPS) luminaire on top. The street lighting covers the majority of the roads within the area.

City Power will no longer install the 30-40 metre high mast lighting, due to the high maintenance costs of these high masts. In general, some communities also find the level of glare from these unacceptably high, and prefer the street front lighting.

The current high masts will be operated until they reach their life cycle, after which City Power will generally de-commission these.

There are also a few isolated old fibre glass poles within the study area, equipped with 125 W Mercury Vapour luminaires. These are still operational, although City Power is also gradually phasing these fittings out of the system, as they are less energy efficient than the High Pressure Sodium fittings.

The area unfortunately experiences high levels of vandalism of the underground supply cables, leading to frequent outages of the lighting, and this creates an additional burden on the City Power maintenance personnel.

2.6 TRANSPORT

2.6.1 INTRODUCTION

This section of the report analyse the current status of transportation infrastructure and operations as part of the Ivory Park Urban Development Frame.

By considering the current reality of the Ivory Park Study Area from a transport and land-use perspective, important transport interventions can be identified (ranging from Engineering Interventions, to Land Use Interventions, to Transport Interventions to Financial Interventions) that would support the UDF to align with the overall Vision for the area. The focus of these interventions will focus on, but will not be limited to Transport Oriented Development (TOD); Compact Mixed Use Development and creating High Quality Living Environments.

The methodology applied in this report is to evaluate the current reality against best practices. Define the gap between the current reality and the best practice, and determine the best mechanism to address the gap.

The main elements that will lead the current reality investigation are:

- Transport demand,
- Transport Infrastructure Supply and Services.

2.6.2 TRANSPORT DEMAND

2.6.2.1 Influences on Movement Patterns

- *Land Use in the Area*

  A person's accessibility and mobility to their daily activities are affected by land use patterns within the direct area. Accessibility is defined as a person's general ability to reach desired goods, services and activities. Mobility refers to the amount and type of travel activity that occurs within an area and to other areas to obtain the desired goods and destination (Litman, 2003). The broad land use features identified in Ivory Park are summarised in **Table 29** and the influence on trip making is indicated. If the necessary services and features required by residents are available within the direct area, local person trips will be frequent. If basic services are not available long distance or external trips will be required.

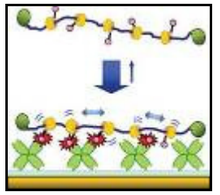
Feature	Status/Characteristic	Trips Required to reach services
Public Services Nearby (800m walking distance)	Few	External/Local Trips
Jobs Nearby (Within study areas)	Few	External Trips
Distance to Major Centres	Medium	Local/External Trips
Schools (In ward)	Most	Local
Library	Limited	Local trips between wards

Table 29*: Land Use Features in Ivory Park*

These land use features can have major impacts in local travel behaviour. For example, the residents in Ivory Park need to travel long distances in order to reach their place of work. The absence of formal sidewalks makes travelling by foot tedious and unsafe. Improving the features indicated below, will reflect in shorter commute trips, shorter errand trips and better travel conditions for all modes of transport.

- *Dwelling Density in the area*

  The most common range of dwelling density in South Africa is 5-30 dwellings per hectare. The average dwelling density in Ivory Park is 36 dwelling units per hectare, thus Ivory Park is classified as a high density settlement. The general household size in Ivory Park is four (4) persons per household, amounting to 144 persons per hectare. Litman (2010) states that travel behaviour are affected by density as follows:

LAND USE ACCESSIBILITY		• The variety of land use activities present within a settlement often increases as the population grows and more job opportunities become available. This reduces the need for vehicle trips and travel distances within the settlement.
MOBILITY OPTIONS		• Due to the economics of scale in a high density settlement, there are often a variety of travel options available supported with facilities such as formal sidewalks and formal public transport ranks.
REDUCED PRIVATE VEHICLE ACCESSIBILITY		• In settlements with a high density driving becomes less desirable as public transport options become more available. Increased density also often leads to lower vehicle speeds.

- *Mixed Land Use*

  Different land uses, such as residential, institutional, commercial, recreational, etc., located close together are referred to as mixed land use developments. The land use mix can take place in various forms, including mixing land uses within a building, namely retail on the ground floor with offices and residential uses on the floors above, the mix could occur along a street or within a neighbourhood.

- *Roadway Design*

  Block size, the cross-section of the road (number and widths of lanes, on-street parking, and formal sidewalks), traffic calming, sidewalk condition, landscaping and the access spacing are all features of roadway design. Attention to proper roadway design could reduce traffic speeds, improve connectivity, support public transport and enhance non-motorised conditions. Improving non-motorised condition is supportive of urban redevelopment.
  A study conducted by the U.S. Environmental Protection Agency (USEPA, 2004) found that regardless of population density, transportation system design features such as greater street connectivity, a non-motorised-friendly environment, shorter route options, and more extensive transit service have a positive impact on urban transportations system

performance, while roadway supply had no measurable effect. Upgrading of gravel roads to paved roads is however a different matter and in the local content, important.

- *Non-Motorised Transportation*

  Non-motorised travel conditions are affected by the availability and quality of formal footpaths, road crossings, linkages to activity areas and support features such as formal taxi ranks and lay-byes. The provision of facilities for non-motorised users with special needs, have to be taken into account especially vulnerable users such as the elderly and young children.

  The identification of physical and other man made barriers needs to be considered and accommodate to provide facilities that will guide the users safely around these obstacles or provide alternatives to gain safe access to their final destination.

2.6.3 IDENTIFICATION OF TRIP GENERATORS AND ATTRACTORS IN IVORY PARK

The studying of people's movement patterns within the urban context is of utmost importance for transportation planning and traffic engineering in order to provide the appropriate infrastructure to serve both a mobility and accessibility function to people based on the most likely movements that these residents will make on a daily basis.

Vehicular and pedestrian movement are defined as vehicular or pedestrian trips made by commuters from home to work, place of education or other places of interest and back on a daily basis. Business, retail, schools and other social services within the community as well as places of employment outside of the study area are typical trip attractors. Residential areas are viewed as trip generators in a typical morning peak period. In the afternoon the residential areas are viewed as the trip attractors. The typical daily travel behaviour of residents is viewed as the movement patterns within the area between the attractors and generators.

During a typical morning peak, the main land use trip generators identified in in Ivory Park are:

- Formal and Informal Residential Areas
- Taxi Ranks
- Taxi Stops
- Train Stations outside of the Study Area

The main land use trip attractors in Ivory Park are:

- Clinics
- Schools
- Sport Stadiums
- Retail – Formal and Informal
- Taxi Ranks
- The industrial areas

These trip generators and attractors indicated above can be classified into local and regional significance.

- *Regional Context*

  The trip attractors with regional significance are indicated in **Figure 41** as regional trip attractors. These centres/ land uses will attract trips from surrounding areas towards Ivory Park. Most of the residential areas within the Ivory Park UDF study area will generate trips to external zones in the morning peak periods and attract trips in the afternoon peak periods.
  Two regional attractors were identified that will attract vehicular trips from areas outside of the study areas. These regional centres are the Savemore in Rabie Ridge and the Shoprite in Ivory Park.

- *Local Context*

  The land use balance between wards 77, 78, 79, 80 and 93 are generally well balanced with regards to commercial land uses and schools. Commuters can gain access to all of these services without travelling across the boundaries of the ward. However, the five (5) clinics in Ivory Park are all situated in wards 77, 78, 79 and 80. Ward 93 is detach from the eastern parts of Ivory Park by means of Republic Road, making accessibility to the clinics and the library, which is located in Ward 80 difficult for both vehicles, but especially non-motorised transportation.

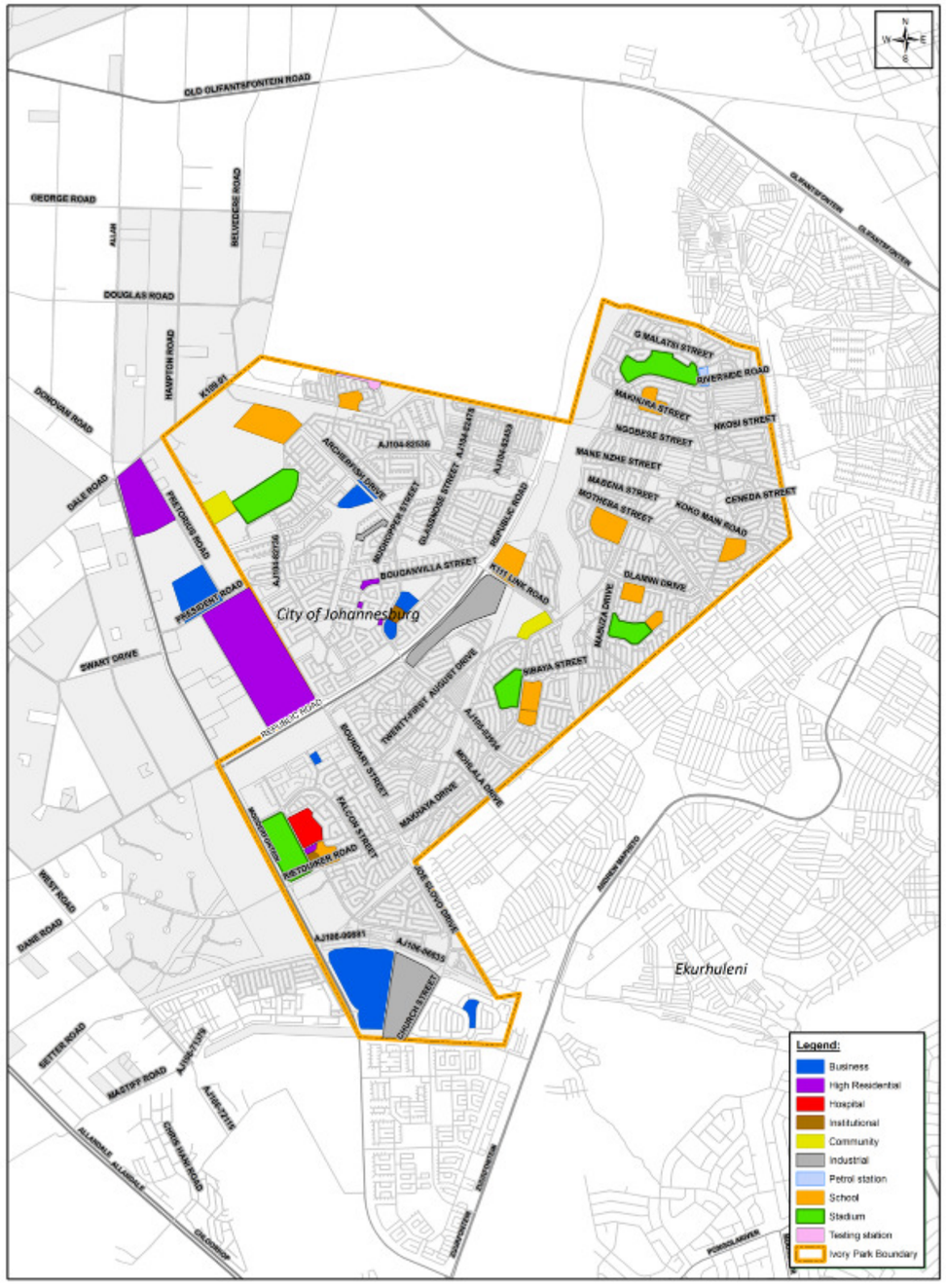


Figure 41: *Land Use Trip Generators in Ivory Park*

2.6.4 IDENTIFICATION OF MAIN MOVEMENT PATTERNS

Based on the main trip generators and attractors identified in the previous section the following vehicular trip making patterns were identified. The main external and internal vehicular movements within in the study area are indicated in **Figure 42.**

The majority of external movements into Ivory Park are from the main routes Modderfontein Road (west), Olifantsfontein Road (north) and Andrew Mapheto Drive (south).

Internally, vehicles follow local streets to the main collector roads, namely Archerfisher Drive and 29th September Drive. These roads link to 21st August Drive and Republic Road, which link the areas with the mobility roads surrounding the area.

The non-motorised transport movement patterns between:
The NMT movement in Ivory Park occur mainly along the major roads, such as Archerfisher Drive, 29th September Drive, 21st August Drive and Republic Road. The movement between the main non-motorised generators and attractors is shown in **Figure 43**. It is important to note that several movements across the K111 were observed and will be addressed in subsequent sections of the report.

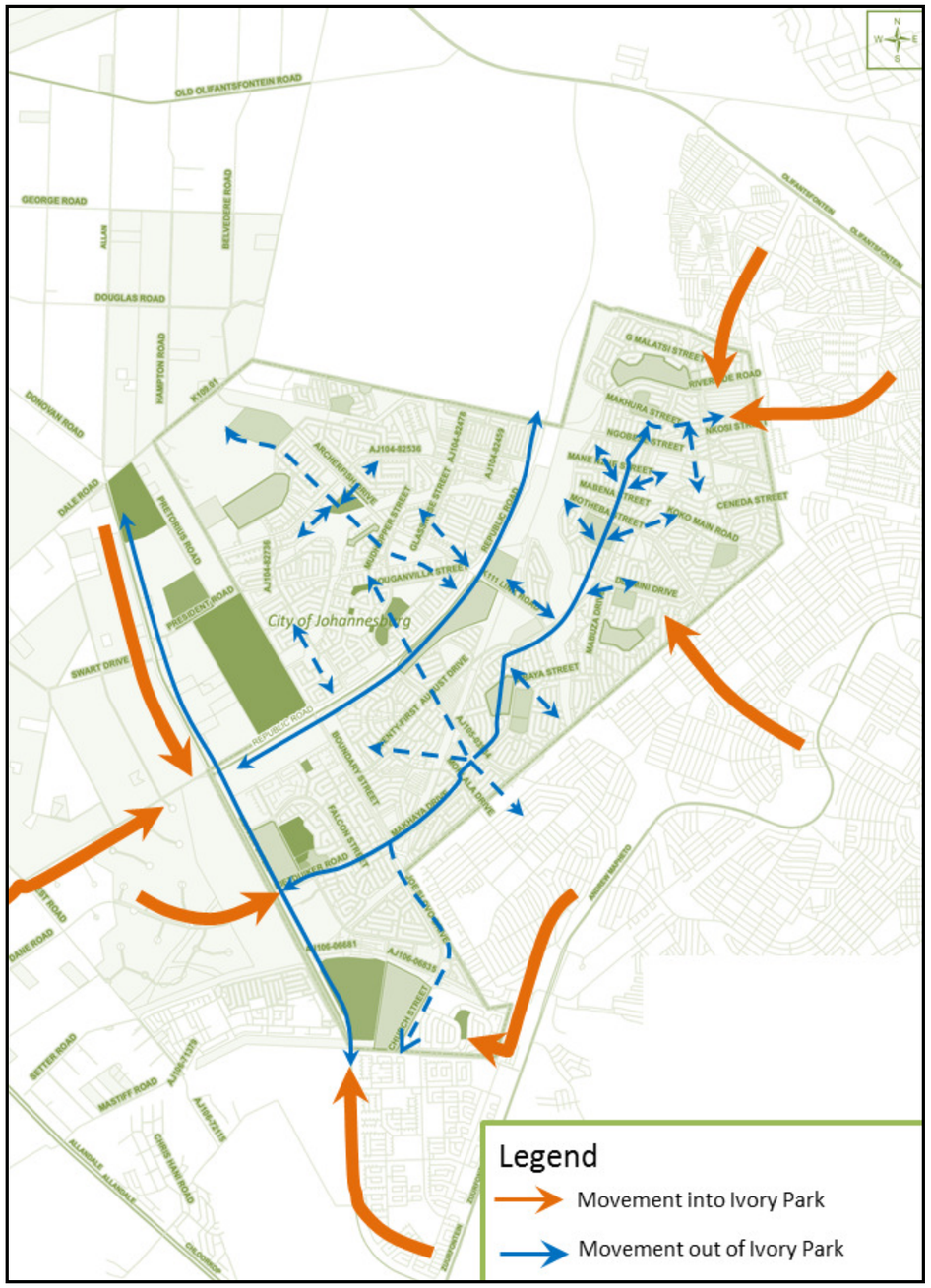


Figure 42*: External and Internal Vehicular Movement in Ivory Park*

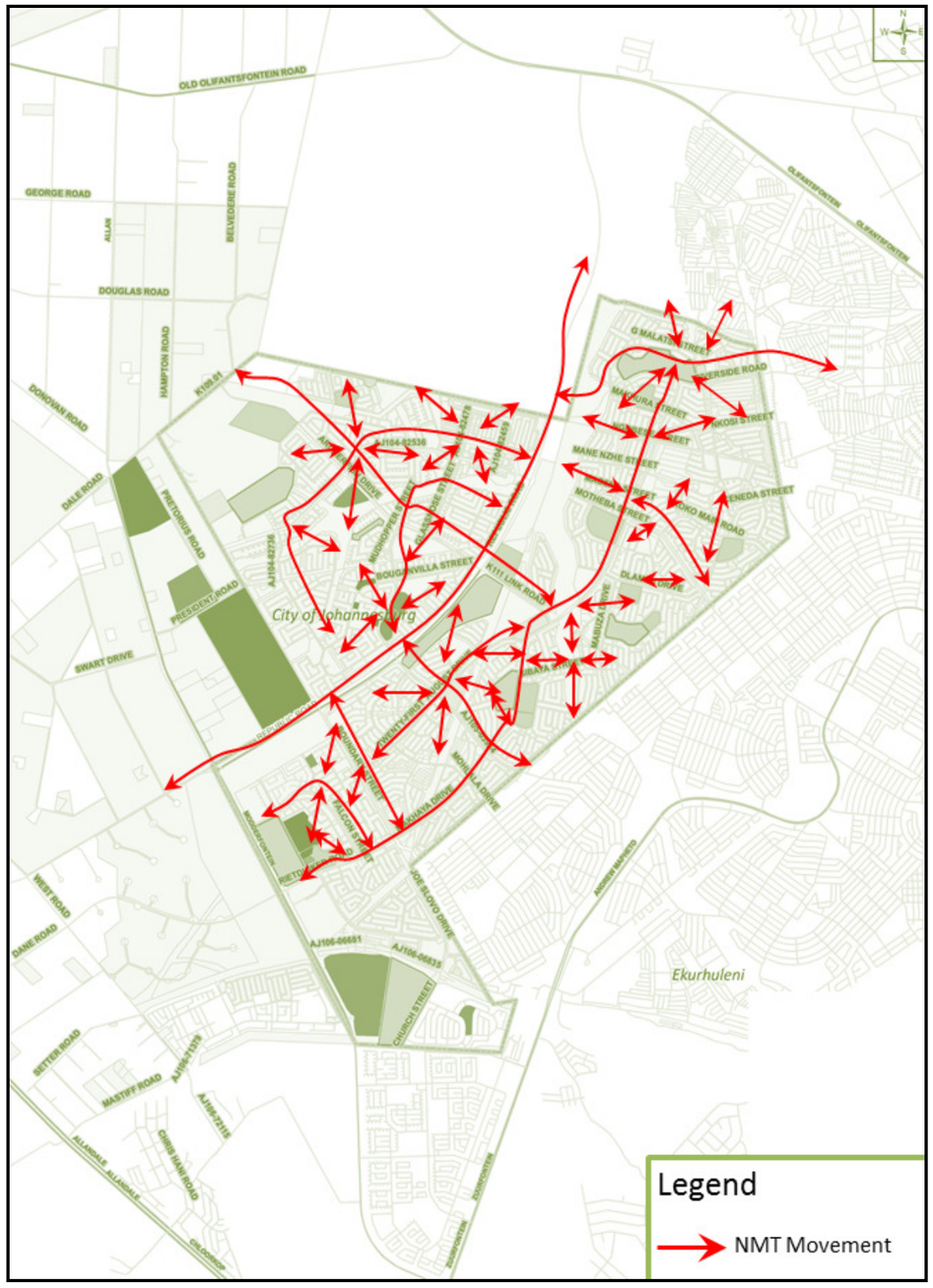


Figure 43*: Internal NMT Movement Pattern in Ivory Park*

2.7 TRANSPORT SUPPLY

Road classification refers to the process where different types of roads are classified in a framework and placed in relation to each other. A functional road classification refers to the process of classifying roads according to the characteristics of traffic service and the function that they are intended to provide.

Roads provide two types of services, namely the provision of traffic mobility and land access. The relationship between these two factors with the different road classes are illustrated below.

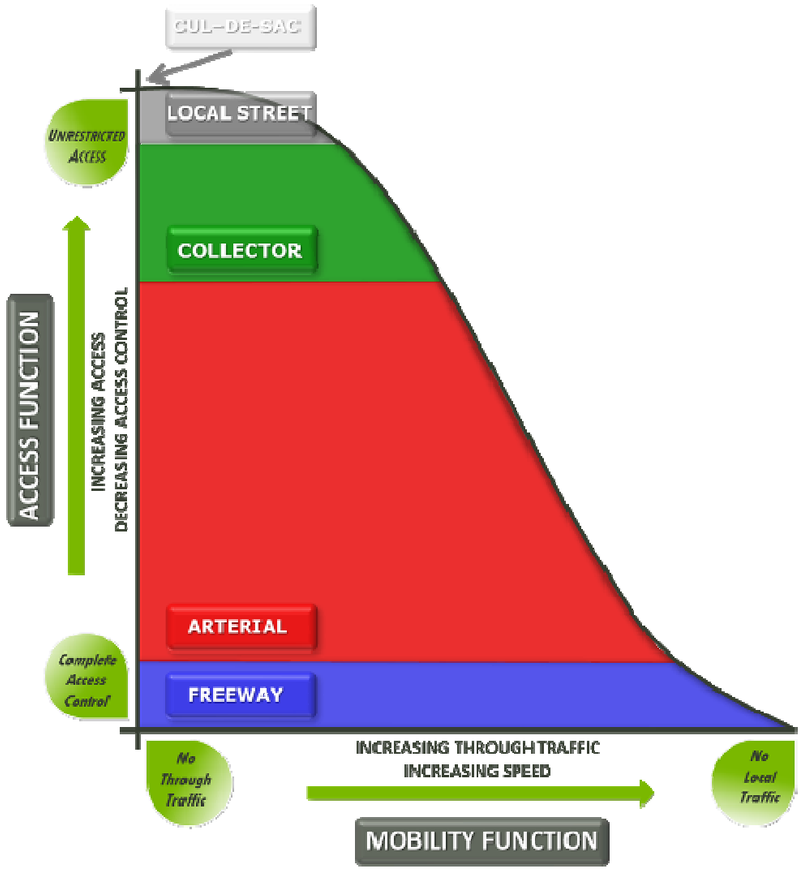


Figure 44*: The relationship between mobility and accessibility of roads*

In the functional road classification, a road is assigned a rank or a class based on the proportion of the service it provides. This is the road classification hierarchy that the Department of Transport (DoT) has proposed nationally in the 2008 Road Infrastructure Strategic Framework for South Africa (RIFSA) document.

Figure 45 below gives an overview of the ideal layout of the different classes of roads linked to their function thus mobility and accessibility.

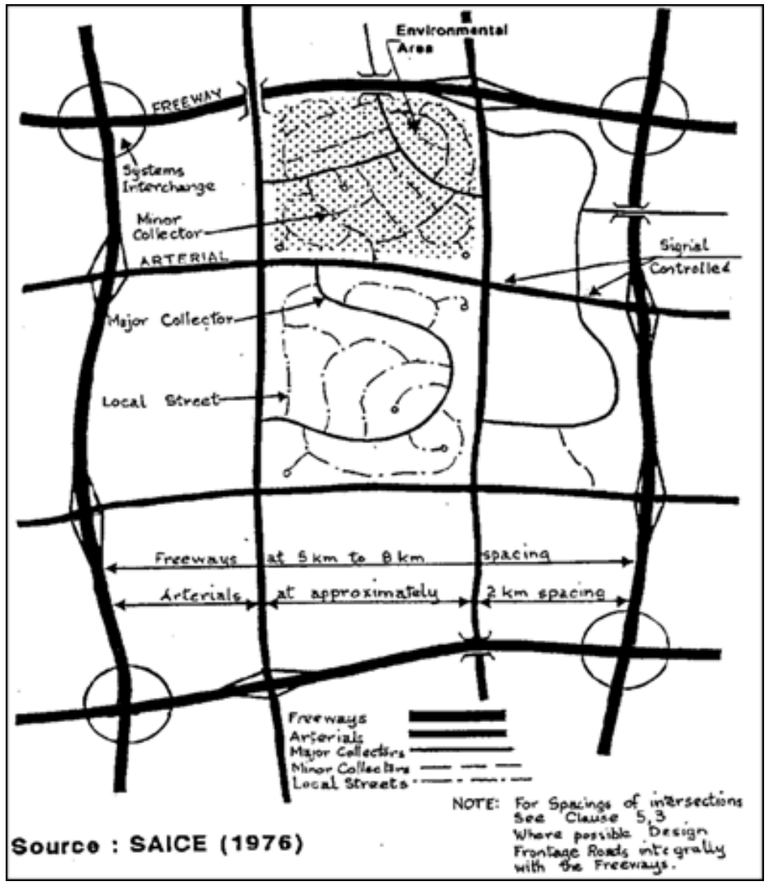


Figure 45*: The road class principle in terms of ideal layout*

The mobility function of roads refer to the mobility of residents to gain access to regional roads and destinations, accessibility provides access to local destinations and services.

2.7.1 MOBILITY ROADS

- *Regional Connectivity to Ivory Park*

  The current road network of Ivory Park consists of roads that perform mobility functions and access functions and a combination of both. Within the Ivory Park boundary there is however only one road that is a primary distributor where the major focus is to provide mobility with limited access points provided by means of interchanges, this road in known as the K111 or Republic Road. The significance of the K111 for the Ivory Park Township is just that, a regional distributor to the North and South of the municipality where it leads to more regional distributors to other outlying areas.

Figure 46 shows the regional connections to national and provincial arterial roads. The average distance from Ivory Park to the nearest national or regional road varies between 5 and 10 km. The roads indicated in black present the regional connectors. The yellow and green coloured roads indicate the local connector roads; these connect to the regional connectors.

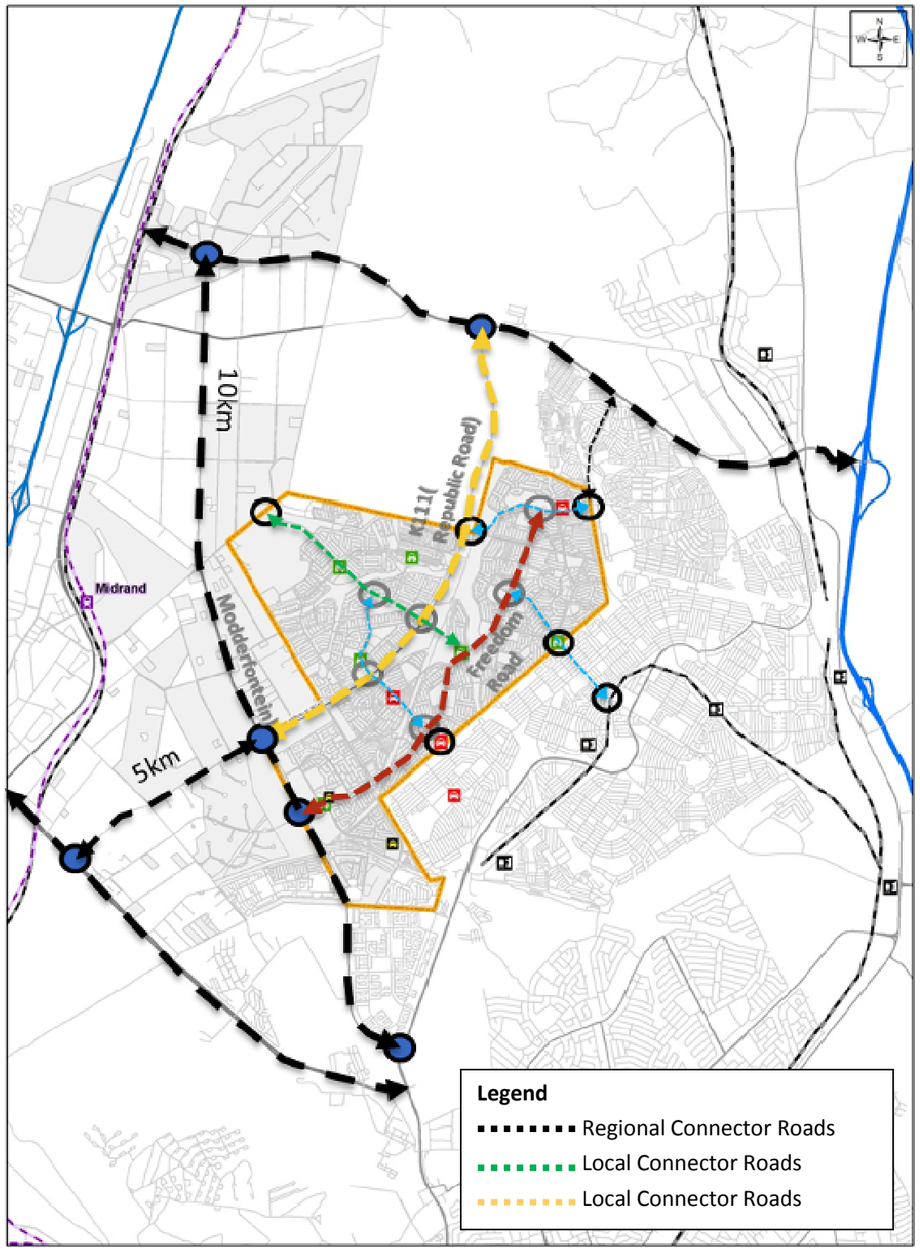


Figure 46*: Ivory Park Regional Connectivity*

- *Regional – Planned Roads in the Vicinity of Ivory Park*

The Provincial Department of Transport has identified various roads for future use. These roads are known as K-Roads. Some of the planned roads are located on the periphery of the Ivory Park Township and is illustrated in **Figure 47**. The most notable road is the PWV5 that is planned to the north of Ivory Park. This road will in future link Ivory Park with national roads and provincial arterial roads. The K111 transvers the study area and will link the area with the PWV 5 to the north and K58 to the south.

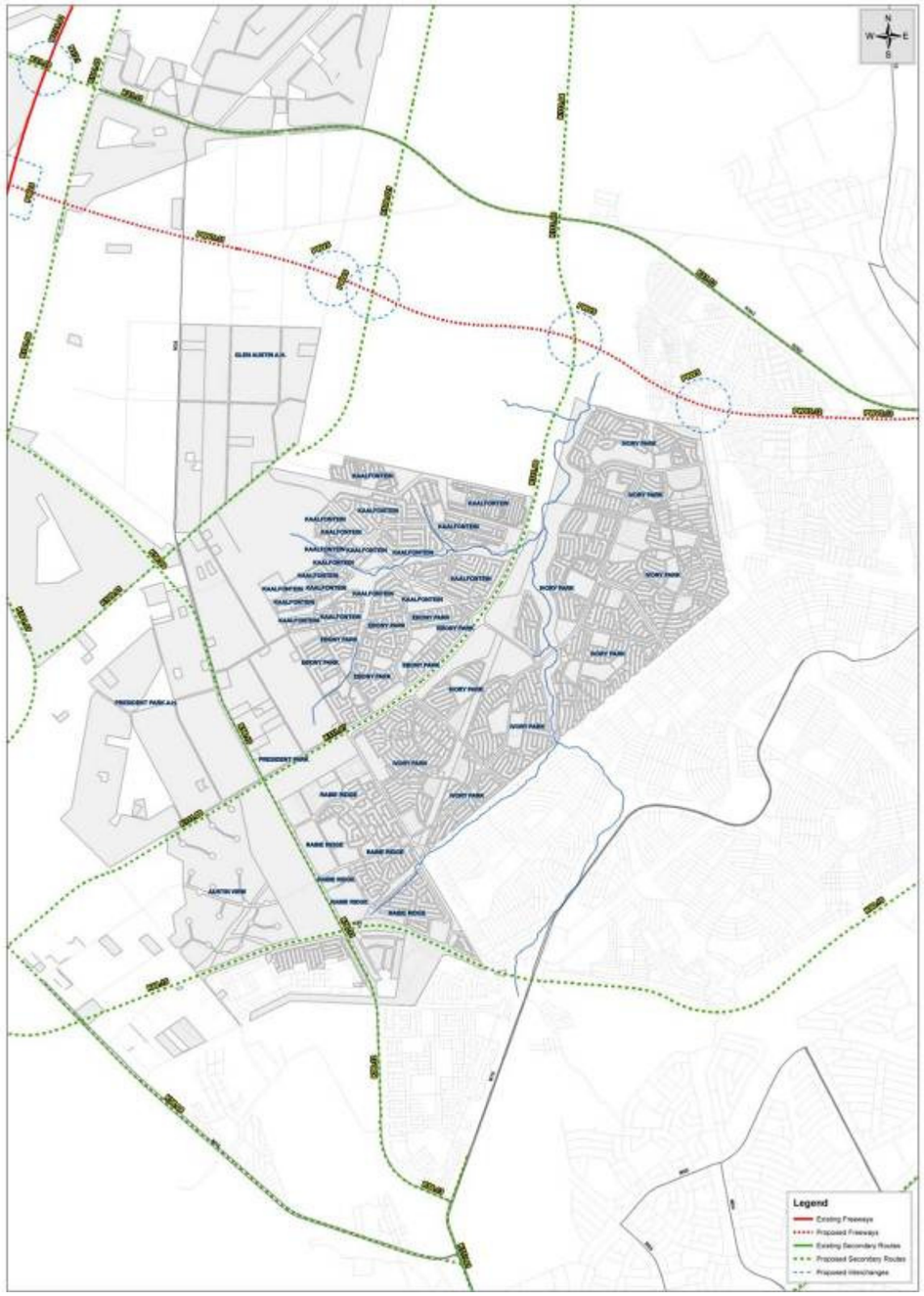


Figure 47*: Planned K-Routes in the vicinity of Ivory Park Township*

2.7.2 ACCESSIBILITY ROADS

- *Local Access to Ivory Park*

  More importantly the K111 (Republic Road) serves as the main connecting spine to other larger road tributaries to the North and South of Ivory Park. Another road that provides reasonable mobility combined with high accessibility is Freedom drive. Freedom drive runs parallel to the K111 to the east. Freedom Drive is the mobility road in the Eastern part of Ivory Park; it virtually spans the whole length of Ivory Park from North to South.

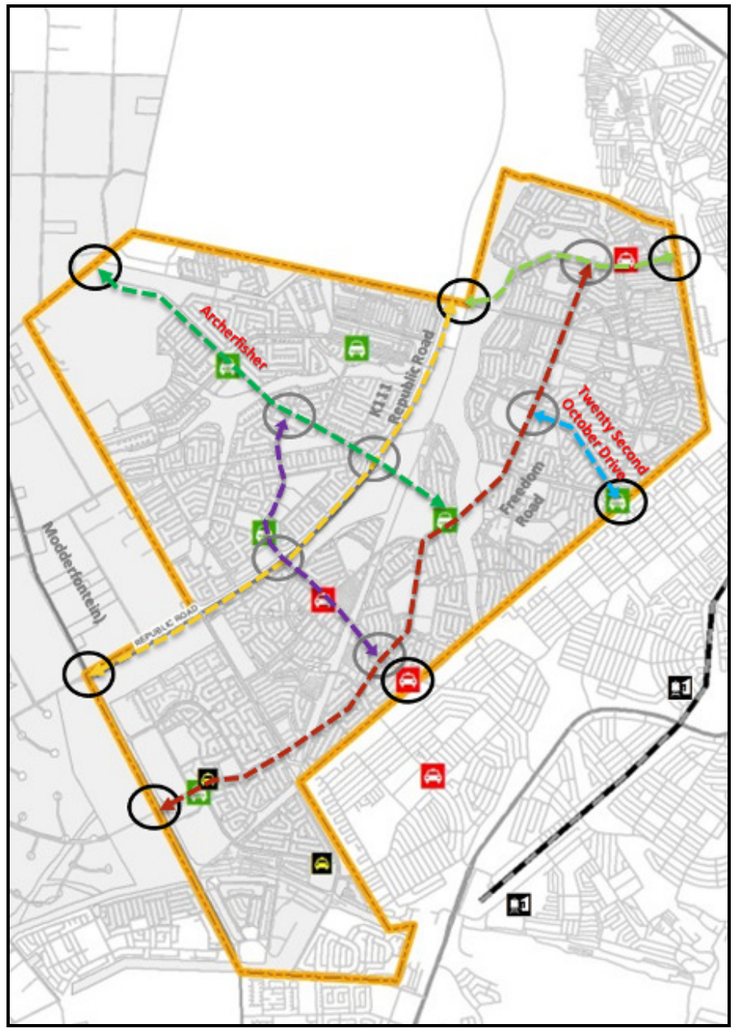


Figure 48: *Access routes in Ivory Park*

The east-west spines through Ivory Park are formed by Archerfish Street, Riverside Road, Acacia and Twenty Second October Drive. These roads do not provide exclusively high

mobility, but have numerous access points along the span of the roadway. The main road spanning the east to west part of Ivory Park is known as Archerfish Street to the north and Twenty Second October Drive to the south. The extension of Riverside Road to the west to join Archerfisher Street will enhance the east-west spine and open up the land currently not accessible to the east of Archerfisher Street. These roads are indicated in **Figure 48**.

- *City of Johannesburg Road Hierarchy 2009*

  The RISFSA classification system used for the classification of the Johannesburg road network rests on the function of the road within the province/ municipality's road network. To determine the function of each road within its local and regional context several criteria/ characteristics were identify in the classification of the roads. The main criteria used for the RISFSA classification 2009 are:

  - Functionality,
  - Traffic Volume,
  - Public Transport,
  - Geometry,
  - Access Spacing,
  - Pedestrians,
  - Freight,
  - Traffic Calming.

The detail characteristics of the roads within each functional class are described in Annexure A. The classification system classified the roads in to 6 functional classes ranging from high order roads Class 1 (Mobility Roads) and local streets Class 5 (Local Access roads). Class 6 roads are pedestrian only roadways.

From previous sections of this report it is evident that Ivory Park in its entirety only has one major regional distributor road (K111). The access spacing along the road is at intervals of approximately 600 m in line with the minimum standard of access spacing along a Class 3 road. The limited accesses along the road need to be preserved to ensure that the mobility function of the road is protected.

The other roads within Ivory Park, Class 4, 5 and 6 roads have high accessibility allowing residents to gain direct access to residential units and social services. Freedom Drive is the Local Class 3 road providing access to social services and other amenities within the area. This road provides an alternative to the K111 and provides both mobility and accessibility within Ivory Park east. The accesses provided along this road are currently not within the desired spacing standards for a Class 3 road. The upgrading of the road to comply with geometric standards of a Class 3 road and the retrofitting of accesses to align with Class 3 road standards was identified as a priority project in this area. The current road classification for roads in Ivory Park area is shown in **Figure 49.**

- *Conclusions Local Connectivity*

  The CoJ's Functional Road Hierarchy assessment is in line with RISFSA (Annexure A), however when focusing on local accessibility within Ivory Park a few Class 5 roads were identified that operates as Class 4 roads. These roads provide critical collector/distribution functions within the local area, some additional Class 4 roads were identified in Ivory Park and are subsequently marked as such in **Figure 49** with black dotted lines. These links will contribute to the accessibility of the areas.

  The CoJ's Functional Road Hierarchy project identified several projects to be implemented in Ivory Park. These projects are listed in **Table 30** and are captured in CIMS to be prioritised.

• RNP088_Upgrade to Mobility Road: Akaya / Freedom Road	Upgrade to Mobility Road - Akaya / Freedom Road
• RNP091_Upgrade to Mobility Road: 29th September Drive and Acacia Street	Upgrade to Class 3 Mobility Road: 29th September Drive and Acacia Street - Ivory Park
• RNP048_K113 - From PWV3 to K56	New K Route from Rabie Ridge to Alexandra.

Table 30*:* CoJ Functional Road Hierarchy Report Identified Projects

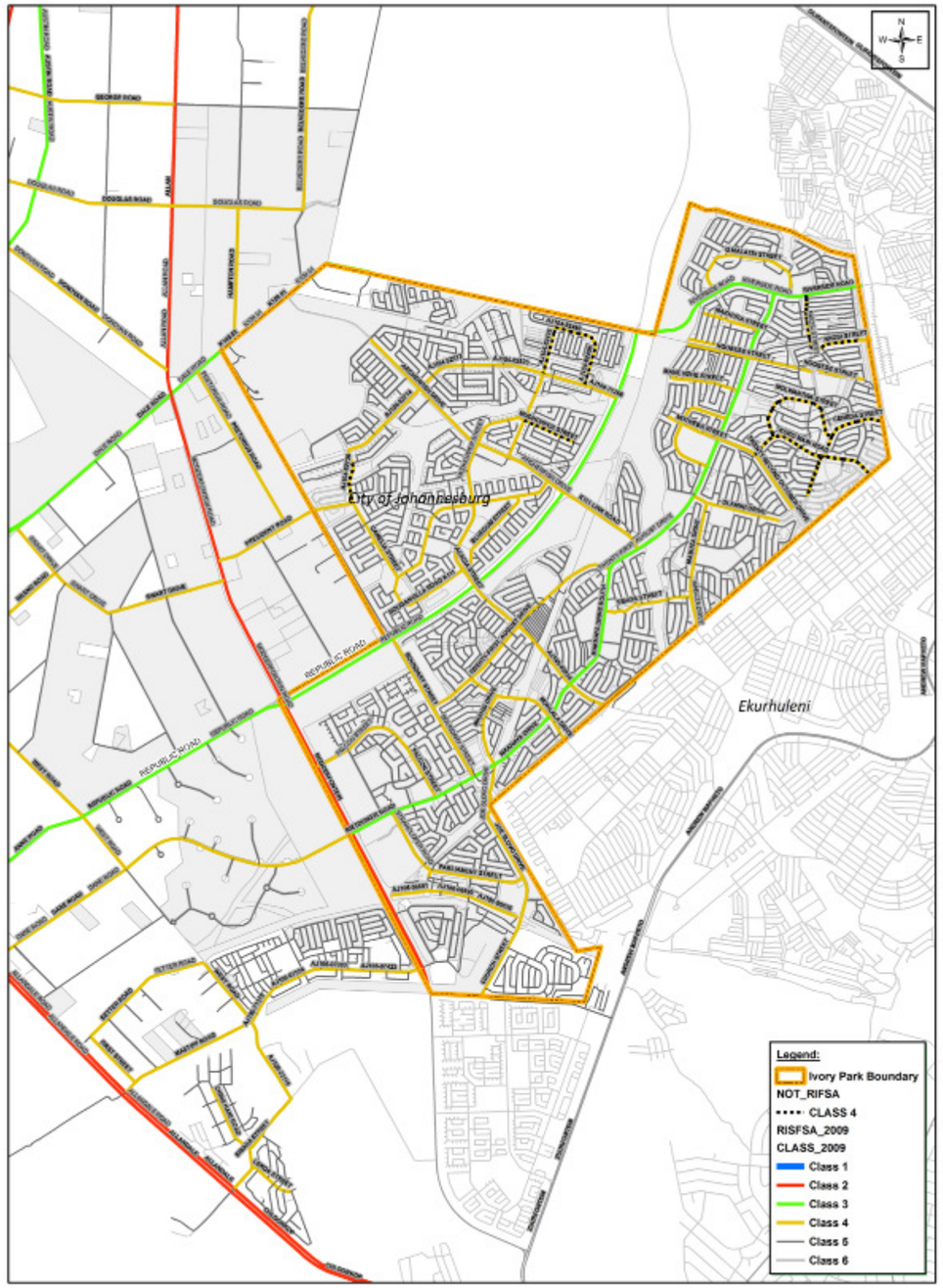


Figure 49*: 2009 RISFSA Road Hierarchy*

2.7.3 Existing Road Infrastructure

- *Road Reserve*

The road reserves of the major roads in Ivory Park are currently used for informal trading and other illegal land use. These activities impede into the open space provided along roads to ensure a safe area for pedestrians to travel along. The road reserve is furthermore provided in order to allow for the provision of public transport lay-by's and services such as water, electricity and telecommunication.

The typical road reserves prescribed in the Road Infrastructure Framework for South Africa (RISFSA) is shown in **Table 31** per road class. Comparing these road reserves widths with the road reserves provided along the main roads in Ivory Park (**Table 32**) it can be commented that the road reserves in Ivory Park along main roads are adequate. Additional lanes can be provided along street with one lane per direction and a road reserve of 25 m and more, provided that the informal traders and illegal land uses in the road reserves are cleared below.

Basic Function	Class No.	Class Name	Typical Cross Section	RCAM Road Reserve Width (m)
Mobility	1	Principal arterial	4/8 lane freeway	**60m** (60 - 120 m)
	2	Major arterial	4/6 lane divided, kerbed	**40m** (38 - 62 m)
	3	Minor arterial	4 lane divided or undivided, kerbed	**30m** (25 - 40 m)
Access / Activity	4a	Collector, commercial	4 lane, median at ped. xing., boulevard, CBD one-way	**25m** (20 - 40 m)
	4b	Collector, residential	2 lane 10,5 m undivided	**20m** (20 - 30 m)
	5a	Local street, commercial	2 lane incl. parking, 10 - 12m	**22m** (15 – 25 m)
	5b	Local street, residential	2 lane mountable kerbs	**16m** (10 - 16 m)

Table 31*:* RIFSA and RCAM Road Reserve Width Standards

Road Name	Road Class	Road Reserve (meters)	Number of Lanes per direction
K111	Class 3	**60**	1
Freedom Drive	Class 3	**25**	1
Riverside Street	Class 4	**25**	1
2nd October Drive	Class 4	**29**	1
Archerfish Drive East	Class 4	**25**	1
Archerfish West	Class 4	**30**	1
29 September Street	Class 4	**25**	1
August Drive	Class 4	**20**	1
Angelfish Street	Class 4	**30**	1

Table 32*:* Ivory Park Road Reserve Assessment

- *Paved / Unpaved Roads*

The majority of roads within the Ivory Park area are currently gravel roads. These roads are Class 5 roads providing direct access to residential stands. The higher order roads, Class 4 and 3 are currently paved. In **Table 32,** the current road surface types of roads within Ivory Park are shown.

The project is listed in CIMS but no funds are allocated to the project in the 2011 financial year.

Project Name	Description	Responsible Person	Assigned Id	Source Amount
Gravel Roads: Ivory Park	Gravel road upgrade as per IDP priority.	Frank Sepuru	GR 0010	**R 222 900 000.00**

Table 33*:* CoJ Current Projects for the Financial Year (2011)

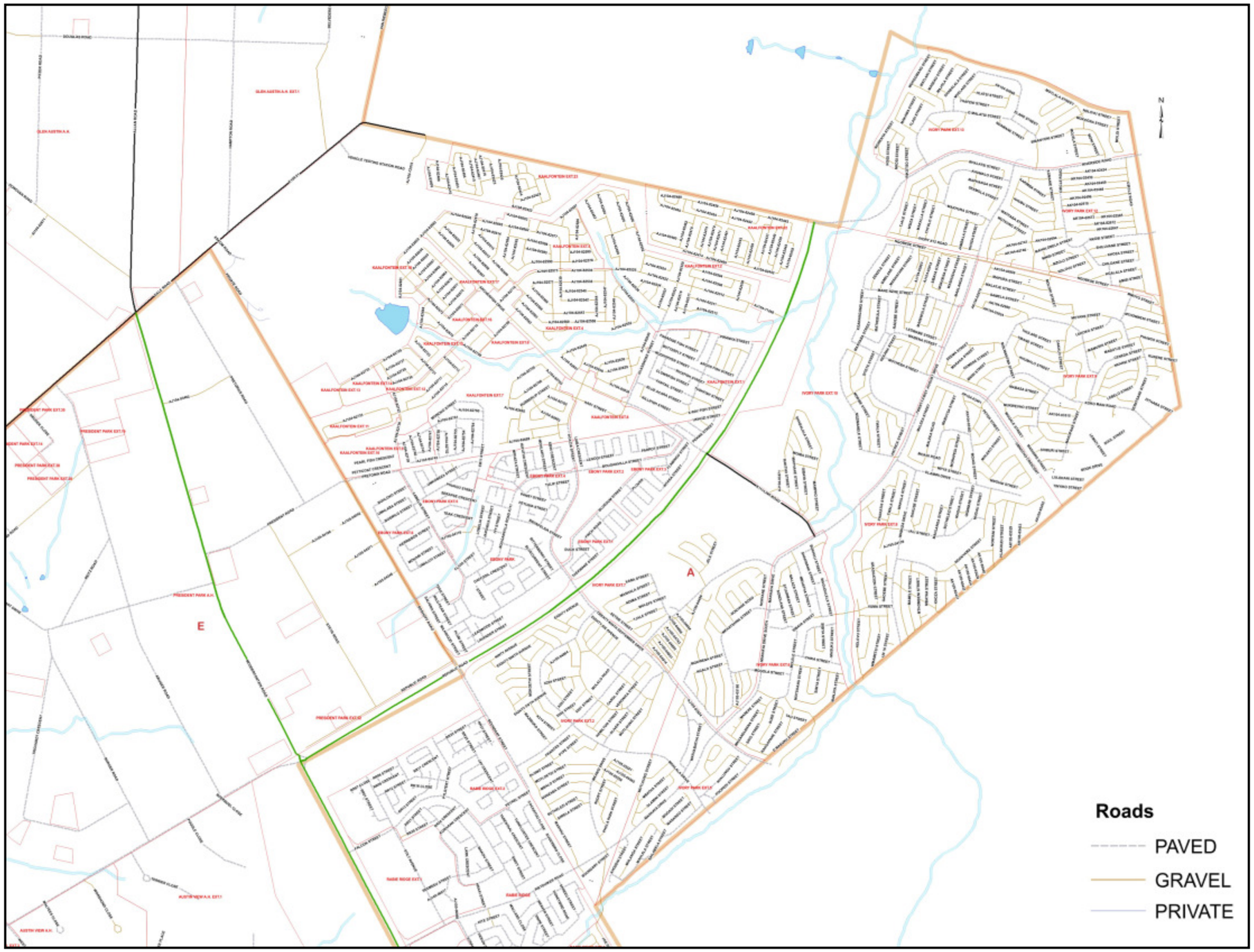


Figure 50: *Paved / Unpaved Roads in Ivory Park*

- *General Paved Road conditions*

The general road conditions in the Ivory Park Township is fair, however, there are some highly deteriorated road sections and also high road maintenance concerns.

The road maintenance concerns are mainly due to stormwater problems and a general lack of road maintenance in the Ivory Park area. As a result of the poor stormwater system mud and gravel is often found on the majority of the roads, this causes the further deterioration of the road system. Accordingly, general road maintenance of all paved roads within Ivory Park needs to be cleared of any debris.

Site visits were conducted to the Class 3 and Class 4 roads in Ivory Park on 5th and 6th of April 2011. Most of the roads are in fair structural conditions. However a few areas of concern were identified and are shown in **Figure 51**. The extent of the concerns and issues are detailed in the figure.

The roads surveyed are mainly local roads and fall under the jurisdiction of JRA (Johannesburg Roads Agency) and the K111 Provincial road under the jurisdiction of the Department of Transport (NDOT). The interventions required to establish good quality road surface are mentioned and will be allocated to the respective institution responsible for maintenance and upgrading of the road in the following section of this report.

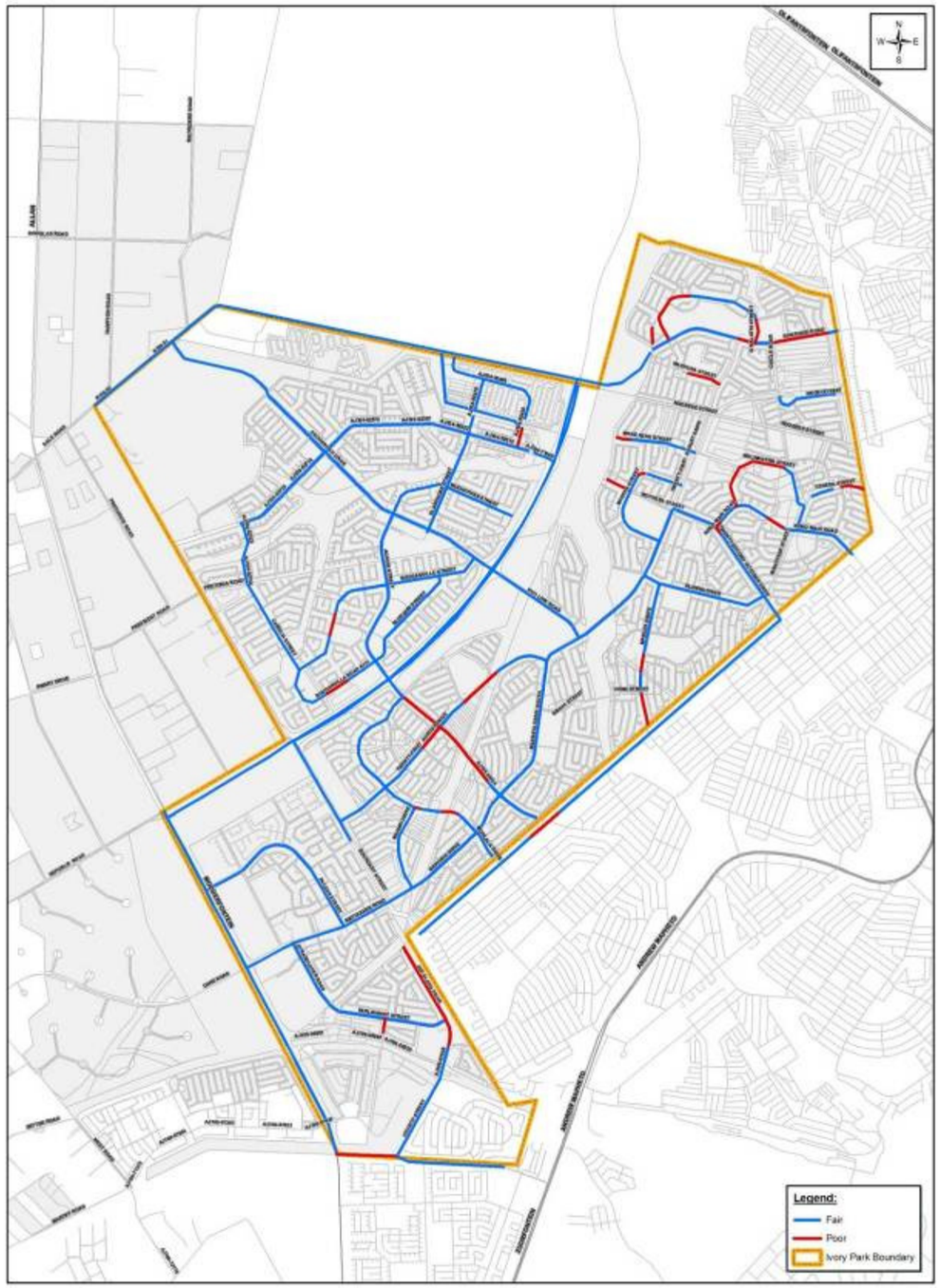


Figure 51*: Ivory Park Road Condition Assessment*

The following areas of road maintenance concern were identified as issues within Ivory Park and are shown in **Figure 52.**

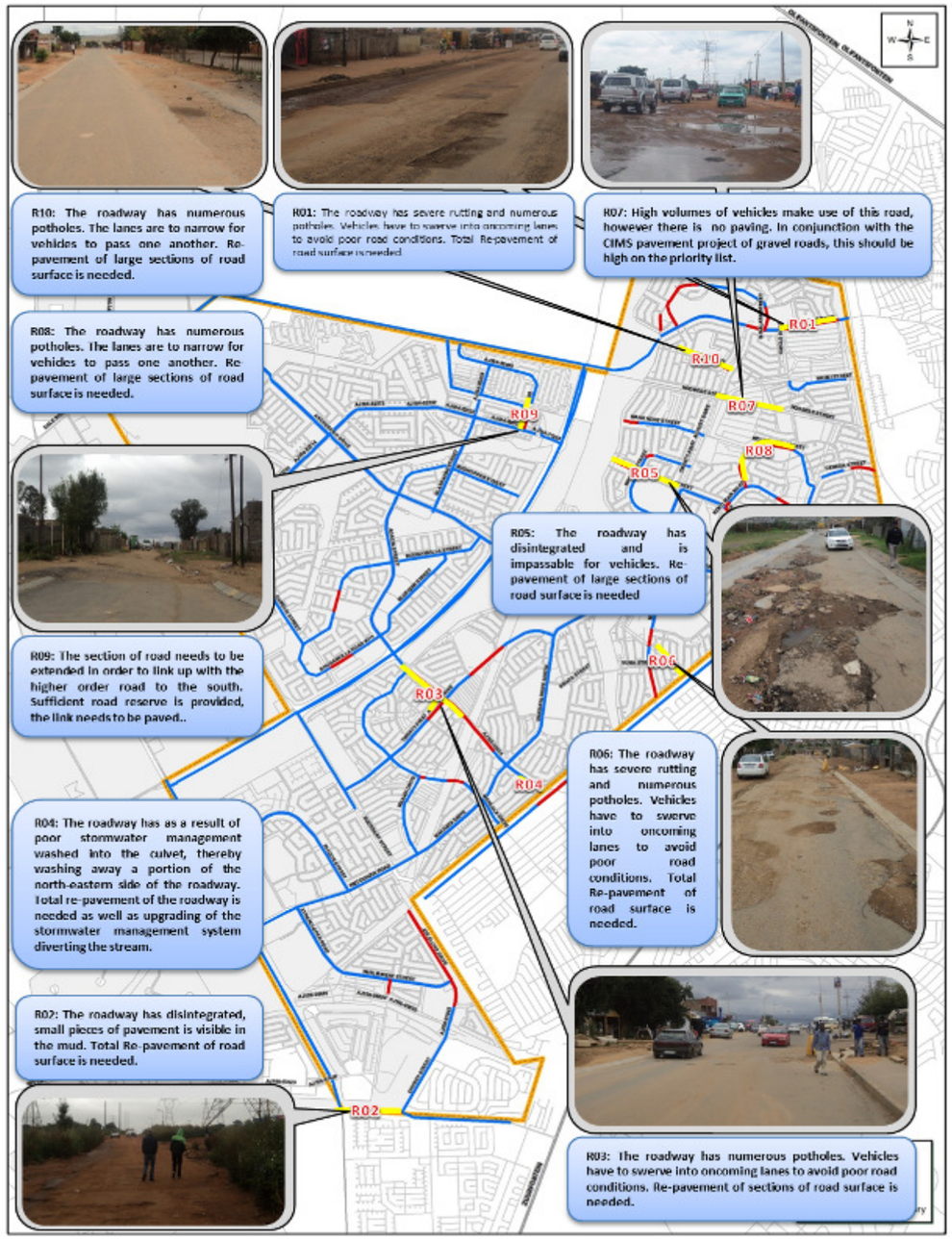


Figure 52: *Ivory Park Road Projects*

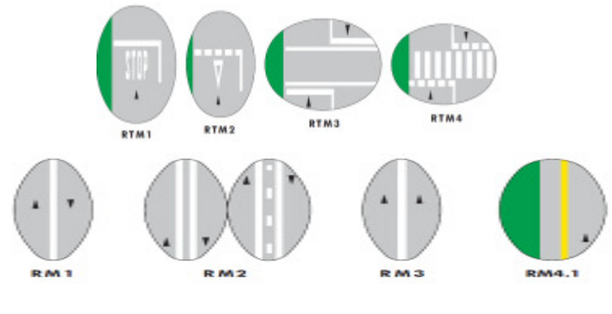
- *Road Markings and Signage*

As part of the site visits on 5th and 6th of April 2011, visual assessments were done on the condition of the road markings as well. The results of the visual assessment are detailed as follows:

- Road markings in general are either poor, not up to standard or in the majority of the case non-existent
- Road signs for the majority of the paved roads are either incorrect, vandalised or absent.

A separate road marking and signage audit needs to be undertaken for existing and required markings and signs in order to get the paved road system up to standard. The South African Traffic Signs Manual, 1999 (SARTSM) should be used as the yard stick in this case. According to the SARTSM basic road traffic markings that should be in place are regarded as the following:

- Regulatory Transverse Markings
  - Stop Lines
  - Yield Lines
  - Pedestrian Crossing Lanes
- Regulatory Markings
  - No overtaking lines
  - No crossing lines
  - Channelizing



According to the SARTSM basic road traffic signs that should be in place are regarded as the following:

- Regulatory Signs
  - Control
  - Restrict
  - Command
  - Prohibit
  - Reservation
  - Comprehensive

- *Intersection Control*

Signal Controlled & Priority Controlled

Signal controlled intersections in urban areas are intersections where traffic flows accumulate at intersect, and where the intersection capacity provided by a priority control is insufficient to accommodate the traffic demand. When the warrants for the implementation of traffic signals are met a signal is implemented. The intersections within the Ivory Park area where traffic signals are implemented are shown in **Figure 53.** The rest of the intersections are priority controlled.

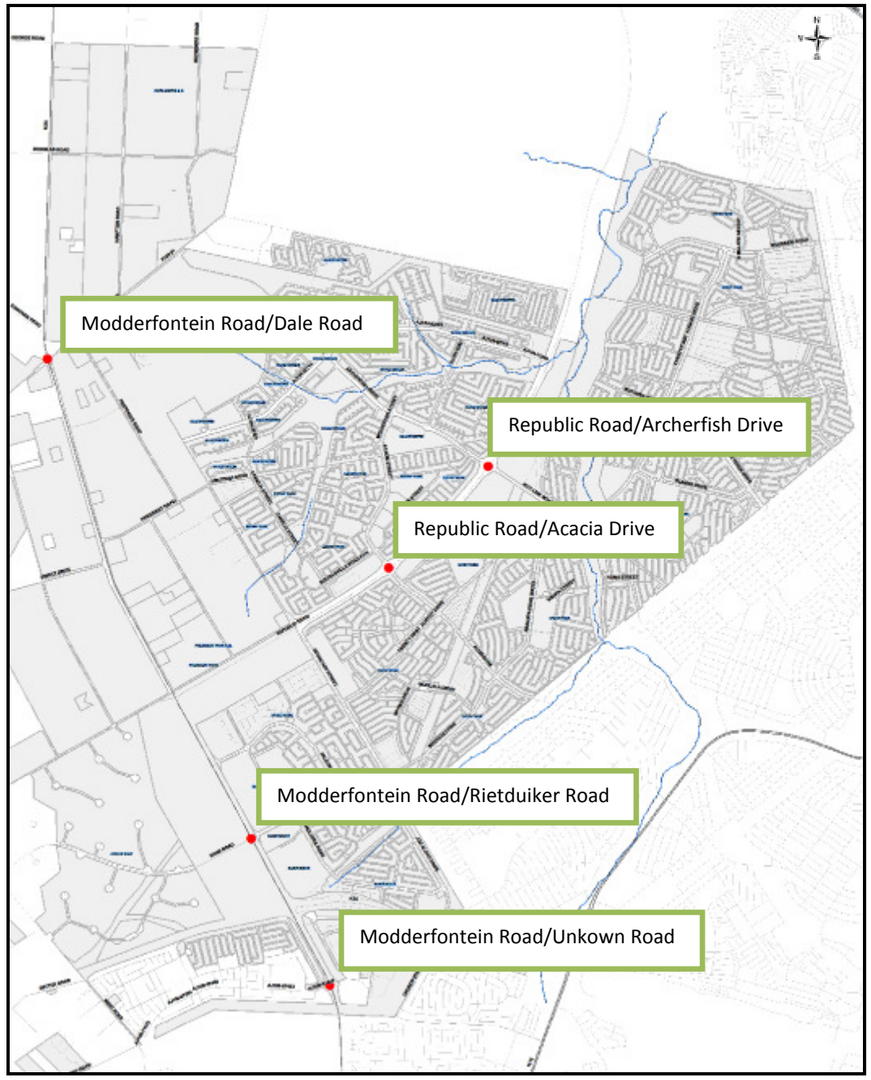


Figure 53*: Signal Controlled intersections in Ivory Park*

During the site visits in Ivory Park no queues were observe at any of the traffic signals. This can indicate that no capacity problems are experienced, but a detail capacity analysis is required to confirm this assumption.

- *Traffic Calming*

The purpose of warning signs is to draw the attention of drivers to dangerous situations on or adjacent to the roadway. These signs often require a decrease in speed to ensure the safety of the vehicle driver, other road users, pedestrians or animals. For traffic calming measures, speed humps are used most commonly. Speed humps must be properly signed and marked by means of road painting. The speed humps identified during the site visits in April are shown in **Figure 54.**

Table 34 indicates the traffic warning signs relevant to traffic calming typically the traffic calming measure is a speed hump. The speed humps identified during the site visits in April are shown in **Figure 54**.

Speeds hump warning sign.	
Chevron placed on the left side of the speed hump within the road reserve.	
Chevron placed on the right side of the speed hump within the road reserve.	

Table 34*:* Traffic Signs

Some roads in Ivory Park have many speed humps one after the other. This is indicative of traffic calming issues which may have been a problem in the past. Currently there are no visible signs of traffic/pedestrian accidents occurring on these roads, which mean that the traffic calming measures in place are sufficient. Most of the speed humps In Ivory Park are not painted, there are no warning signs and no chevrons placed on both sides of the road. The location of traffic calming measures within Ivory Park is shown in **Figure 54.**

- Community Needs Identified: **During the stakeholder participation no issues or problems relating to traffic calming in Ivory Park were raised.**

- **Projects Previously Identified:** Schools in Ebony Park need speed humps.

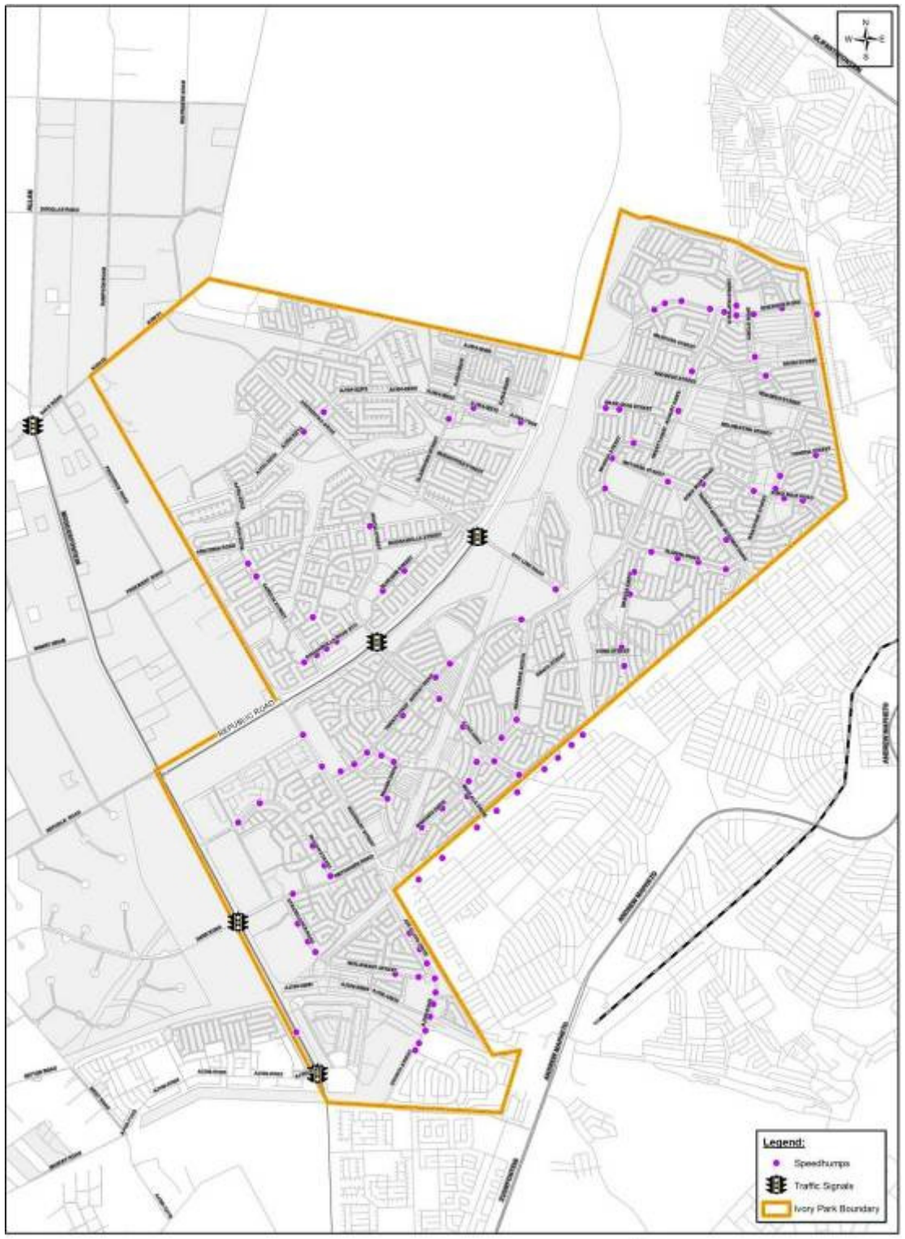


Figure 54*: Traffic Calming Measures in Ivory Park*

- *Access Management*

A comprehensive definition of access management is as follows:

> *"Access Management attempts to reduce and combine access points along major roadways while still encouraging complete circulation systems. The product is a street system that functions safer and more efficiently while creating a more attractive and pleasant transportation experience." – Managing Transportation and Infrastructure, Indiana, United States (12 January, 2006).*

From previous sections of this report it is evident that Ivory Park in its entirety only has one major regional distributor road (K111) and access to this road is highly limited. The restrictive conditions of the access to this roadway need to be maintained and limited. The other roads, Class 4 and 5 roads within Ivory Park have high accessibility along them and the limitation of accesses is not deemed necessary.

- *Road Operations*

During the site visit on the 5th and 6th of April 2011 numerous Johannesburg Metro Police (JMPD) officers were observed. Also the officers where conducting general inspections of vehicles and drivers with some speed enforcement also taking place.

As part of the public participation meeting, it was suggested that a JMPD station is constructed within the Ivory Park area; this would enable the JMPD to operate from within the area. This would serve to establish a stronger link between the metro police and residents of Ivory Park.

2.8 SERVICES

2.8.1 PUBLIC TRANSPORT

For the purpose of this Ivory Park UDF report, four (4) distinctive modes of public transport will be investigated. These modes of public transport will be deliberated on, based on their particular usage within Ivory Park study area. The four modes of public transport are:

- Mini Bus Taxi
- Buses
- Metro Rail
- 4+1 Taxi

- ***Trip Purpose Mode Split***

  To derive the importance of each public transport mode in the Ivory Park area, the National Household Travel Survey (NHTS 2002) data was used. The travel survey gives an indication of the main mode that commuters use to travel from home to their work or place of education on a daily basis. The significance of the main mode lies in the provision of infrastructure that support these choices.

  The main modes to education per survey-zone in the Ivory Park are shown in ***Table 34*** and the main modes to work in ***Table 35***. These splits were used to determine the dominant mode of public transport in the study area

Figure 55 shows the main modes which commuters in Ivory Park use to reach their place of education and work respectively, based on **Table 35** and **Table 36.**

Ward	Main Mode to Education
Ward 93	Walk
Ward 77, 78 and 79	Walk
Ward 80	Walk
West of Ward 93	Car

Table 35*: Main Modes per Ward to Education*

Ward	Main Mode to Work
Ward 93	Taxi
Ward 77, 78 and 79	Taxi
Ward 80	Taxi
West of Ward 93	Car

Table 36*: Main Modes per Ward to Work*

From the tables above, walking is the main mode of transport for people who are travelling to their place of education. It could be assumed that people younger than 18 years old are highly depended on NMT. People who travel to work make use of taxis, emphasising the provision of good public transport infrastructure in Ivory Park.

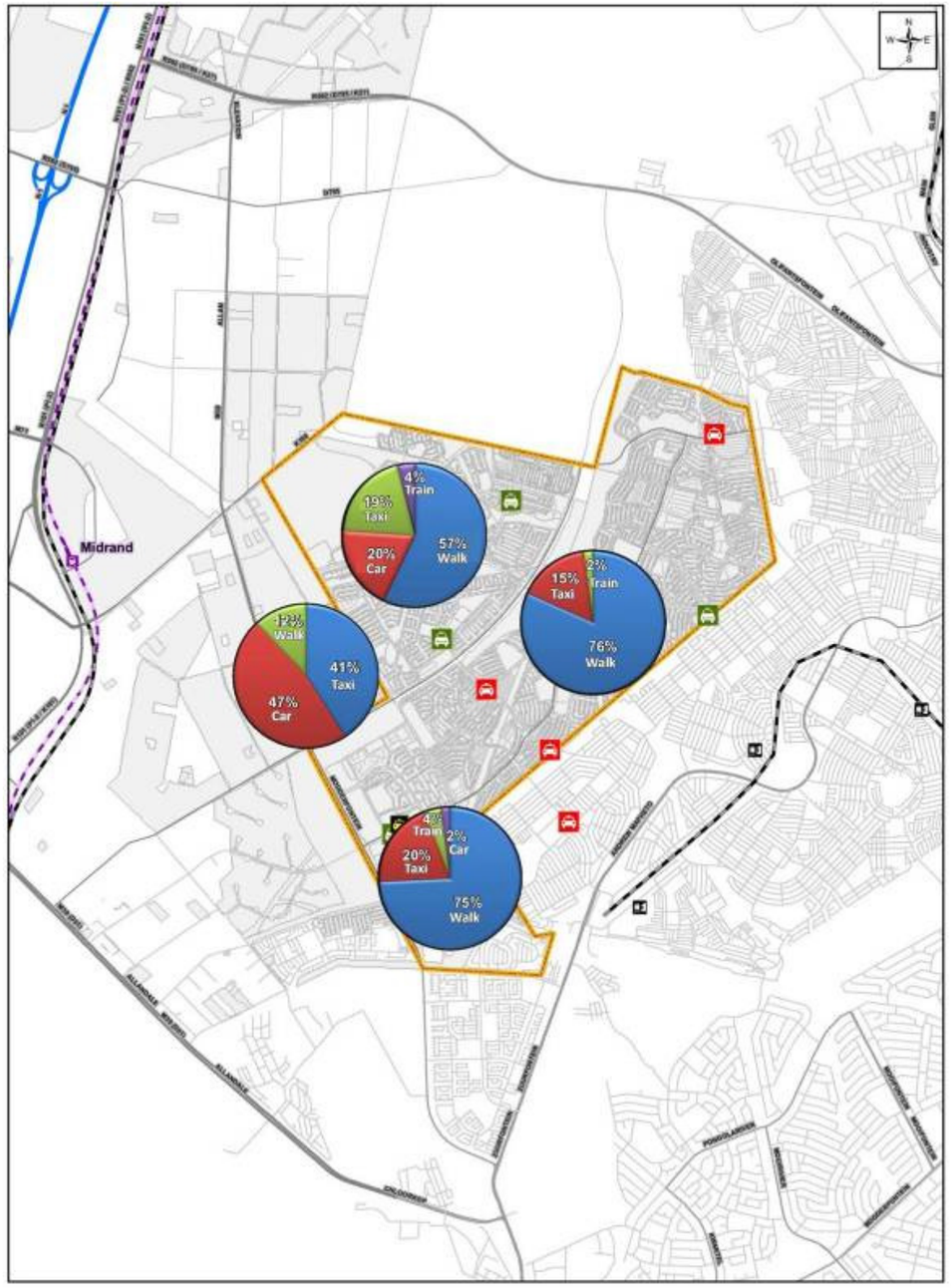


Figure 55*: Main Modes to Education in Ivory Park*

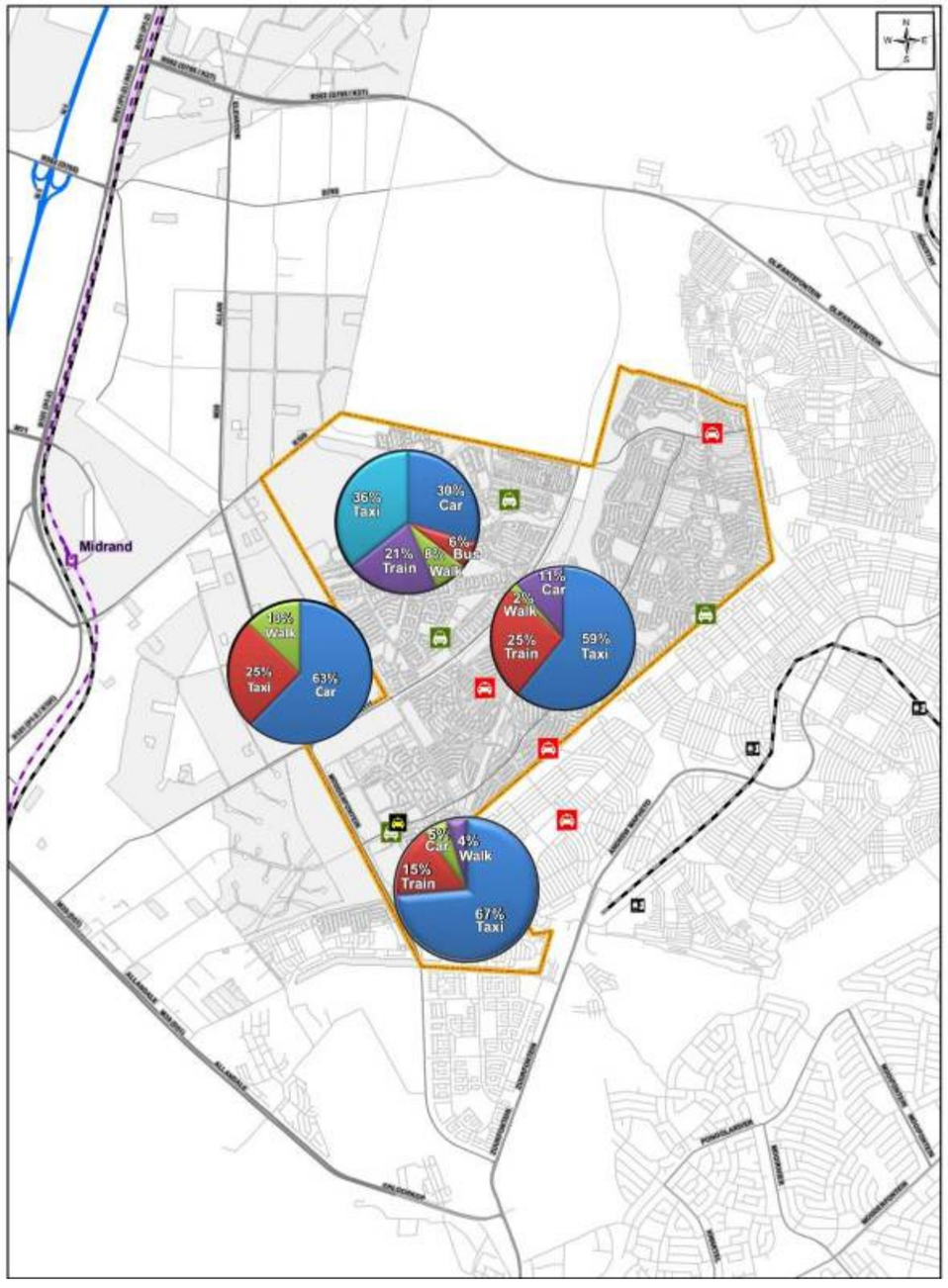


Figure 56*: Main Modes to Work in Ivory Park*

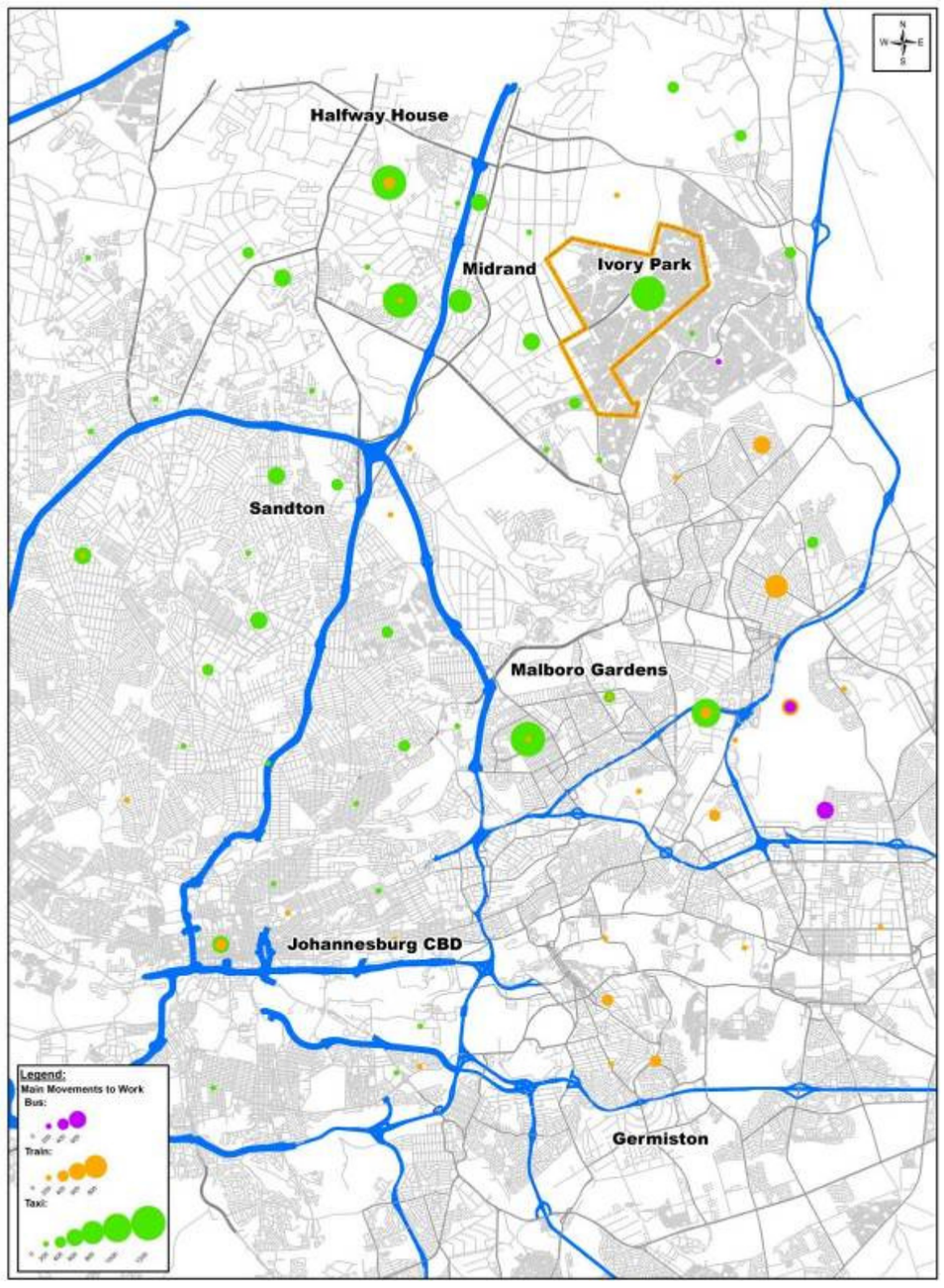


Figure 57*: Main Work Place Destination Zones*

The NHTS 2002 surveyed the destinations where people from Ivory Park travel to in the morning peak period. **Figure 57** shows the areas where people living in Ivory Park travel to, for work purposes. The modes used to travel to work are shown. Most of the residents travel to Midrand and Halfway House areas by taxi as well as the industrial areas close to Marlboro Gardens.

Mini Bus Taxi

The majority of public transport commuters travel by taxi from Ivory Park to their workplace. The most used mode of public transport is mini bus taxi, for the purpose of this UDF. The provision of ranks that provide the required facilities and capacity to accommodate these commuters are of importance. According to the NDoT requirements, the purpose of investigating public transport is to give an inventory of public transport operations and facilities, including their condition; this is the responsibility of the planning authority.

The objective is to be able to issue public transport contracts, design of infrastructure and public transport plans.

4+1 Passenger Taxi

Also referred to as 'local transport' the 4+1 taxis are normal private sedans that are used to transport people from their respective origins (home) to a nearby public transport facility. They operate in the areas normally scoring low points on the public transport accessibility index within Ivory Park. The 4+1 is unregulated and informal, therefore difficult to survey compared to mini bus taxis.

Metro Rail

Scheduled metro rail passes adjacent to Ivory Park with a significant number of people identified to be using this mode in the modal split. Metro rail is probably the most affordable mode used by Ivory Park's commuters and generates a number of external public transport trips as well; these trips will later be defined in the operational analysis of public transport in this report, if provided by the authority.

Buses

Currently no scheduled or subsidised bus transport services exist within Ivory Park. The only form of bus transport is scholar bus transport, airport and private bus shuttles. The current operators of this bus service are private and only used through bookings. As a result not a lot of busses will be dealt with in this UDF Report.

Gautrain

This service operates outside of the Ivory Park study area but might also be significant in terms of attracting people to use it for external trips especially the people residing within Ivory Park.

- *Locality of all Public Transport Facilities*

The location of the formal and informal public transport facilities in Ivory Park are depicted in **Figure 58.**

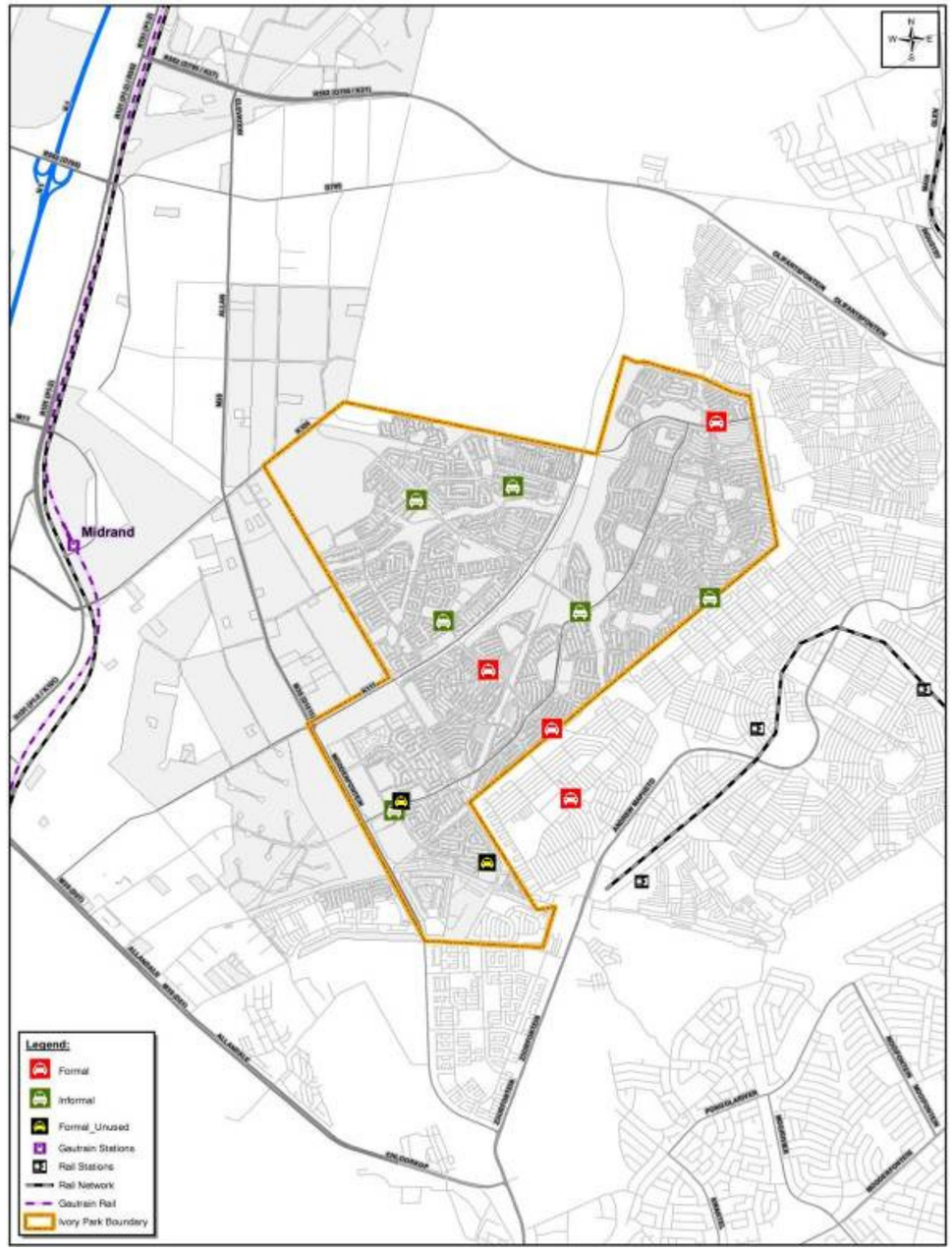


Figure 58*: Location of Public Transport Facilities within Ivory Park*

Figure 58 it is clear that some of the wards within Ivory Park do not have formal public transport infrastructure. The opportunity for commuters to gain access to public transport is limited in these

wards. It is recommended that laybys are provided along current taxi routes to improve public transport accessibility in the area.

- *Operational Analysis of Public Transport*

  Figure 59 below shows the public transport corridors identified within Ivory Park during the site visit in April 2011.

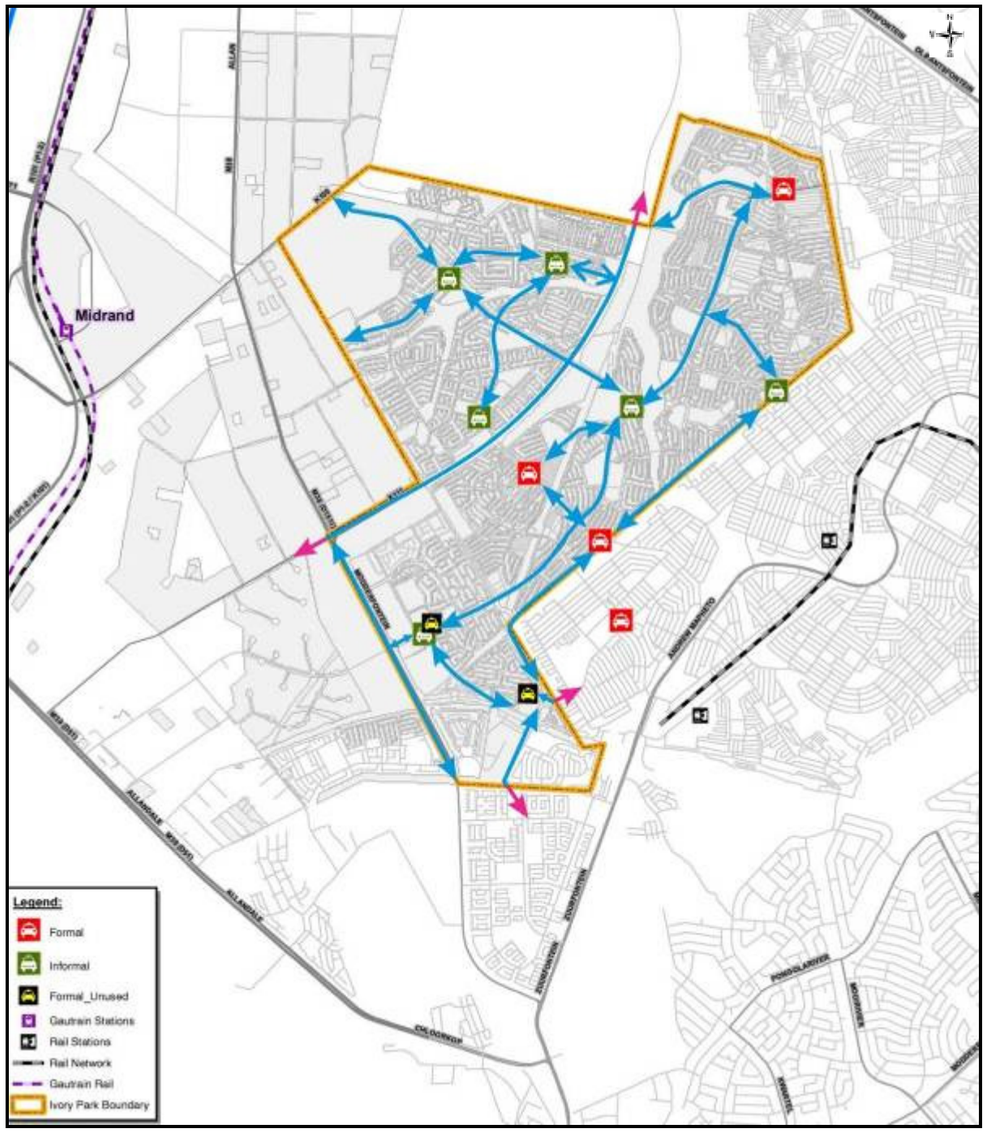


Figure 59*: Public Transport Routes within the Ivory Park Study Area*

The area is traversed by taxi routes and no specific area was identified where routes are required.

- Public Transport Infrastructure (Facility) Issues

  Public participation was carried out for the different wards within Ivory Park. Each ward was treated differently with the respective ward councilor supplying information to the project team purely concerning their ward. The information was analyzed and concerns raised are listed below:

- A pedestrian bridge is required to access the train station in AJ10-60750 Road.
- The possibility to introduce a scheduled bus service within Ivory Park area needs to be investigated.
- Informal trading facilities are required at the following areas:
  - Corner of twenty First August Drive and Mamobe Street (no 17 on map)
  - Swazi Inn (no 19 on map)
  - Corner Church Street and AK10585453 Street (no 20 on map)
- Most of the Mini Bus Taxi Facilities/Ranks lack the following amenities:
  - Proper Shelters
  - Proper Seating Infrastructure
  - Functional Toilets
  - Administration Offices
  - Adequate Information Signs
  - Proper Lighting
  - Adequate Fencing
  - Running Water
  - Vehicle Wash Bays
  - Safe Pedestrian Crossings at Conflict areas
- The following operational issues were raised as problems within the taxi industry by the councillors:
  - Punctuality
  - Reliability
  - Crime at taxi ranks

- Major Reliance on One Mode of Transport/ Institutional Organisation within Public Transport

  The Ivory Park area faces a big challenge in the development of public transport operations and infrastructure because of the reliance on one major mode, which is mini bus taxi. The institutional arrangements within the mini bus taxi industry are such that all ranking facilities are managed by taxi associations, currently operating in the area. This is a problem because all facilities should be managed by the owning authority, in the case of Ivory Park; it should be the City of Johannesburg (CoJ).

  The mini bus taxi industry is organized in such a way that all the associations, currently operating within Ivory Park area, are affiliated to the Gauteng Regional Taxi Council or

the Top Six Taxi Association. These two organizations have an executive committee that engages with the CoJ Public Transport Department on a monthly basis depending on issues that arise within the industry, this system however does not permit for immediate resolving of other matters involving the mini bus taxi industry because it takes a month or longer for them to sit and discuss it in a meeting.

- *Recommendations*

  It is recommended that the following informal facilities be upgraded as indicated in **Figure 60**.

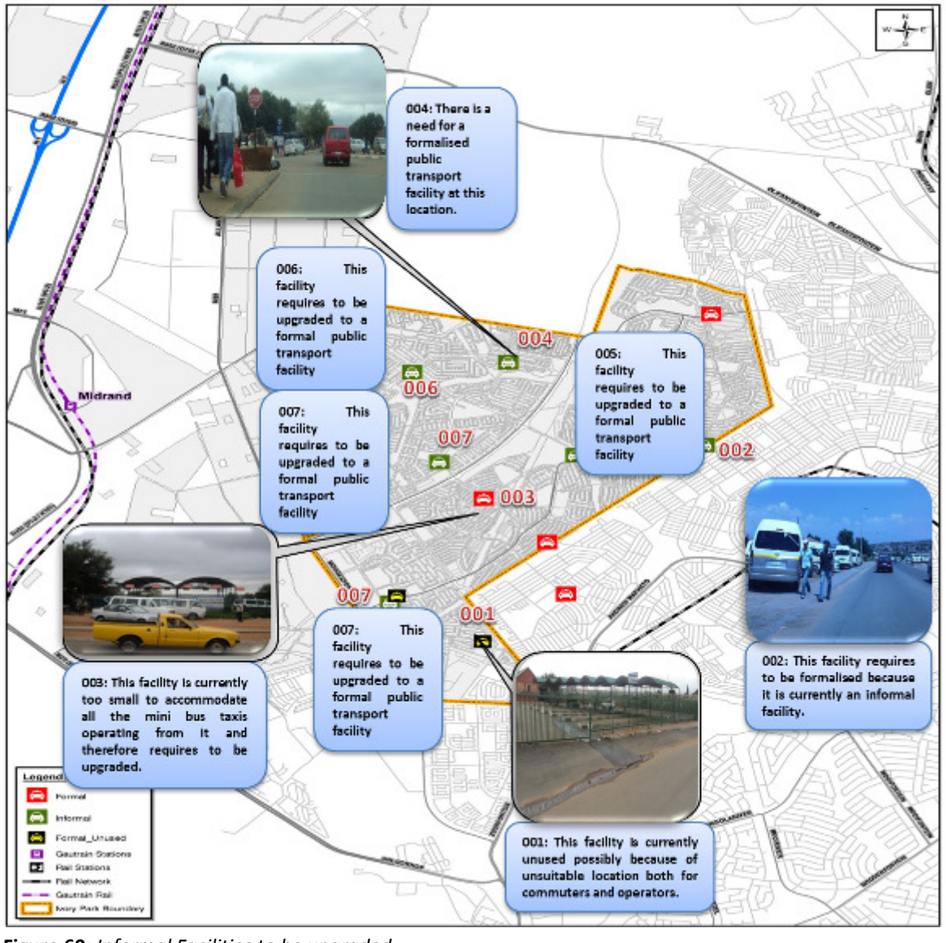


Figure 60*: Informal Facilities to be upgraded*

It is envisaged that once public transport infrastructure assessments have been conducted, a few of the existing formal facilities will require amenities to be installed. Some of the major routes will require further infrastructure where it is currently not provided.

- *Stakeholder Participation*

  At this stage of the project, the following has taken place as indicated in ***Table 37.***

No	Action	Response	Status	Date
1	Inform CoJ about proposed UDF Investigation	Positive - Taxi Industry to be notified	Complete	01-Apr-11
2	Present background information about UDF to taxi industry	Negative - RTC Should address associations	Complete	07-Apr-11
3	Ivory Park Taxi Associations briefing meeting	Negative - Meeting cancelled		13-Apr-11
4	Discussion with CoJ, Metro Police, RTC and Top Six	Positive - Information will be conveyed to Associations	Pending	15-Apr-11
5	Discussions on the nature of assessments to be conducted in Ivory Park	Still awaiting meeting date	Pending	N.A
6	Public Transport Facility Assessments + Operator needs assessment	Still awaiting meeting date	Pending	N.A
7	Sample surveys at major ranks	To date no surveys could commence due to permission required from taxi associations	Pending	
8	Analysis and generating of MAPS	To be confirmed by CoJ	Pending	

Table 37*: Project Progress*

2.8.2 NON-MOTORISED TRANSPORT

- *Importance of Non-motorised Transport*

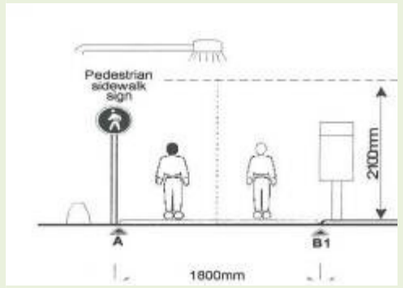
  National, Provincial and Local Government has prioritised non-motorised transport as a feasible and sustainable transport mode for the urban areas in South Africa. (City of Johannesburg's Framework for NMT, 2009). (Refer to **Figure 61**) for typical non-motorised infrastructure standards used, against which the current realities in Ivory Park were accessed.)

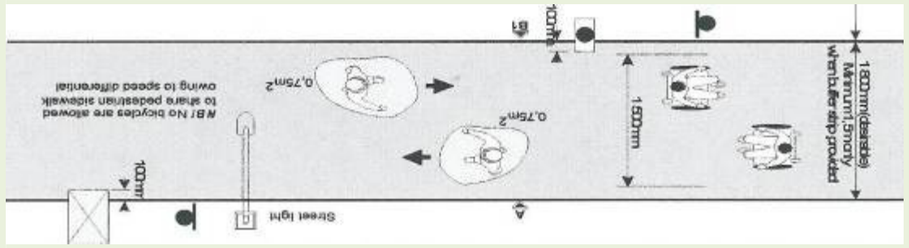
  It is imperative that the infrastructure provided for pedestrians is according to the minimum standards and provide an environment that these users can safely and conveniently travel in.

  Typical minimum standards are provided in **Figure 61.** These standards need to be justified to accommodate the specific needs of pedestrians in Ivory Park.

Pedestrian Orientated Streets

The minimum width of dedicated pedestrian walkways in these streets is 1,8m.





Mixed-Mode Streets

With walking on sidewalks, the width is a crucial dimension, since passing is possible only when there is enough width to pass easily. 3,5 m to 4,5 m.

Figure 61*: General Techniques for Evaluating Existing Conditions*

- **Site Visit**
  An extensive site visit was conducted on the 6th of April 2011. During the site visit the formal sidewalks along Class 3 and 4 roads were captured (Refer to **Figure 62**) and the NMT demand was identified, and is indicated in **Figure 63.**

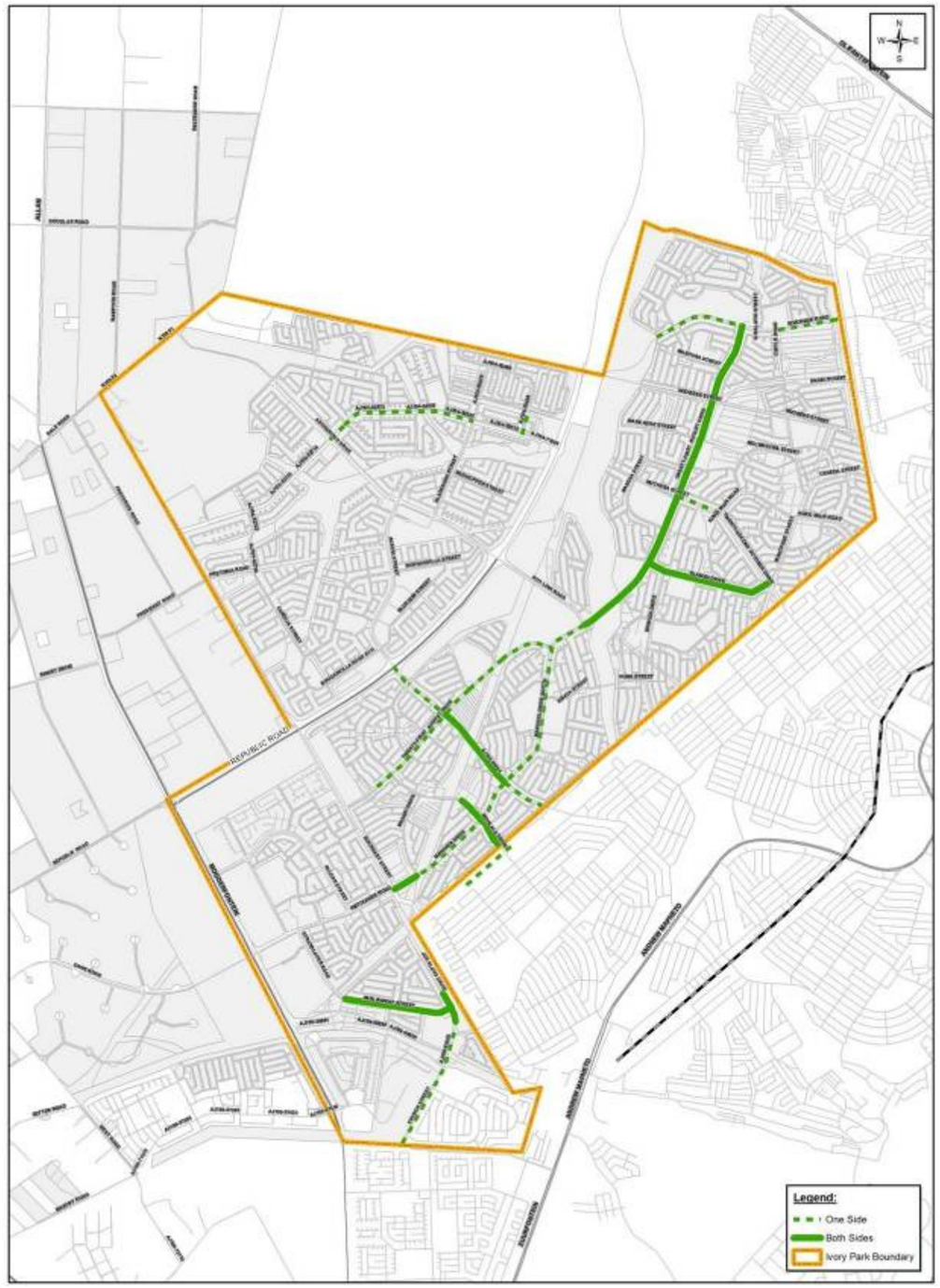


Figure 62*: Formal Sidewalks in Ivory Park*

The full extent of the formal sidewalk network within Ivory Park is lacking seen that surveys were conducted along Class 3 and 4 roads. From **Figure 63** it is seen that on some roads formal sidewalks are only provided on one side of the road, this is not desirable in an area which depend mainly on NMT, such as Ivory Park. When there is not enough dedicated space for NMT users, then conflict between NMT users and vehicles arise.

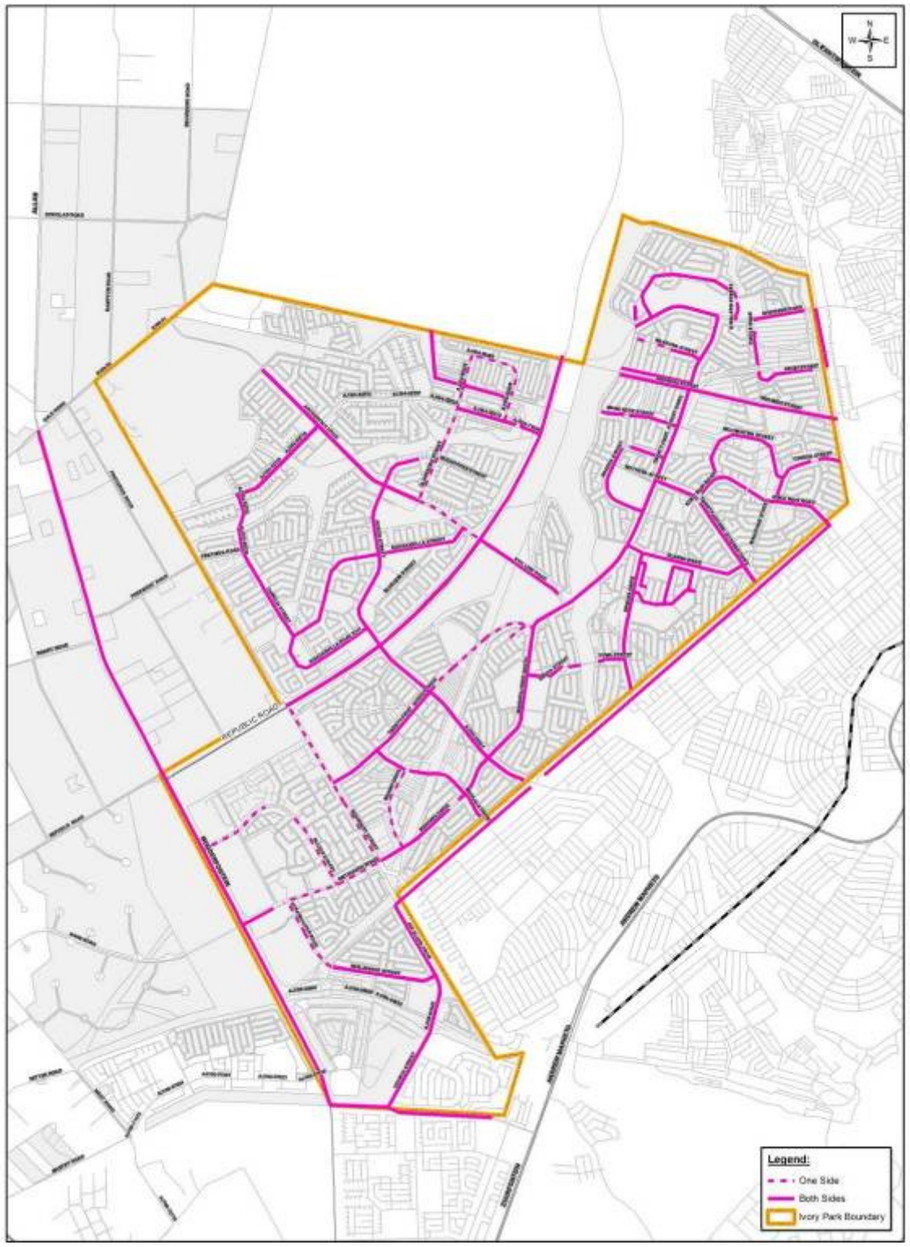


Figure 63*: NMT Demand in Ivory Park*

Figure 63 indicates the current NMT demand and it can be concluded that there is an extensive need for formal sidewalks in Ivory Park. The NMT demand in Ivory Park is on both sides of the roads and formal sidewalks are required on both sides along Class 4 roads. **Figure 63** indicates where sidewalks on both sides and along one-side are required.

- **NMT Modes Observed**

  In Ivory Park, NMT forms of transport are predominantly presented by walking. Wheelchair users, cyclists and animal drawn transport were also observed during the site visits (**Photo 1, 2, 3**). As a mode of transport, NMT is available to almost everyone, thus investing in good NMT infrastructure benefits the whole community.

Photo 1

Photo 2

Photo 3

- **Sidewalk Capacity**

  Figure 54 above is used to evaluate the capacity of the formal sidewalks provided in Ivory Park. From the general techniques for evaluating existing conditions, the following are observed:

  - **Photo 4** below shows four (4) people walking next to each other. The current width (1,2m) of the formal sidewalks in Ivory Park is not desired. People must walk on the dirt or in the road in order to pass another person; this creates conflict amongst pedestrians and vehicles. Sidewalks of at least 2m are required in high demand areas (refer to ***Figure 62.****)*

Photo 4

Photo 5

- **Sidewalk Quality**
  Generally the quality of the formal sidewalks provided in Ivory Park is of a high standard, as observed in ***Photo 4*** above. There are however, many obstacles that the pedestrians are faced with, within the preferred walkway, such as informal traders and rubble in Nkosi Street (***Photo 5***) near the Mpumelelo Clinic.

Informal tyre sales and vehicles parking on the sidewalk to gain access to these goods are present throughout Ivory Park (***Photo 6***). ***Photo 7*** and ***Photo 8*** show warning signs in the middle of the formal sidewalk on Riverside Road, pedestrians and other NMT users need to navigate around these, increasing the risk of accidents.

Photo 6

Photo 7

Photo 8

The provision of warning signs on the right-hand side of the sidewalks will provide a clear sidewalk without any obstacles. The majority of formal sidewalks have suitable street lighting, for instance in 21st August Drive. The placement of the street lights does not interfere with the users of the formal sidewalks, as they are placed well outside of the formal footpath space (***Photo 9***).

Photo 9

The formal sidewalks are generally not accessible to persons with disabilities for example in 21st August Drive. Where these users cross the road, the curb of the formal sidewalk is a barrier curb (***Photo 10***). Where there are mountable curbs, the danger exists of vehicles stopping halfway or completely on the formal sidewalk as observed in Riverside Road (***Photo 11*** and ***Photo 12***.)

Photo 10

Photo 11

Photo 12

Provision for NMT at public transport ranks and stops are inadequate. ***Photo 13*** indicates the lack of formal sidewalks at the formal taxi rank in Riverside Road. The absence of proper NMT provision at public transport ranks holds a safety risk for NMT users.

Photo 13

- Community Needs Identified

  A public participation meeting was held on the 29th of March 2011. The following issues and concerns were raised by the community members:
  - There is only one (1) link road (***Photo 14***) and one (1) footbridge (***Photo 15***) across the river to link Ward 93 to the eastern part of the town.

Photo 14

Photo 15

- Insufficient traffic lights on Koko Main Road in Ward 78 to regulate traffic flow and pedestrian crossings.
- Residents in Ward 79 work mainly in Isando, Kempton, Germiston, Midrand and the City of Johannesburg. Good access and linkages to these areas need to be provided in order to improve the accessibility of Ivory Park's residents**.**
- Street furniture / benches to be provided in Ward 78 at public transport laybys.

- **Projects Previously Identified**
  - In Ward 80, build bridge that links Joe Slovo to Freedom Drive and three (3) pedestrian bridges to shorten traveling distance between Kanana Extension 4 & Ivory Park Extension.
- **Johannesburg Non-motorized Strategy for Schools**
  - The proposal from this study is to provide dedicated cycle routes between three identified schools within Ivory Park area.
  - A NMT buffer zone of 2km for all schools within the area.
  - Cycling route linking the three (3) major schools in Ivory Park with the Midrand routes as indicated in **Figure 64**.
  - This route will extend into Midrand. A cycle path will be provided in the road reserve.

(Joburg's Framework for Non-motorised Transport, 2009)

Figure 64*: Ivory Park – Midrand Routes*

- **NMT Projects in Capital Investment Management System of Johannesburg (CIMS). Located within Ivory Park**
  - Pedestrian Bridge in Rabie Ridge (1)
    It's about a pedestrian bridge in Ward 80 located in the southern edge of Rabie Ridge Ext 5 across a trapezoidal stormwater canal that divides CoJ and Ekurhuleni municipalities; the request is to substitute an existing structure (less than 1m wide without handrails) to make it safer and avoid the loss of lives during rainy season.
  - Pedestrian Bridge in Rabie Ridge (2)
    It was requested to substitute existing structure located in the southern edge of Rabie Ridge Ext 5 across a trapezoidal stormwater canal that divides from Ekurhuleni for a well-designed one to make it safer and avoid the loss of lives during rainy season.
  - Pedestrian Bridge in Rabie Ridge (3)
    It was proposed across a wide watercourse further identified as Kaalspruit, outside of the City's boundary but with a high potential impact on the Rabie Ridge community which use this route to get access to transport at Andrews Mapheto Drive and Leralla Rail Station, as well as 2 major commercial facilities located along that road. This poses a threat to the people's lives mostly during rainy season and obviously at night.
  - Pedestrian Bridge in Rabie Ridge (4)
    There is a need to link Joe Slovo Drive in Rabie Ridge Ext 4 to Freedom Drive (also Rietduiker) in the limit between Rabie Ridge and Ivory Park Ext 2 across a wetland, to get access to transport at Freedom Drive and facilities located in that area; also vehicular if feasible.

- *Conclusion*

  The CoJ SDF (2009-2010) classifies Ivory Park as a marginalised community. It can be generalised that marginalised communities in South Africa depended largely on NMT as their main mode of transportation. It is thus crucial that the quality and quantity of NMT infrastructure in Ivory Park are in accordance with best practice standards.

- **Issues identified by the community and observed during the site visit are:**
  - It is recommended that a formal NMT study be conducted for Ivory Park in order to support the projects as identified by the community, site visit observation and CIMS.
  - Pedestrian crossings and bridges are implemented where there are weak linages from Ward 93 to the eastern side of Ivory Park.
  - Street furniture be accommodated on the formal sidewalks, this will enhance the aesthetical environment of Ivory Park.
  - NMT priority streets be developed which link priority areas to the residential areas.

Figure 65 shows the main issues raised by the community and observed during the site visit, where the lack of pedestrian bridges over the river, the poor linkage of ward 93 to the eastern parts of Ivory Park and the formal sidewalk demand in Ivory Park on all the major roads.

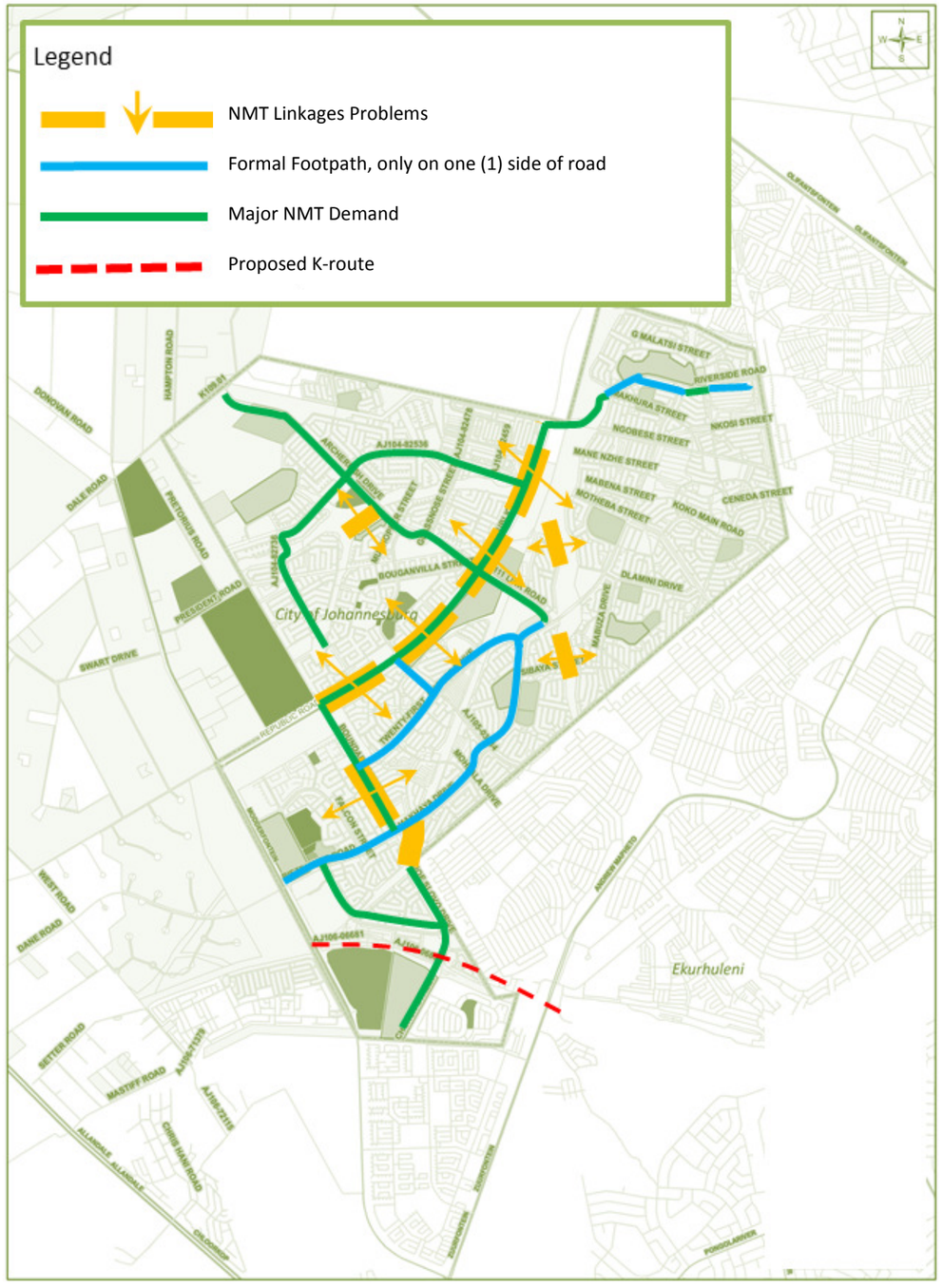


Figure 65: *Issues Map*

2.9 STUDY AREA SUMMARY

	CURRENT CAPACITY	SHORTFALLS / GAPS
Water	Reservoirs at full capacity.	Low pressure during peak demand period. Inadequate pipe sizes or possible operation issues.
Stormwater	Rabie Ridge ext. 1 is best serviced and has a drainage backbone system. Similar drainage backbone systems could be found in Ivory Park ext. 2, 5, 6 and 7. Remainder of Ivory Park consists of local systems draining into or along paved roads. Pipe diameters within the study area range from 450 mm to 1500mm.	Lack of stormwater drainage infrastructure Poses a safety issue. No facilities for attenuation were visible within Ivory Park. Stormwater master planning and implementation.
Sanitation	Ivory Park area is serviced by five sewer collectors, but at critical points in the system there is insufficient capacity. Various sections of the Ivory Park South link sewer have low or insufficient spare capacity. Sewer along Spreeu Street in Rabie Ridge has insufficient capacity; Sewer in Kaalspruit sub-basin have insufficient capacity; Daily blockages throughout Ivory Park The majority of internal pipes have spare capacity	There are a number of areas where blockages are experienced. Critical areas of insufficient capacity should be addressed as these could be contributing factors into the blockages.
Electricity	Current loading of the substation is above 20 MVA, which is below the maximum capacity of 40 MVA. Allandale Substation is being upgraded to cater for future developments. The 11 kV distribution panels are also overloaded.	Power provision is limited to 20MVA. Distribution panels are overloaded. Greater number of feeder zones is required.
Transport Regional connectivity	Distributor road: • Republic Road (K111), • Modderfontein Road, • Freedom Drive (local distributor), • 29th September Road. These roads links Ivory park with greater Johannesburg.	No regional road is provided to the north of Ivory Park and the extension of K111 to link with the K60 is required. **Upgrading** of **Freedom Drive** and **29th September Drive** to **Class 3** geometric design standard sin sections not yet constructed to the Class standard.
Transport Planned routes	Planned routes in the area include: • K58 and K60 to the south • K56 (Modderfontein Road) • Extension of K111 (Republic Road) to the west PWV 5 to the north of Ivory Park.	The extension of the K111 to the K60 and the K60 between Ivory park and the K71 are the highest priority regional roads for the area.
Transport Accessibility roads	Current accessibility roads: • Archerfish's Road, • Riverside Road, • Acacia Drive, Twenty Second October Drive.	A few Class 5 roads were identified that needs to b ere-classified to Class 4 roads reason be that these roads operate as local collector and distribution roads.
Transport Existing roads (paved)	General maintenance of paved roads within Ivory Park is required.	9 maintenance projects were identified were potholes needs to be repaired urgently. These roads are: Riverside Road
Transport Existing roads (unpaved)	A majority of roads within Ivory Park is unpaved.	It is estimated that to surface all gravel roads will cost in the order of R 222 900 000.00
Transport Access management	Only K-routes are currently governed with access spacing regulation.	It is recommended that an access management plan is developed for the Class 3 roads in Ivory Park to improve the mobility along the roads.
Transport Public transport	Certain wards do not have formal public transport infrastructure People travel mostly by taxi within the region No direct link to rail, taxi or bus is used to gain access to rail infrastructure in Tembisa. Lay-bys along Class 3 roads with proper shelters and benches are required at strategic positions along the roads. Current taxi rank lay-outs promote conflict between modes, and pose safety hazard for pedestrians.	Scheduled bus service within area is required Lay-bys along Class 3 roads to provide proper loading and of loading for local operators and passengers. Re-design taxi ranks to allow for minimum conflict between modes and improve traffic circulation.
Transport NMT	NMT movement occur mainly along major roads, Provided sidewalks is of high quality but the capacity provided (width) is inadequate for the current pedestrian demand, Inadequate provision for NMT at public transport ranks and stops	Sidewalks only provided along one side of street There are many obstacles on sidewalks Sidewalks should be at least 2 m wide Sidewalks not accessible to disabled people
Environment	Green open space is found within the study. Perennial and non-perennial rivers traverse the site. Historic locations for red data species are located towards the northern border of the study area. This area also contains primary vegetation which increases the conservation value.	Conservation of green/open areas in Ivory Park Cleaning up of public areas such as streets Lack of stormwater infrastructure

CHAPTER 3: CONTEXTUALISATION OF THE URBAN DEVELOPMENT FRAMEWORK

3.1 INTRODUCTION

The spatial conceptualisation for the urban development framework utilizes the information collected in the situational analysis with particular focus on the identified nodes within the study area. Specific nodes have been identified in collaboration with the City of Johannesburg Metropolitan Municipality as well as other role players. These nodes were specifically chosen based on the current as well as expected future impact that the said nodes will have on the wider community. Whilst the demarcation of these nodes will not remain stagnant over time this document should be considered as the first step in identifying catalytic areas within Ivory Park which, when developed, should ensure the highest level of impact on current social wellbeing of the community. Lastly, it was necessary to identify (and quantify) specific development initiatives in order to ensure a holistic alignment with the provision of civil engineering services and transport facilities within the study area.

3.2 ISSUES AND CONSTRAINTS

The conclusion of the situational analysis identifies critical aspects. These aspects informed by the development vision for the Ivory Park study area will be captured into a spatial conceptualisation of the Urban Development Framework (this chapter). These aspects refer primarily to the level of consolidation of the study area and its role and function within the region as well as the following:

- Ivory Park is an isolated area, far from the main economic centres of activity of the Johannesburg Metropolitan area.
- There is little commercial activity in the area and hence there are very few local work opportunities for residents. The commercial sector is primarily informally driven. The majority of employed members of the community work in Germiston, Kempton Park and Isando.
- Ivory Park has been largely formalised and needs to be regarded as an established area.
- The planned developments within the Swazi Inn and Bambanani Industrial Nodes will take time to materialise. However, when developed will complement and contribute to energising and reinforcing the entire study area.
- In terms of urban management, Ivory Park deserves a change of mind set on the part of the city; it needs to be accepted as a developing formal area and managed accordingly.

3.3 CONTEXTUAL CONSIDERATION

In addition to the specific issues highlighted in Chapter 2 it is important to promote the integration of Ivory Park with the surrounding areas and improve its long-term sustainability by engaging both the private and public sectors in provide opportunities for local economic development, job creation and capacity building. The Spatial conceptualisation of the Urban Development Framework will take into consideration general planning principles promoted in the RSDF and other forums including:

- Poverty alleviation and the satisfaction of basic needs
- Focus on special needs groups – HIV/AIDS affected people, children, the aged and people with disabilities
- The environment – physical, social and economic
- Participation and democratic processes
- Local economic development
- Accessibility – public transport and pedestrian focus
- Mixed-use development
- Corridor development
- Safety and security
- Variation and flexibility
- Densification
- Reduction or urban sprawl

The proposal and guidelines also look at the functional elements that can improve the liveability, sustainability and general performance of the settlement and create a more diverse and rich environment, as illustrated in ***Figure 66.*** These elements are: housing, workplaces, services distribution, community facilities and integration, public transport, character and identity.

Due to the configuration of Ivory Park and the location of existing facilities, people have to walk longer distances that desirable or acceptable in terms of town planning standards to access them. When properly integrated and formalised over time the design (and layout) of Ivory Park must allow for even distribution of facilities serving the local community. Unfortunately these are not all developed yet to satisfactory standards. The challenge remains to identify specific areas where mixed uses should be concentrated and where more dense residential development, including variety in tenure options are provided, supported by facilities at acceptable waling distances, as indicated in **Figure 66** to promote the development of a more sustainable and supportive environment.

Figure 66: *Conceptual Integrated Development Model*

3.4 VISION, APPROACH AND OBJECTIVES

3.4.1 THE VISION

Given the characteristics and history of the area, the vision of the Spatial Conceptualisation of the Urban Development Framework is to:

Develop Ivory Park into a sustainable human settlement comprising of a well-balanced and well developed mixture of uses and social infrastructure which are sensitive towards its environment, creating a vibrant community with a unique character and identity.

The idea is to work with the existing and look for ways of developing a strong local identity embracing and reflecting the culture and values of the local community.

Key Aspects	Interventions	Outcome to achieve vision
Places for people	• Enhance the quality of the public realm • Making better places	Create an environment where everyone can access and benefit from the full range of opportunities available to all members of society.
		
Enrich the existing	• Establish a unique character (brand) • Build beautifully • Visually attractive designs	Be integrated into the existing urban form and the natural and built environments,.
		
Make connections	• Facilitate the ease of movement • Allow for logical and legible movement patterns • Design for permeability	Address the connections between people and places by considering the needs of people to access jobs and key services.
		
Work with landscape	• Design using natural harmonics • Be sensitive to natural systems • Discard dumping and mismanagement of natural systems • Integrate natural systems into the design	Consider the direct and indirect impacts on the natural environment.
		

Key Aspects	Interventions	Outcome to achieve vision
Mix of uses & form	• Create diverse mixture of uses and form • Stimulate social interaction • Design for variety which is sensitive to appropriate macro, meso and micro economics	Address the connections between people and places by considering the needs of people to access jobs and key services.
		
Socio-economic flexibility	• Make provision within design for adaptability • Ensure that enough scope exist for personalization	Create an environment where everyone can access and benefit from the fill range of opportunities available to all members of society
		
Transit Orientated Development	• Public transport precincts should become destinations in their own right • Public transport precincts should move towards representing trends observed in world class cities	Create an environment that is conducive to establishing a culture of attractive, viable transport choices that is supported by public transport and suitable non-motorised transport infrastructure.
		
Sustainable Service Delivery	• Provide acceptable level of basic service delivery to all members of society • Service delivery to meet national and international best practices • Existing services to be maintained and upgraded where necessary	Create an environment where all members of society has access to basic services in support of harmonious living conditions, general safety and where the community's health is not jeopardised due to lack of service delivery and where such delivery will enhance economic activity.
		

3.4.2 DEVELOPMENT APPROACH

The approach is to consolidate the existing fabric and improve its legibility and sense of place by promoting the establishment development nodes in strategic areas which is considered to be critical to the success of achieving the outcomes of the vision developed for Ivory Park. Each node will provide opportunities to accommodate a range of uses and activities strategically located, accessible by foot and public transport, well balanced to support the existing spatial form and infrastructure.

3.4.3 DEVELOPMENT OBJECTIVES

The development objectives guiding the formulation of the Spatial Conceptualisation of the Urban Development Framework cover three critical aspects:

Socio-economic

- Reinforce local economic activities and create opportunities for the establishment of local business;
- Provide social facilities to support the residential uses.

Physical

- Develop a strong, legible urban structure with good connectivity;
- Improve linkages with surrounding areas;
- Extend public transport facilities to improve accessibility;
- Provide a quality public environment to support the residential uses; and
- Encourage development of new housing stock offering a range of tenure options in close proximity to public transport facilities.

Environmental

Protect and take advantage of the unique natural features within the study area.

3.4.4 STRATEGIC INTERVENTIONS

To achieve the vision and objectives, the following strategic interventions are proposed:

Key Aspects	Interventions
Places for people	•Enhance the quality of the public realm •Making better places
Enrich the existing	•Establish a unique character (brand) •Build beautifully •Visually attractive designs
Make connections	•Facilitate the ease of movement •Allow for logical and legible movement patterns •Design for permeability
Work with landscape	•Design using natural harmonics •Be sensitive to natural systems •Discard dumping and mismanagement of natural systems •Integrate natural systems into the design
Mix of uses & form	•Create diverse mixture of uses and form •Stimulate social interaction •Design for variety which is sensitive to appropriate macro, meso and micro economics
Socio-economic flexibility	•Make provision within design for adaptability •Ensure that enough scope exist for personalization
Transit Orientated Development	•Public transport precincts should become destinations in their own right •Public transport precincts should move towards representing trends observed in world class cities
Sustainable Service Delivery	•Provide acceptable level of basic service delivery to all members of society •Service delivery to meet national and international best practices •Existing services to be maintained and upgraded where necessary

Table 38: Strategic Interventions

3.5 DEVELOPMENT CONCEPT

The development concept, as illustrated in **Figure 67,** is to reinforce existing economic activities and consolidate the residential neighbourhoods, to allow for the incremental intensification and diversification of land uses, including increased residential densities located in close proximity to main transportation, educational and social facilities.

The RSDF promotes the establishment of identifiable activity areas. These activity areas or nodes are organised hierarchically in relation to others in the region.

The concept propose the consolidation of the emerging nodes, some which are developing incrementally but still not realising their full potential and other that could be promoted to activate areas that have no facilities at the moment.

The concept is reinforced with the introduction of various nodes spread evenly throughout the study area. The intended identification of nodes in all of the current wards will serve a very important purpose towards the envisaged micro economics of each of the said wards. The existing nodes of Swazi-Inn and Bambanani were not altered and should be read with this document since it will form part of the final chapter and business plan.

The Ivory Park area already has a number of social facilities including health service, a police station, education institutions and other community facilities which is well distributed throughout the area. The proposed nodes will mainly be anchored primarily around existing formal and informal commercial activities and civic amenities which need to be reinforced.

The proposed structure consists of a hierarchy of nodes connected by mobility and activity corridors established along main connecting and access roads.

The categorisation of nodes only provides for neighbourhood nodes since these nodes are very weak and will have to be allowed time and investment to develop naturally. The distribution of nodes promotes the integration of the area with the surrounding existing and proposed developments, and improving the relationship between existing neighbourhoods.

In planning terms the intention is twofold:

- To define the spatial form of the settlement to enable a more focussed allocation of resources and improve urban management; and
- To cluster activities that can enlist the participation and contributions of different tiers of government and seek the cooperation and support of community-based structures and private sector investment.

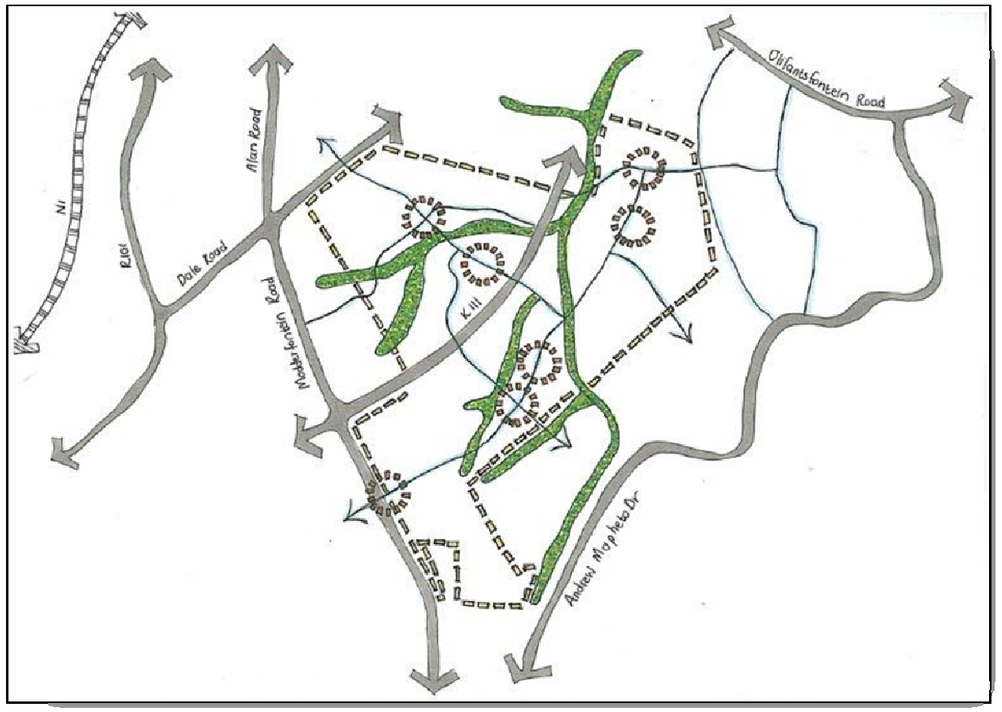


Figure 67: *Concept Plan*

3.6 SPATIAL CONCEPTUALISATION OF THE URBAN DEVELOPMENT FRAMEWORK

The spatial conceptualisation of the Urban Development Framework (UDF) comprises a series of plans capturing the essential aspects to be considered and also unpacks the key structuring elements identified to guide development over the next five year period. It has been devised as a tool to coordinate public sector investment and inform the business plan and identification of projects. It can also be used to further future consultative processes, build short and medium term alliances between council departments and provide a platform for collaboration between the private and public sectors.

The nodal planning can also facilitate on-going review and performance assessment of these nodes and build knowledge and a database to inform future planning and interventions. The proposed vision also aims at supporting and attracting the direct participation of other government departments, local businesses and potential corporate investment.

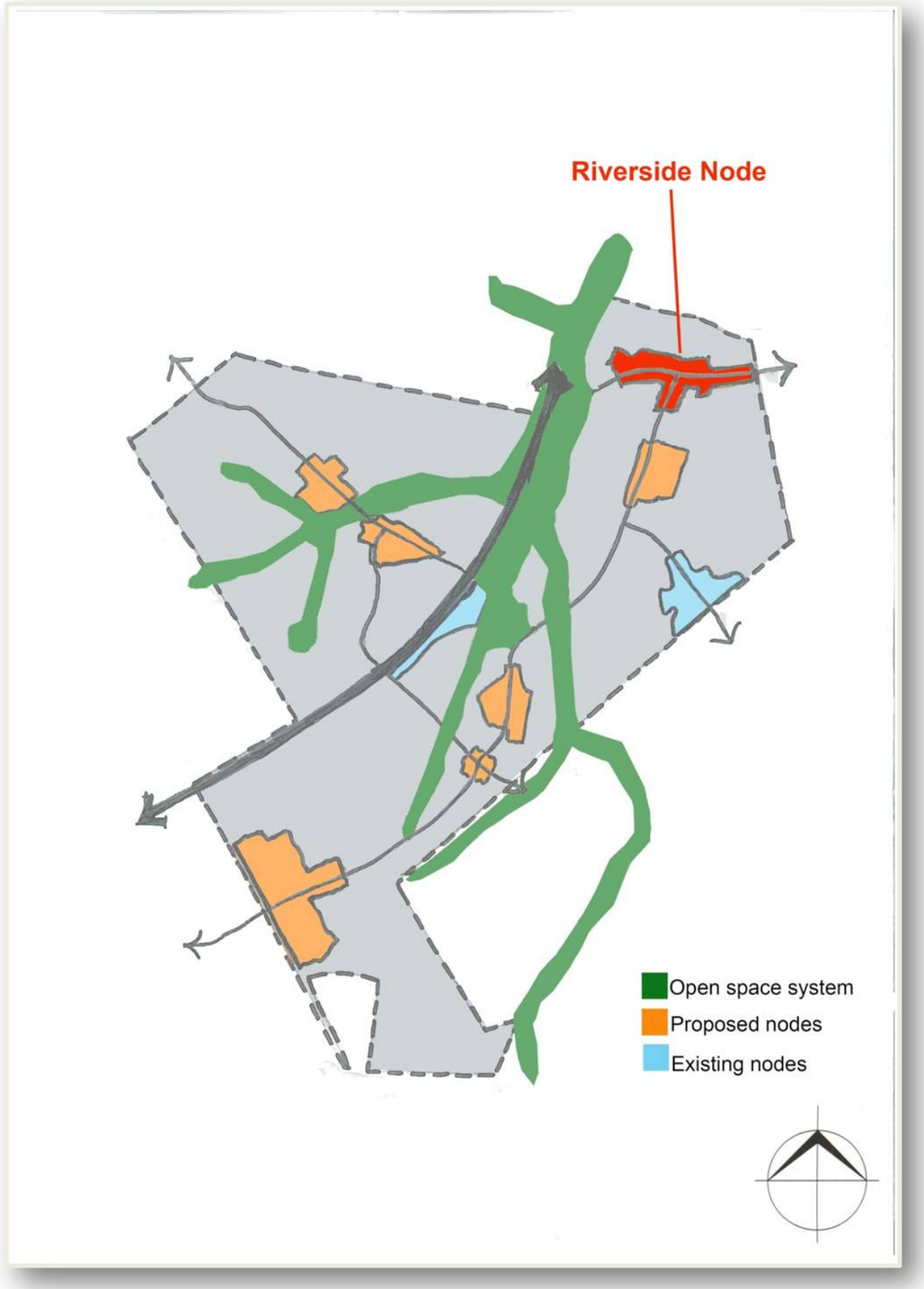
The overall structuring elements of the UDF are indicated in ***Figure 68.***

Figure 68: *Structuring Elements*

3.7 URBAN DEVELOPMENT FRAMEWORK

Urban Development Framework

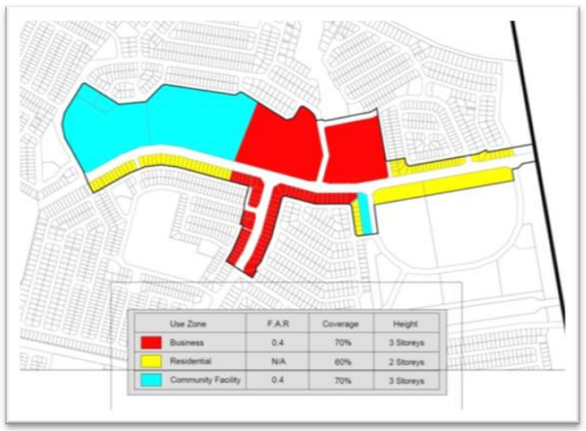
Riverside Node



Riverside Node

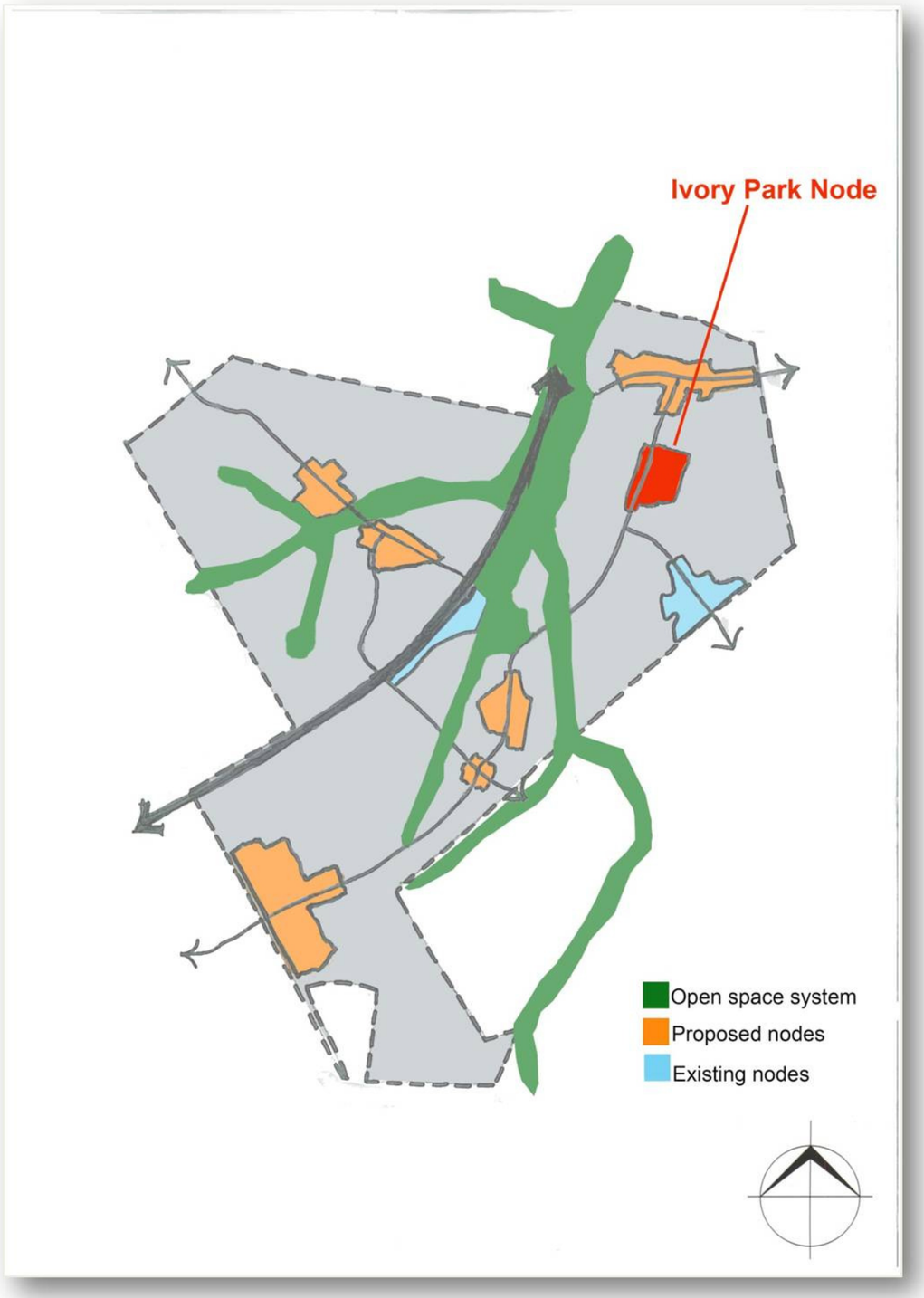
Key Aspects	Evaluation of node
Places for people	Although formal business opportunity exist towards the north of the precinct the wider area is dominated by informal trade - normally from dwellings abutting main roads.
Enrich the existing	No real sense of place. Main entrance to Ivory Park from the north, however does not create a presence of character or unique identity that support the notion of "we've arrived".
Make connections	Main movement pattern along main roads. Unfriendly movement pattern, especially towards pedestrian movement. There are no connection between street, people and places.
Work with landscape	Current landscape built up. No natural systems within this node. Dumping occurs ad hoc and on vacant sites.
Mix of uses & form	Variety and mixture of uses and city form. The north is dominated by shopping centre and sports facilities whilst moving southward a typical residential character is observed.
Socio-economic flexibility	Informal trade along main routes dominates economic basis of this area. Stands are very small and vacant land scares.
Transit Orientated Development	Informal taxi ranks exist and pedestrian movement along main roads are poorly developed.
Sustainable Service Delivery	The area seems to be well serviced, however maintenance seems to be a problem.



Project	Intervention	Discussion
1	Extend the existing shopping centre to allow for additional bulk as well as opening up of the centre to a more balanced footprint on either side of the intersection.	Vacant land to the west of the existing shopping centre could be utilised in facilitating the extension.
2	Allow for current residential dwellings to be extended and developed as more formal home undertakings which would create a more vibrant street scene.	Ensure that building lines are respected in order to allow for free movement of pedestrians on the sidewalk.
3	Allow for the development of office uses, either private or public which flanks the shopping centre and support the retail use within this prominent location.	Follow holistic design approach in ensuring that all attributes and existing components of the landscape is accommodated into the urban form.
4	Provide for better integration of the existing school and sport facilities with the wider area. Ensure that road design and safety take account of pedestrian movement along this road.	Developing the social / civic uses to its full capacity will strengthen the current urban form and create focal points within the street scene.
5	Create identity at this point – sense of place and arrival within Ivory Park. Develop branding strategy to assist in urban regeneration.	Public art and landscaping can be successfully used in order to achieve a desired end result. It will be critical to involve the community in this exercise.

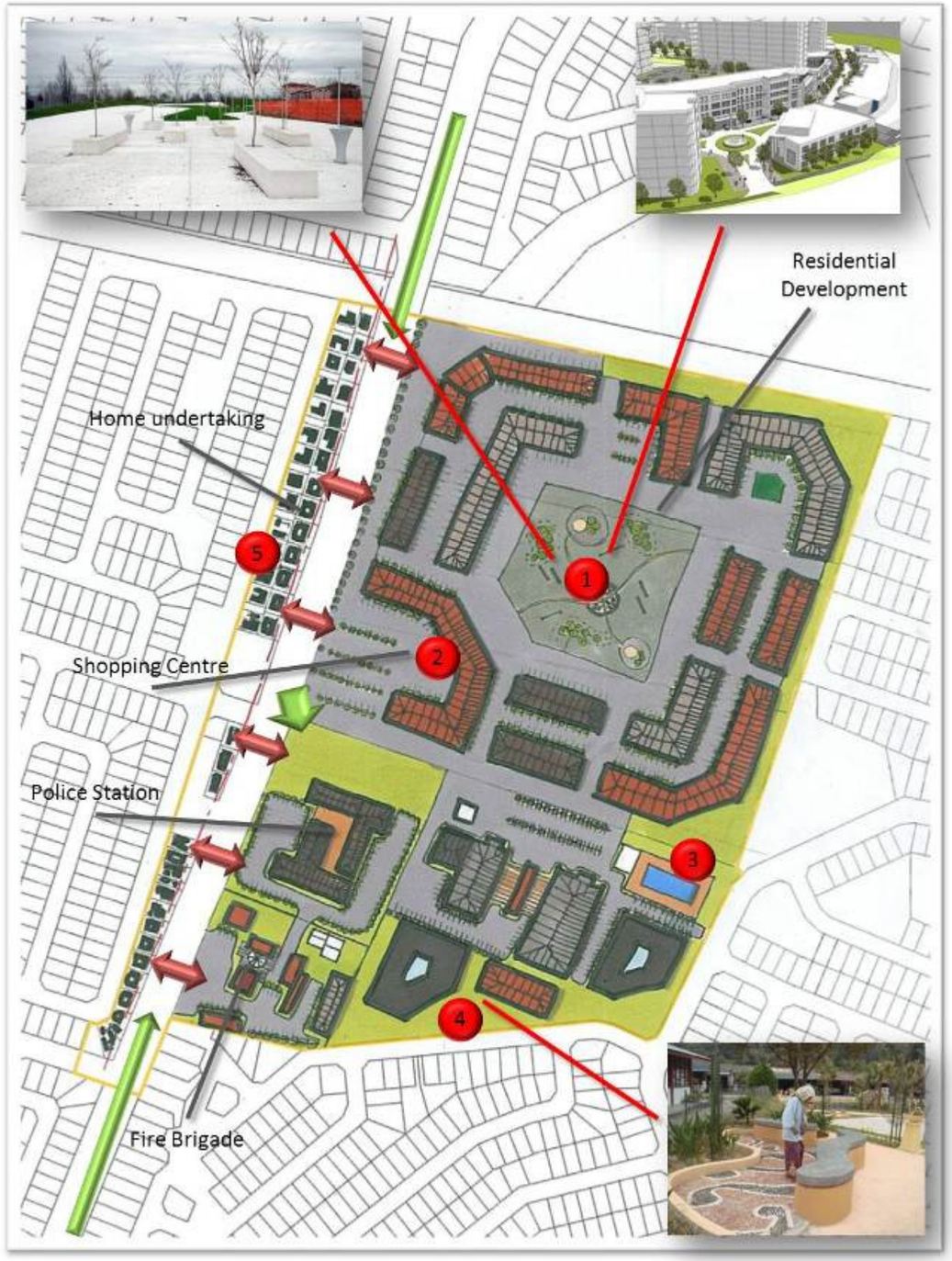
Ivory Park Node

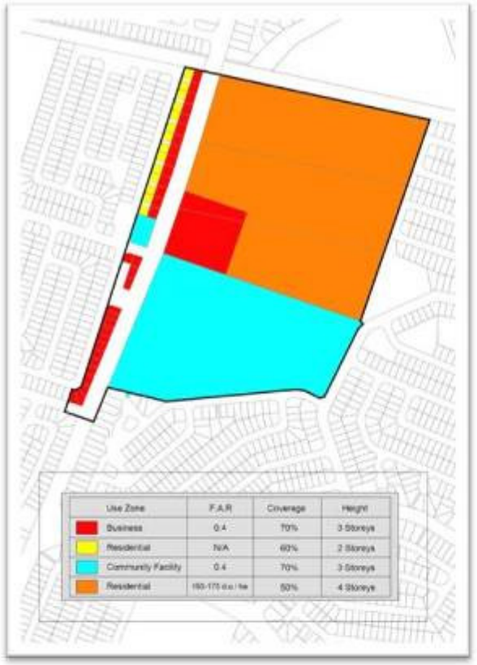


Ivory Park Node

Key Aspects	Evaluation of node
Places for people	Although formal business opportunity exist along main roads the wider area is dominated by informal trade - normally from dwellings abutting main roads.
Enrich the existing	No real sense of place. Police station is a very prominent location and could be further developed as landmark of this node.
Make connections	Main movement pattern along main roads. Unfriendly movement pattern, especially towards pedestrian movement. There are no connection between street, people and places.
Work with landscape	Current landscape built up. No natural systems within this node. Dumping occurs ad hoc and on vacant sites. To the north of the community hall lies a large township area which has not been formalised.
Mix of uses & form	Variety and mixture of uses and city form. Mainly social facilities within this node which could become hub of service delivery. Very lively street scene and feel within this area.
Socio-economic flexibility	Informal trade along main routes dominates economic basis of this area. Stands are very small and vacant land scares.
Transit Orientated Development	Informal taxi ranks exist and pedestrian movement along main roads are poorly developed.
Sustainable Service Delivery	The area seems to be well serviced, however maintenance seems to be a problem.



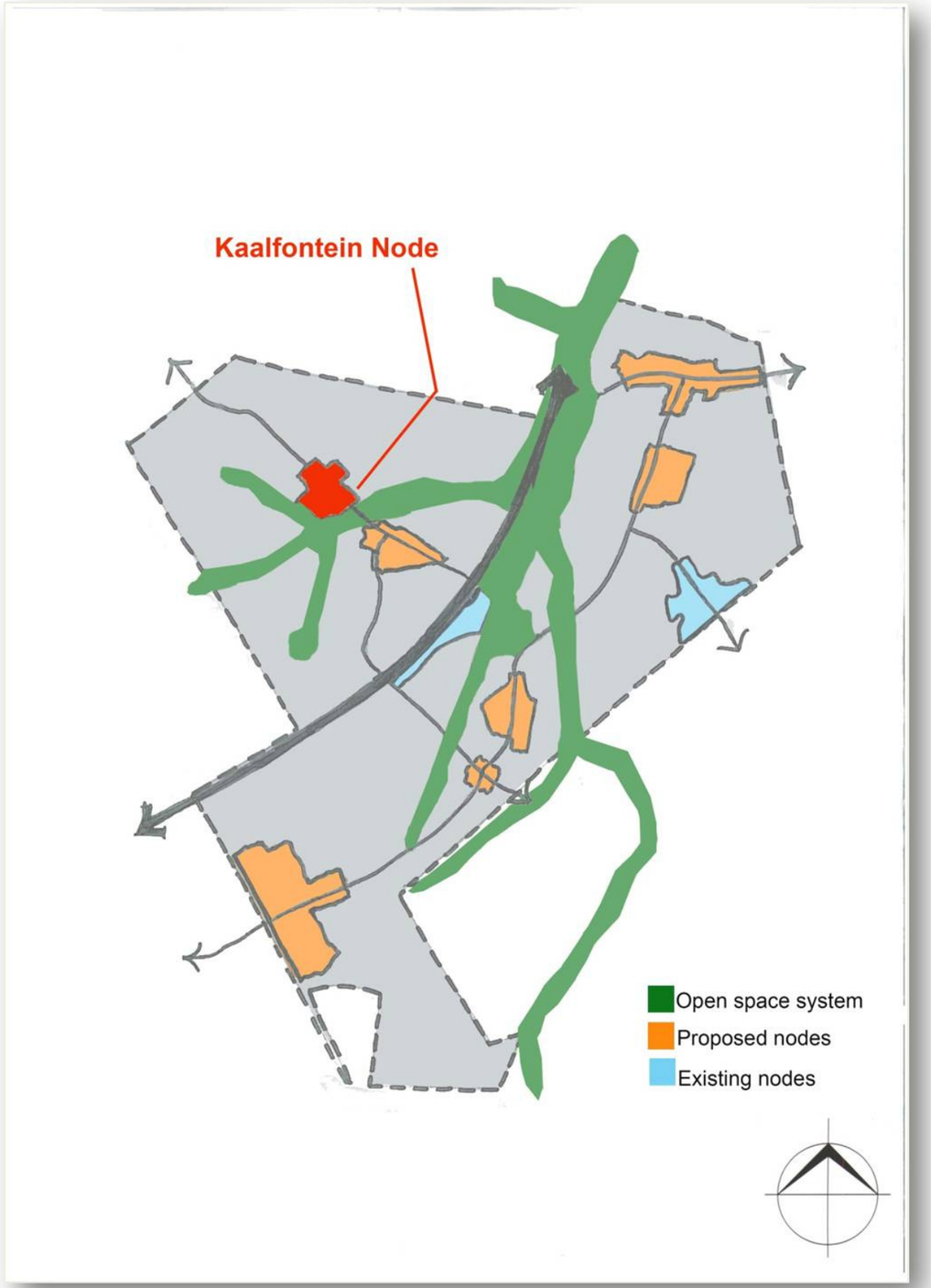





Ivory Park Node

Project	Intervention	Discussion
1	Development of a new high density residential development with a variety and mix of tenure would strengthen the development of the node towards the north.	Higher density residential development will create additional feet and ultimately spending power within this node as well as sustain the vibrant nature of the street scene after hours.
2	Development of a new shopping centre to allow for the provision of formal retail facility within this area which would support the existing social / civic infrastructure.	The development of a shopping centre in this location would allow for the creation of a vibrant street scene whilst creating job opportunities as well as balancing the urban uses and form within this node.
3	Extend the existing children play facility located adjacent to the community hall. Also introduce the development of a swimming pool.	The existing community hall and open area provides for vibrant social interaction by the community.
4	Use the vacant land to the back of the existing community centre for office and other related social uses.	The development of a youth centre can be considered within this area.
5	Allow for current residential dwellings to be extended and developed as more formal home undertakings which would create a more vibrant street scene.	Ensure that building lines are respected in order to allow for free movement of pedestrians on the sidewalk.

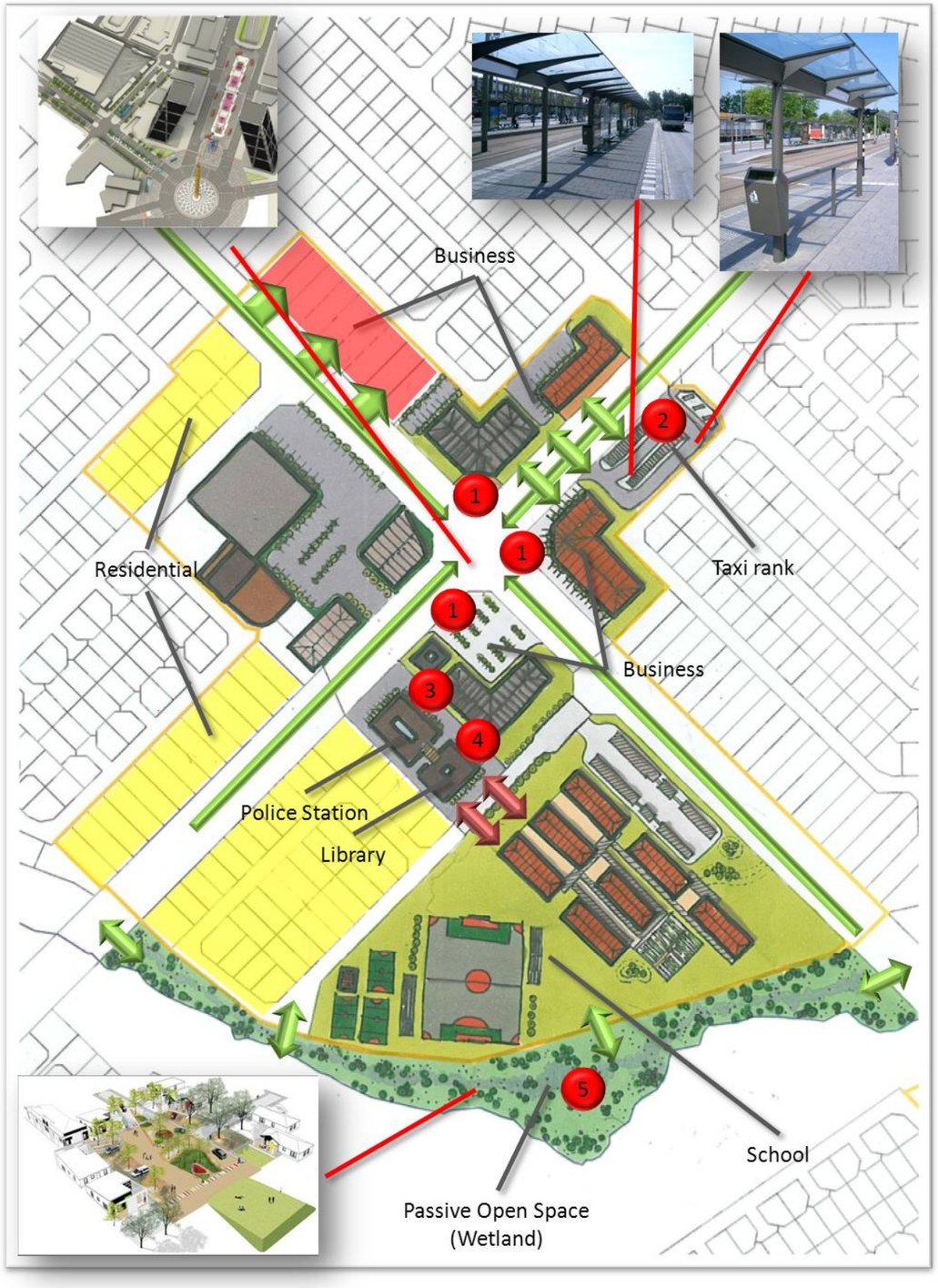
Kaalfontein Node

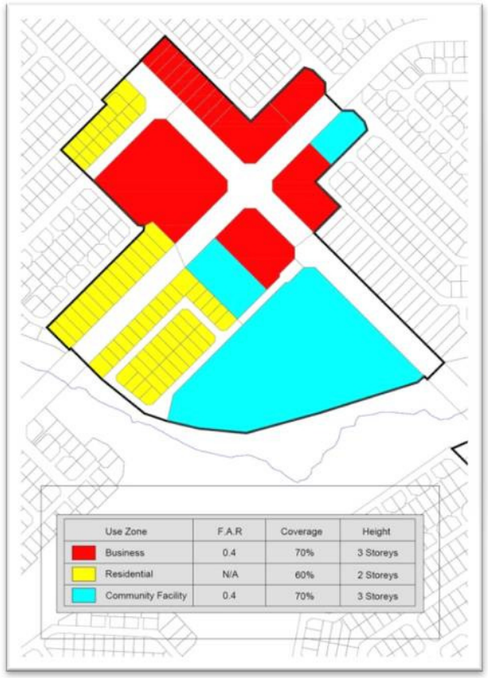


Kaalfontein Node

Key Aspects	Evaluation of node
Places for people	Although formal business opportunity exist along main roads the wider area is dominated by informal trade - normally from dwellings abutting main roads. The nodal intersection is poorly developed.
Enrich the existing	No real sense of place. Main attraction in the far west. Topography can become very attractive feature in the development of this node.
Make connections	Movement pattern along main roads. Unfriendly movement pattern, especially pedestrian movement. There are no connection between street, people and places.
Work with landscape	Very prominent wetland area towards the south of the node.
Mix of uses & form	Not a wide variety and mixture of uses and city form. Mainly residential character. The prominence of this node as well as business mix should be enhanced.
Socio-economic flexibility	Informal trade along main routes dominates economic basis of this area. Stands are very small and vacant land scares.
Transit Orientated Development	Informal taxi ranks exist and pedestrian movement along main roads are poorly developed.
Sustainable Service Delivery	The residential area seem to be well serviced.



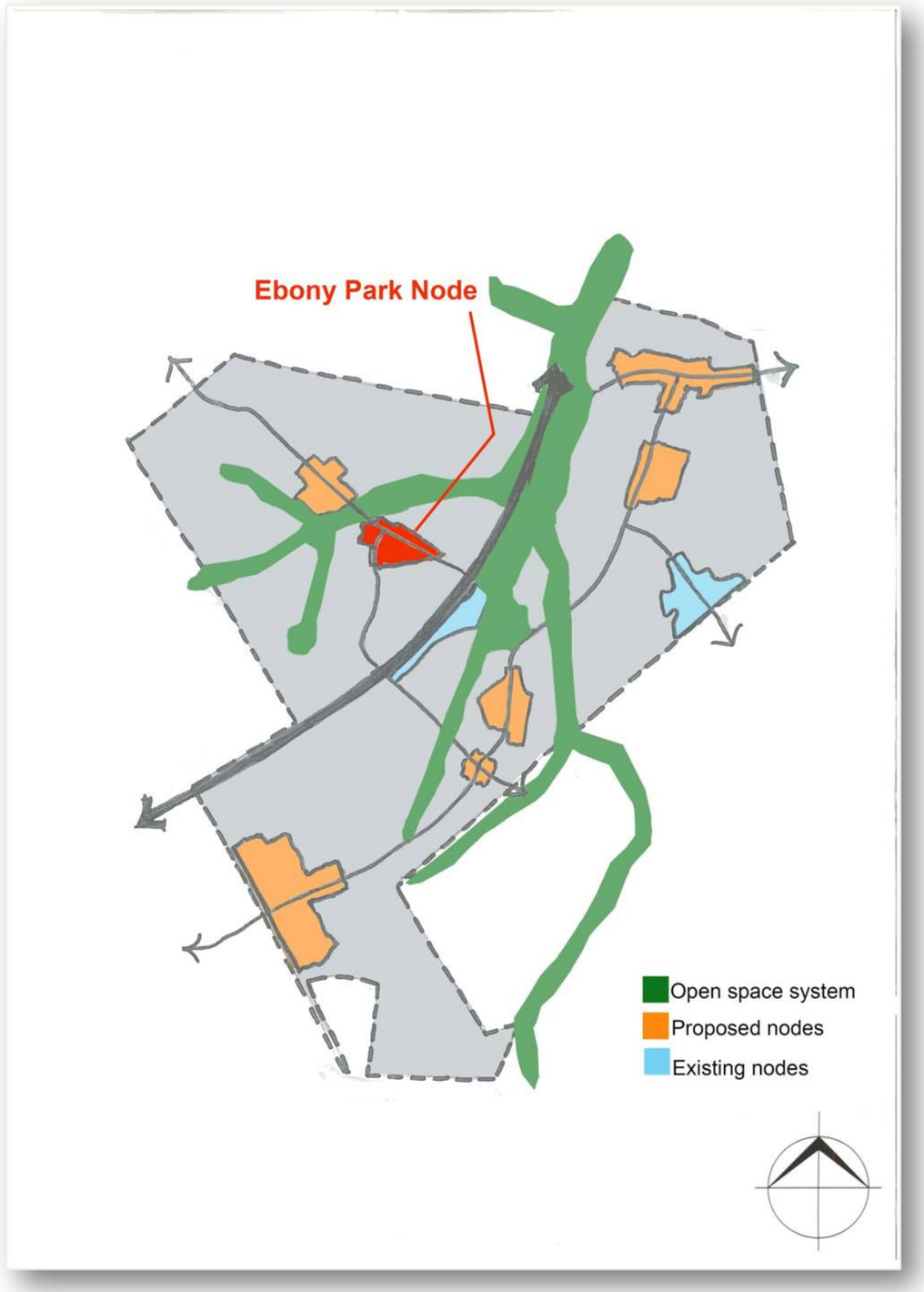




Kaalfontein Node

Project	Intervention	Discussion
1	Strengthen business opportunities on all possible corners of the node to attract community from all sides.	Ensure that building lines are enforced in order to allow for the opening up of the street scene as well as visibility splays. Create opportunity for pedestrian movement along the corners.
2	Introduce public transport hub (formalise the existing) to allow for designated area around which development can take place	Taxi rank set back from the intersection to allow for wider penetration of people into the node.
3	Strengthen the node by introducing much needed social / civic facilities.	Introduce facilities like police station and library to support the educational use in the south.
4	Allow for community to use social / civic facilities in conjunction with existing uses.	Ensure that social / civic uses has maximum opportunity to be used by target audience.
5	Incorporate the wetland into the design in order to play a more prominent role within the streetscape.	Follow holistic design approach in ensuring that all attributes and existing components of the landscape is accommodated into the urban form.

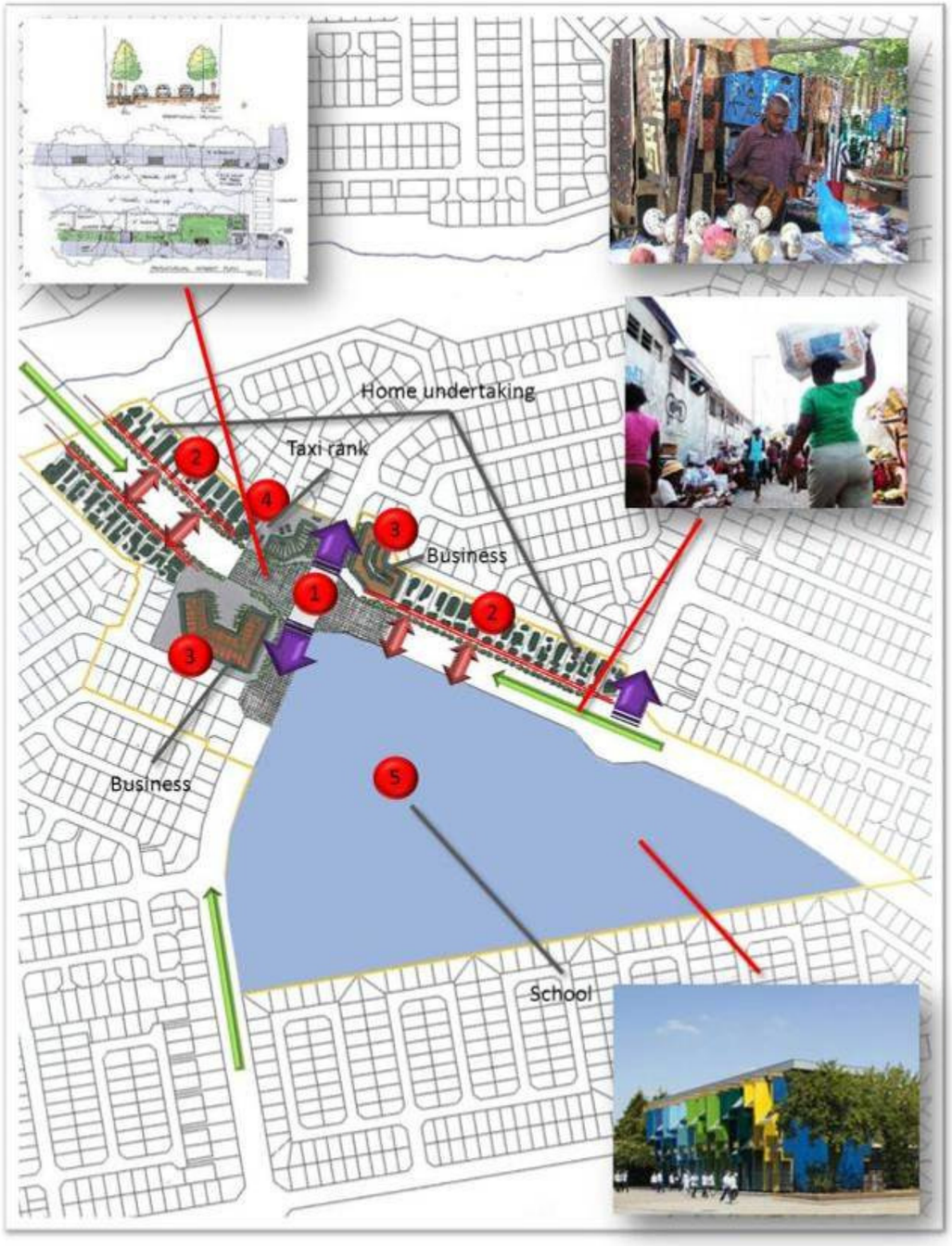
Ebony Park Node



Ebony Park Node

Key Aspects	Evaluation of node
Places for people	Although formal business opportunity exist along main roads the wider area is dominated by informal trade - normally from dwellings abutting main roads. The nodal intersection is poorly developed.
Enrich the existing	No real sense of place. Together with Kaalfontein Node the main attraction in the far west. Topography can become very attractive feature in the development of this node. Schools in south-eastern corner dominate urban form.
Make connections	Movement pattern along main roads. Unfriendly movement pattern, especially pedestrian movement. There are no connection between street, people and places.
Work with landscape	Very prominent wetland area towards the north of the node - although not directly affected. Schools and sport fields in the south create sense of openness.
Mix of uses & form	Not a wide variety and mixture of uses and city form. Mainly residential character. The prominence of this node as well as business mix should be enhanced in association with the existing social facilities.
Socio-economic flexibility	Informal trade along main routes dominates economic basis of this area. Stands are very small and vacant land scares.
Transit Orientated Development	Informal taxi ranks exist and pedestrian movement along main roads are poorly developed.
Sustainable Service Delivery	The residential area seem to be well serviced.

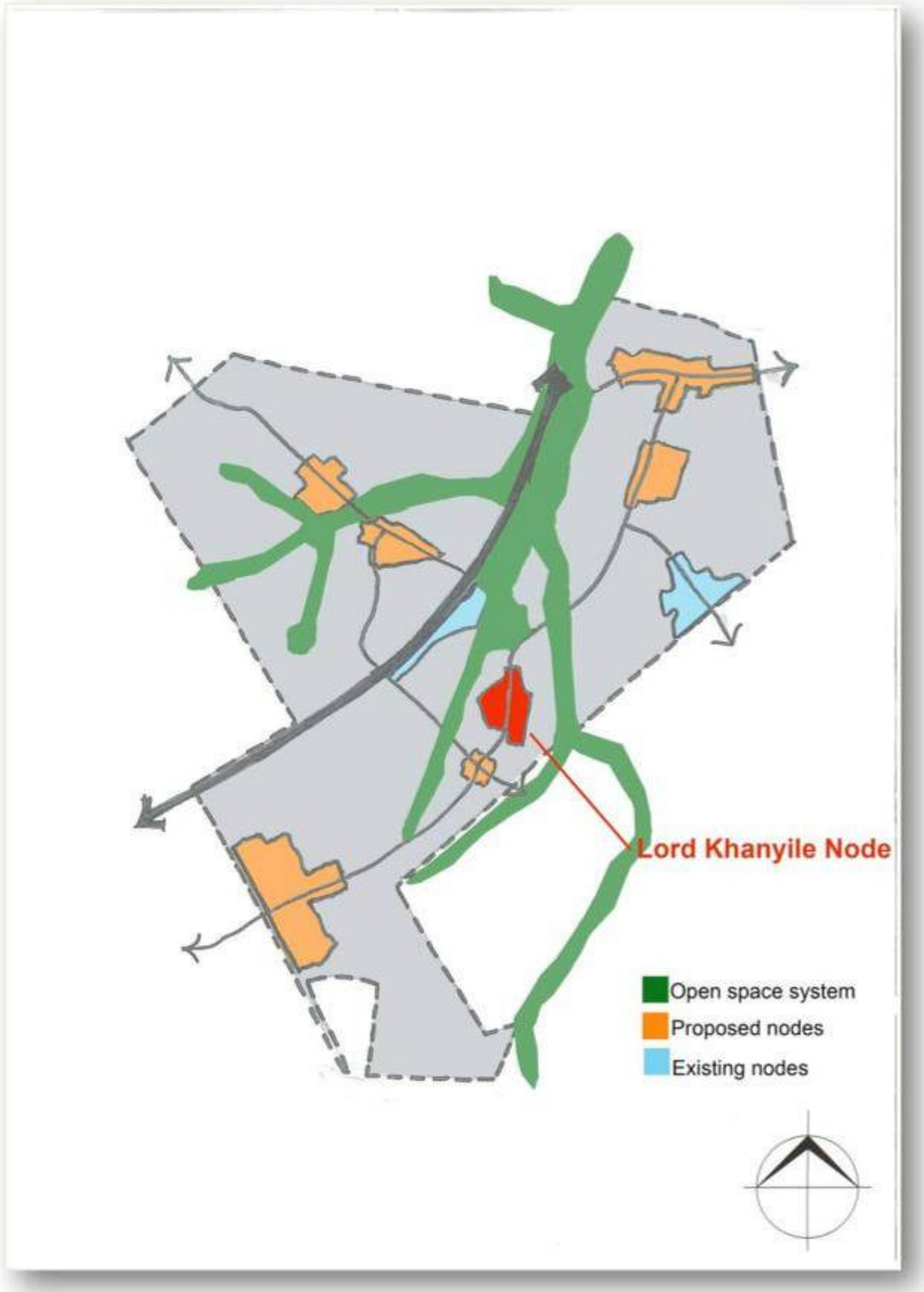


Ebony Park Node

Project	Intervention	Discussion
1	Use topography to strengthen and brand the node. This node is situated in strategic location and boast good access towards the rest of the ward.	Creative landscape solutions can be used to create a living streetscape.
2	Allow for current residential dwellings to be extended and developed as more formal home undertakings which would create a more vibrant street scene.	Ensure that building lines are respected in order to allow for free movement of pedestrians on the sidewalk.
3	Development of business and retail uses on the north-eastern and south-western corners of the node will be critical in boosting spending power as well as creating a living streetscape.	The two vacant sites are considered adequate in size and shape to cater for a good mix of business uses.
4	Introduce public transport hub (formalise the existing taxi rank) to allow for designated area around which development can take place	Taxi rank set within the intersection to allow for wider penetration of people into the node.
5	Extend the current school sites to accommodate other uses like a library,. The long term sustainability will largely depend on how well agglomeration factors have been capitalised on.	Developing the social / civic uses to its full capacity will strengthen the current urban form and create focal points within the street scene.

Lord Khanyile Node



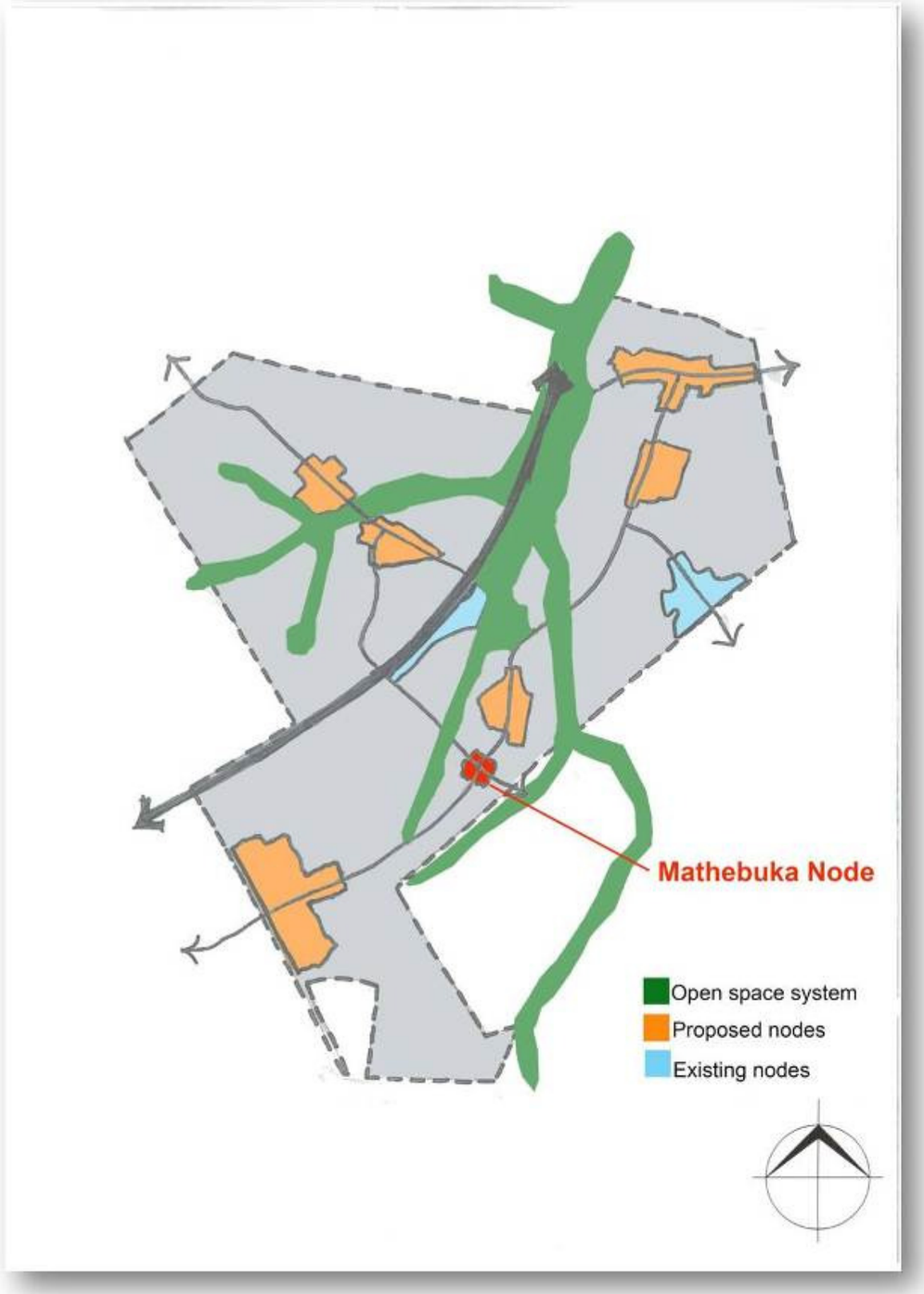
Lord Khanyile Node

Key Aspects	Evaluation of node
Places for people	Formal business opportunity poorly developed. Informal trade - normally from dwellings abutting main roads occur on ad hoc basis. Very strong social / community feel within this node supported by all the social facilities.
Enrich the existing	Very attractive streetscape. Social facilities are a very prominent feature of this node.
Make connections	Main movement pattern along main roads. Better developed movement pattern, and spatial design of roads, especially pedestrian movement.
Work with landscape	Current landscape built up. No natural systems within this node. Dumping occurs ad hoc and on vacant sites.
Mix of uses & form	Variety and mixture of uses and city form. Mainly social facilities within this node which could become hub of service delivery. Very lively street scene and feel within this area.
Socio-economic flexibility	Informal trade along main routes dominates economic basis of this area. Stands are very small and vacant land scares.
Transit Orientated Development	Informal taxi ranks exist and pedestrian movement along main road are better developed, or at least spatially possible within road design.
Sustainable Service Delivery	The residential area seems to generally be well serviced.

Lord Khanyile Node

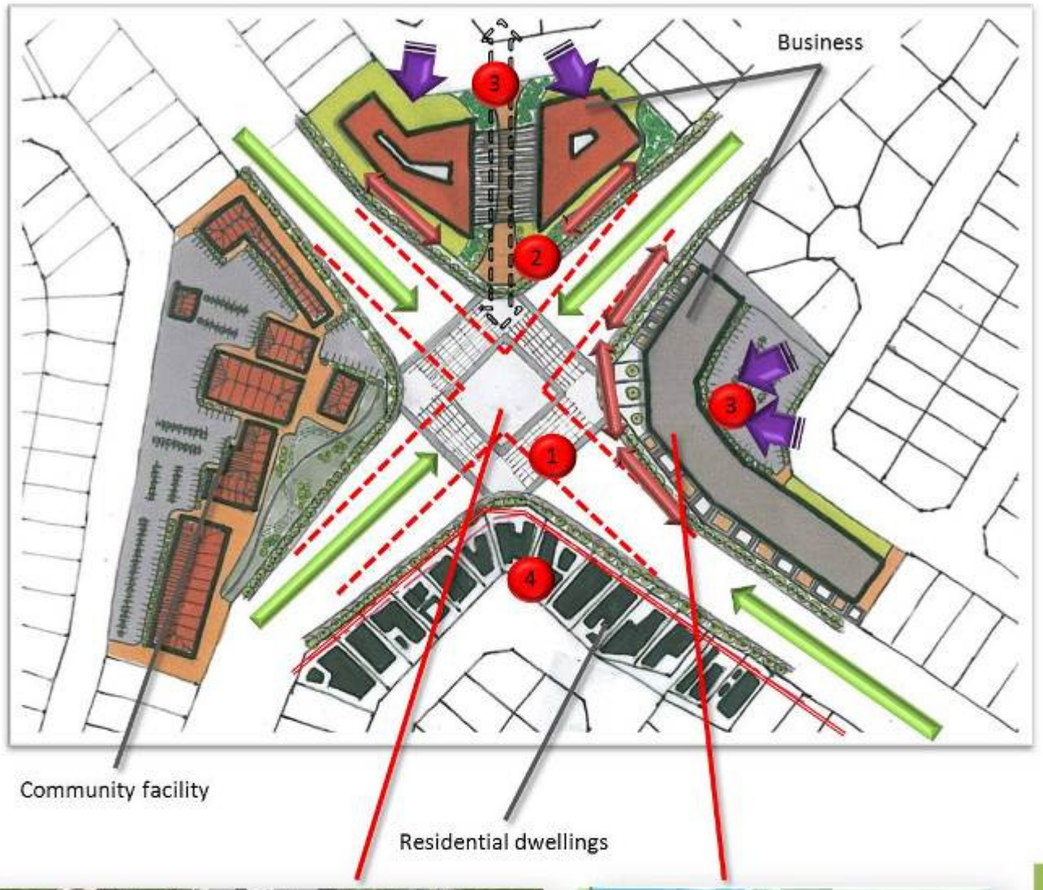
Project	Intervention	Discussion
1	Development of a new high density residential development with a variety and mix of tenure would strengthen the development of the node towards the west – rectifying the urban balance within the node.	Higher density residential development will create additional feet and ultimately spending power within this node as well as sustain the vibrant nature of the street scene after hours. From a sustainability point of view this will also assist in support for the developed social / civic facilities.
2	Allow for the development of office and retail uses, either private or public which flanks the sport stadium on the south and east.	Follow holistic design approach in ensuring that all attributes and existing components of the landscape is accommodated into the urban form. Business uses will strengthen the node as well as increase spending at convenient location within the node.
3	Development and/or extension of the clinic into a health centre in order to cater for the wider community.	Convenient location and character of this node will support such a use. Coupled with possible future extension of the sport stadium into a high performance centre could be beneficial.
4	The existing facilities are very hard buffers in the street scene. Allow for the development of links in order to allow for the filtering of people from the east towards the centre of the node.	Creative landscape solutions can be used to create a living streetscape.
5	Allow for the development of office and retail uses, either private or public which flanks the sport stadium on the south and east.	Business uses will strengthen the node as well as increase spending at convenient location within the node.

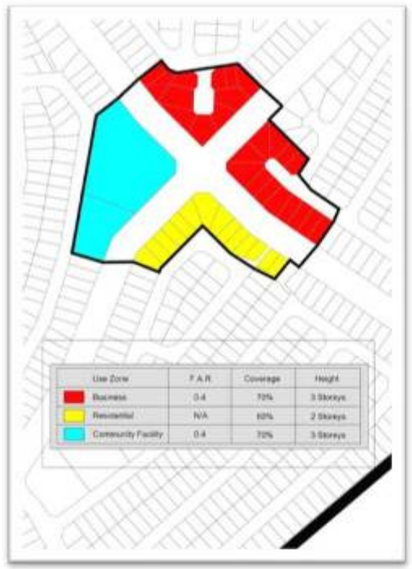
Mathebuka Node



Mathebuka Node

Key Aspects	Evaluation of node
Places for people	Formal business opportunity within this node is limited. The current character is dominated by informal trade along the road towards Tembisa.
Enrich the existing	No real sense of place. Although a very important intersection within the wider Ivory Park area the node is very unattractive and without unique character.
Make connections	Main movement pattern along main roads. Unfriendly movement pattern especially pedestrian movement. There are no connection between street, people and places.
Work with landscape	Current landscape built up. No natural systems within this node. Dumping occurs ad hoc and on vacant sites.
Mix of uses & form	Not a wide variety and mixture of uses and city form. Mainly residential uses within this node.
Socio-economic flexibility	Informal trade along main routes dominates economic basis of this area. Stands are very small and vacant land scares.
Transit Orientated Development	Informal taxi ranks exist and pedestrian movement along main roads are poorly developed.
Sustainable Service Delivery	The area seems to be well serviced, however maintenance seems to be a problem.



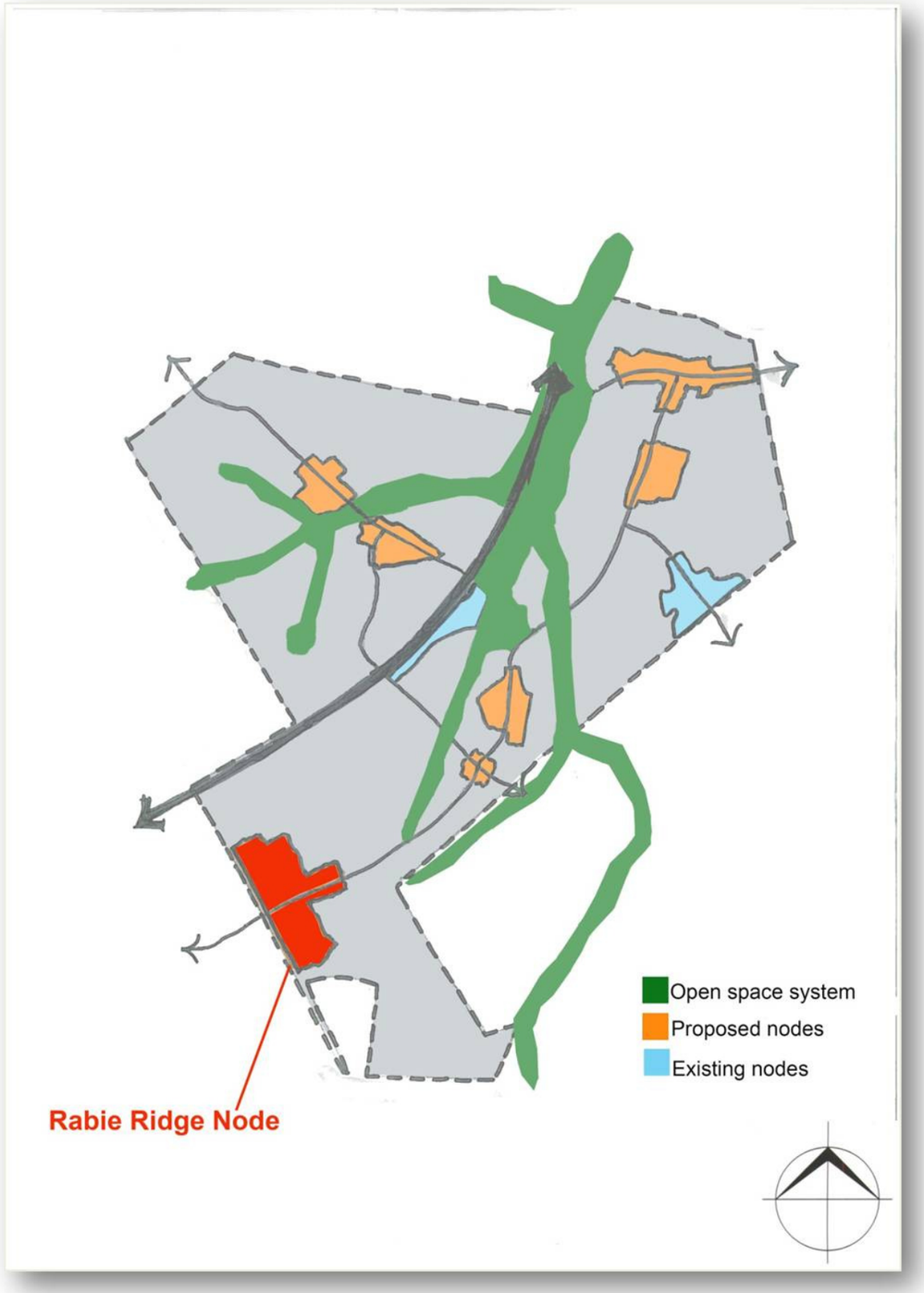


Mathebuka Node

Project	Intervention	Discussion
1	Redesign the intersection to allow for the widening of splays which is consistent with the hierarchy of roads traversing it.	Opening up of the street scene will allow for better movement in particular pedestrian movement which will also benefit business uses.
2	Strengthen business opportunities on all possible corners of the node to attract community from all sides.	Ensure that building lines are enforced in order to allow for the opening up of the street scene as well as visibility splays. Create opportunity for pedestrian movement along the corners.
3	Development of business opportunities to allow for movement from community abutting the use at the back.	This design feature will allow for maximum penetration as well as bringing the community closer to the centre of this node.
4	Retain residential dwellings along this front with the understanding that these buildings could be altered to a business use driven by economic demand and supply.	The current residential character towards the south is very strong and should be preserved insofar possible. Upgrading / formalisation of these dwellings could achieve a better looking street facia.

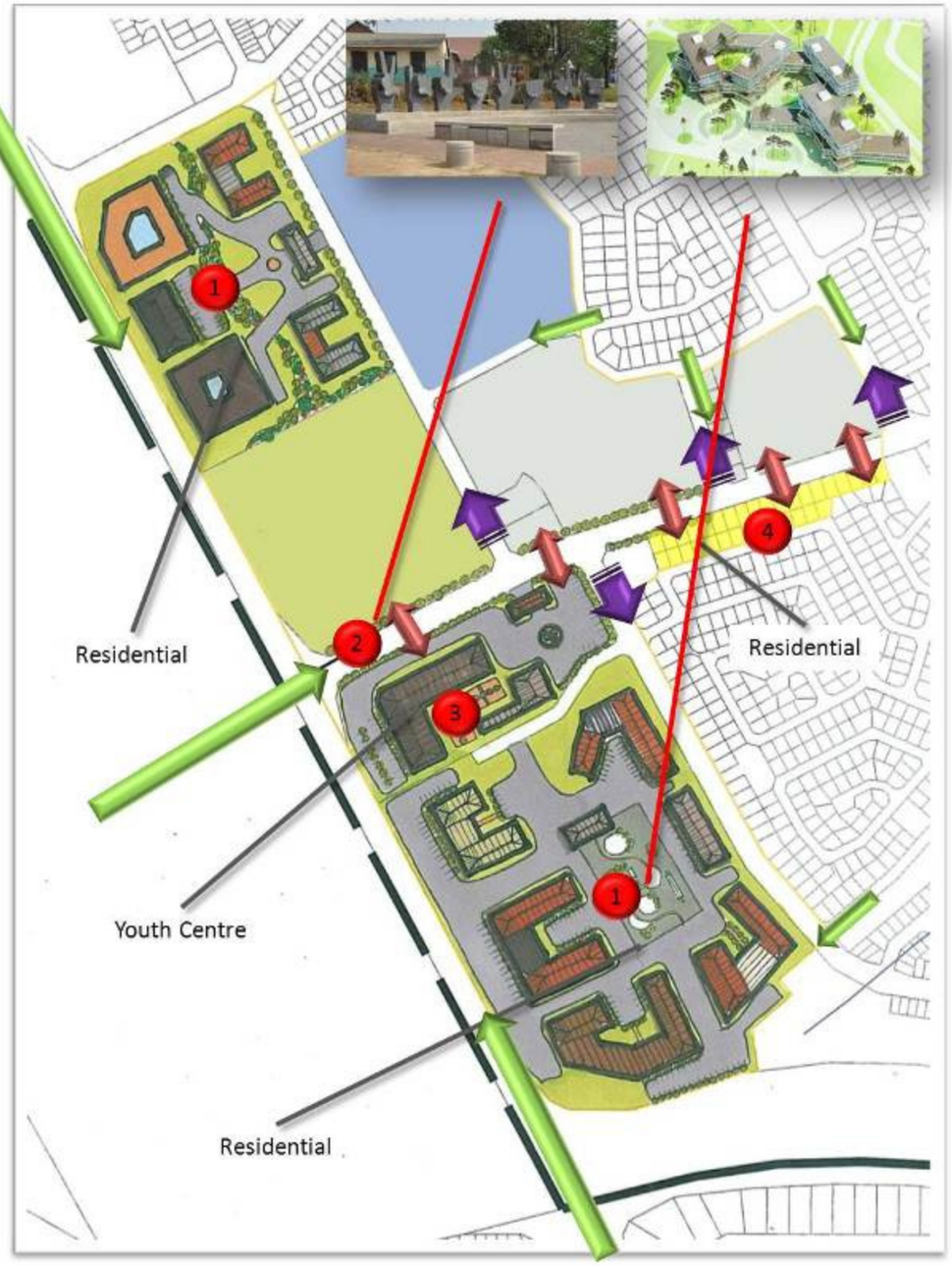
Rabie Ridge Node

Rabie Ridge Node



Key Aspects	Evaluation of node
Places for people	Although formal business opportunity exist along main roads the wider area is dominated by informal trade - normally from dwellings abutting main roads.
Enrich the existing	No real sense of place. Main entrance to Ivory Park in the south. The character of the area is very much rural given the large parcels of undeveloped land to the far west.
Make connections	Main movement pattern along main roads. Unfriendly movement pattern, especially towards pedestrian movement. There are no connection between street, people and places.
Work with landscape	Current landscape relatively built up. No natural systems within this node. Dumping occurs ad hoc and on vacant sites. Very prominent social facilities anchors the northern parts of the node.
Mix of uses & form	Variety and mixture of uses and city form. Mainly social facilities within this node which could become hub of service delivery in the south.
Socio-economic flexibility	Informal trade along main routes dominates economic basis of this area. Stands are very small, however there are some vacant land parcels.
Transit Orientated Development	Informal taxi ranks exist and pedestrian movement along main roads are poorly developed.
Sustainable Service Delivery	The area seems to be well serviced, however maintenance seems to be a problem.



Rabie Ridge Node

Project	Intervention	Discussion
1	Development of a new high density residential development on both flanks of the node with a variety and mix of tenure would allow for an optimum and balanced node.	Higher density residential development will create additional feet and ultimately spending power within this node as well as sustain the vibrant nature of the street scene after hours.
2	Create identity at this point – sense of place and arrival within Ivory Park. Develop branding strategy to assist in urban regeneration.	Public art and landscaping can be successfully used in order to achieve a desired end result. It will be critical to involve the community in this exercise.
3	The development of a youth centre was identified as a serious need within this area.	The design of a youth centre in this prominent location will help to assist with creating a sense of place in terms of urban form and scale.
4	Retain the residential character insofar possible. Over time these residential dwellings will most likely be transformed into business opportunities.	Allowing the economy to play its part in market demand and supply will be critical to the success and long term sustainability of this node especially in light of the additional residential units being added to this node.

3.8 CIVIL ENGINEERING INFRASTRUCTURE

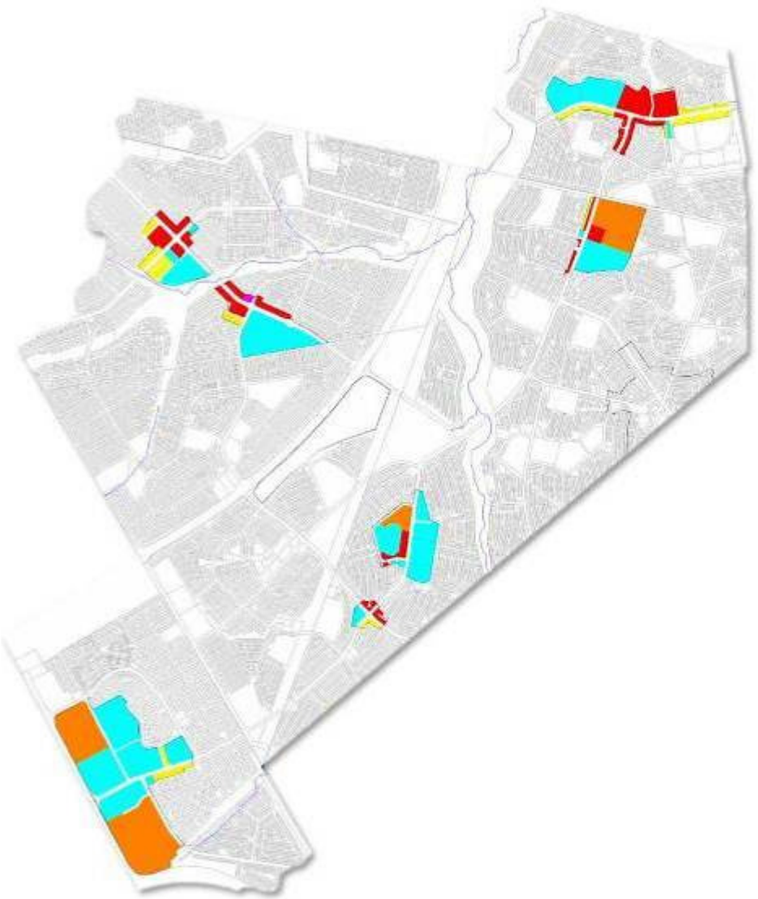
Interventions Required for Water Provision

Ivory Park Water Network Assumptions:

Residential dwelling size - 75 m^2
Design Peak Factor - 3 (CES Report)
Ground Storage - 24 hours AADD (Annual Average Daily Demand)
Elevated Storage - 2 hours DPFR (Design Peak Flow Rate)

Development Type	Demand	Units
Residential	0.6	kl/unit
Res (150-175d.U/ha)	0.45	kl/unit
Community GROUNDS	15	kl/ha
Community Buildings	0.3	kl/100m^2
Business	0.4	kl/100m^2
Industrial (Dry)	0.4	kl/100m^2

Ivory Park Development Nodes



Use Zone	F.A.R	Coverage	Height
Business	0.4	70%	3 Storeys
Residential	N/A	60%	2 Storeys
Community Facility	0.4	70%	3 Storeys
Industrial (Taxi Rank)	0.4	70%	3 Storeys
Residential	150-175 d.u / ha	50%	4 Storeys

Interventions Required for Water Provision

President Park Storage Facility:

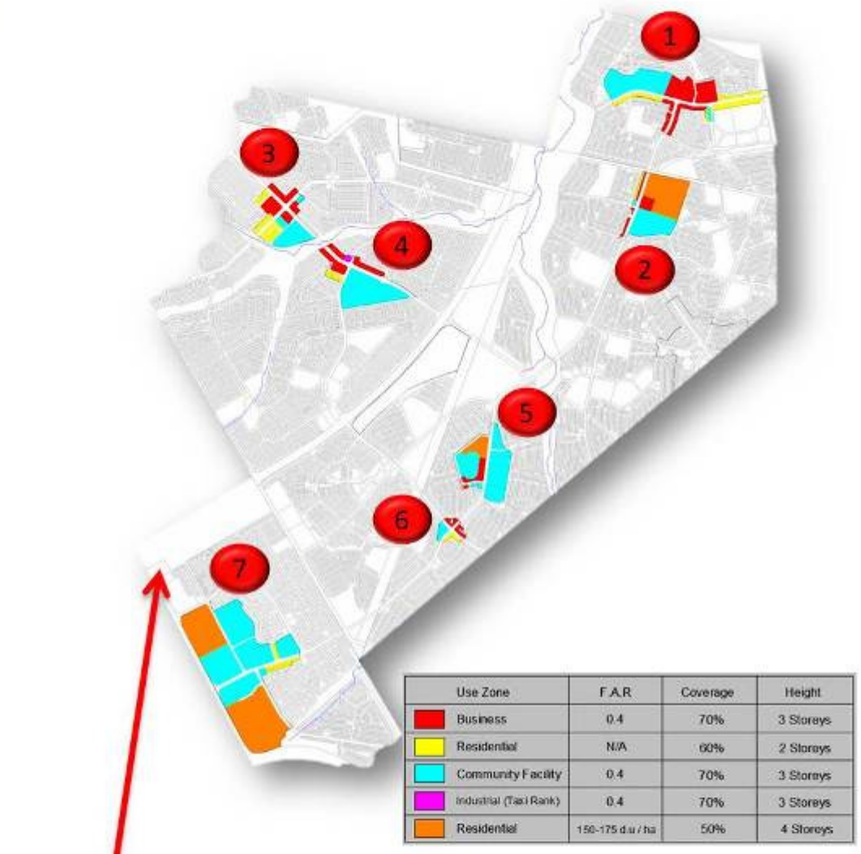
The report regarding the Ivory Park water network contains its recommendations regarding the storage facility, these recommendations is not directly related to Ivory Park. They are planned the ultimate scenario. According to Aurecon's study the development nodes will contribute an additional 4ML to the AADD. This will create a 5 year scenario where the storage at President Park is approximately as depicted in the table below.

President Park Storage Reservoir Site Capacity		
Description	5 YEAR Excluding Nodes	5 YEAR Including Nodes
President Park Reservoirs	29.3h x AADD	25.5h x AADD
President Park Tower	1.4h x DPFR	0.9h x DPFR

Demand and Increase Per Node (kl/day)
The following existing and future demands are estimated for the Nodes

	CES	Aurecon	
Description	Existing Demands	Future Demand	Demand Increase
Node 1	155	564	409
Node 2	173	791	618
Node 3	69	363	294
Node 4	48	276	229
Node 5	118	309	192
Node 6	37	75	38
Node 7	134	2286	2152
TOTAL	**732**	**4664**	**3932**

Ivory Park Development Nodes



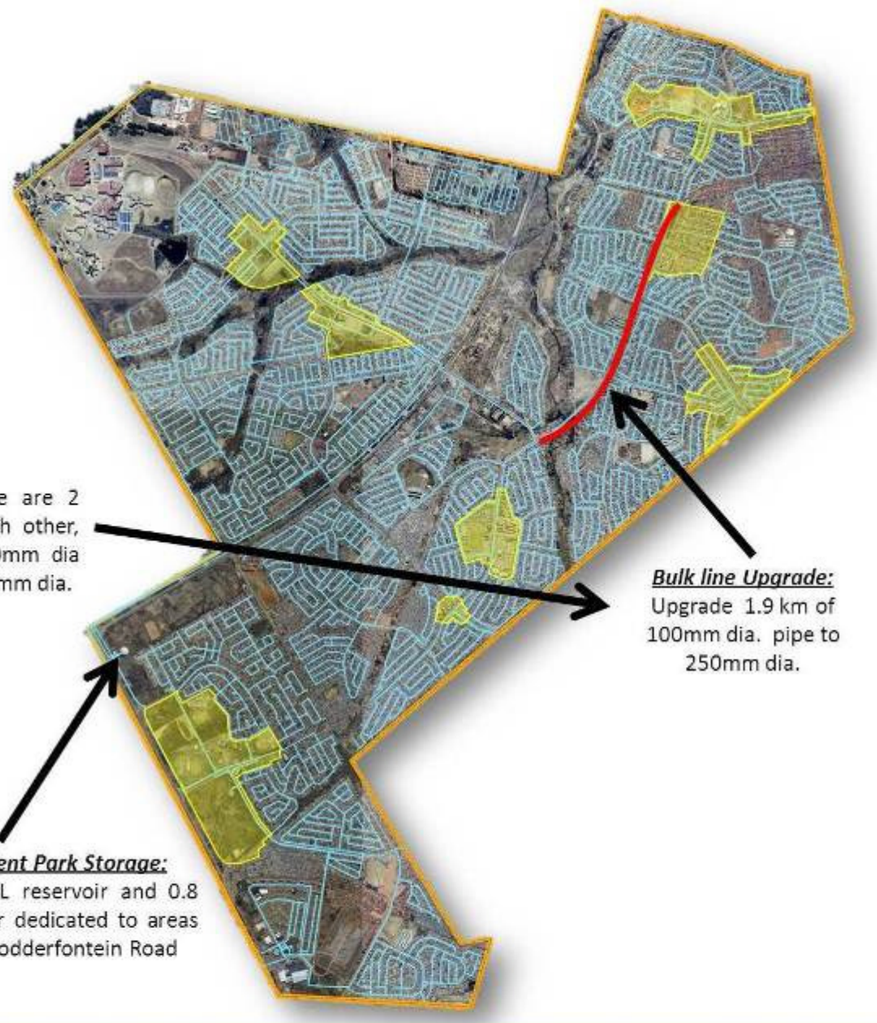
Use Zone	F.A.R	Coverage	Height
Business	0.4	70%	3 Storeys
Residential	N/A	60%	2 Storeys
Community Facility	0.4	70%	3 Storeys
Industrial (Taxi Rank)	0.4	70%	3 Storeys
Residential	150-175 d.u / ha	50%	4 Storeys

President Park Storage

Interventions Required for Water Provision

Ivory Park Water Network – Base Year

Ivory Park Water Network – Future Year



Bulk Water:
Along this line there are 2 pipes parallel to each other, the one being a 250mm dia and the second a 100mm dia.

Bulk line Upgrade:
Upgrade 1.9 km of 100mm dia. pipe to 250mm dia.

President Park Storage:
Build 4ML reservoir and 0.8 ML Tower dedicated to areas east of Modderfontein Road

Line Type	*Description*
	Water Reticulation
	Bulk Water

For the Nodes to Fully Develop the following Upgrades to the Water Reticulation Network are Required

Type of Pipe	Pipe Length (m)	Estimated Rand Value
250mm uPVC PN12	1950	R 1,170,000.00

Interventions Required for Sanitation

Ivory Park Sanitation Assumptions:

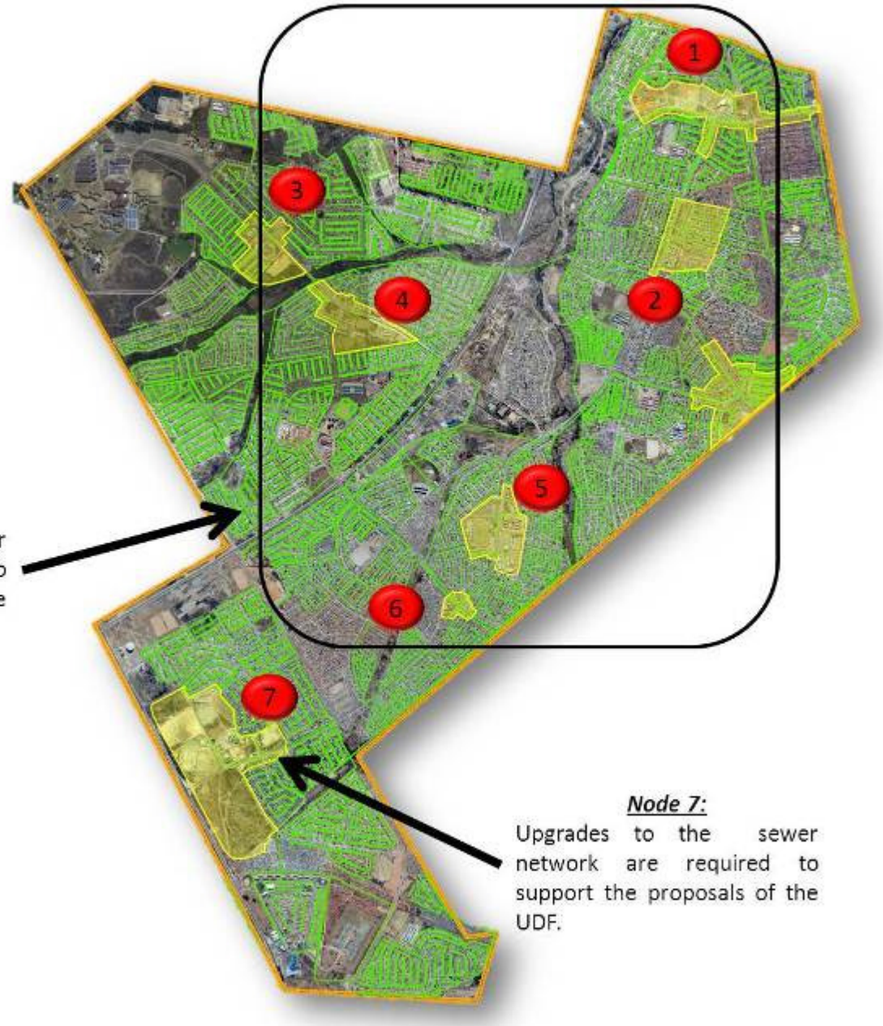
- Sewer = 70% of AADD
- Peak = 1.8 (very large area)
- The Report on Johannesburg Sewer Network Analysis for Olifantsfontein Basin reflects the base year

Ivory Park Sanitation:

Taking into consideration the status quo as presented in Chapter 2, it clearly could be seen that the **projects proposed** within the above mentioned report has not been implemented. The problems experienced in Ivory Park is primarily due to the problems identified in the above mentioned report. Important p arts of the network are incapable of handling the required flows resulting in sewage overflowing at certain locations.

Sewer Increase Per Zone (kl/day) The following existing and future sewer run-off are estimated for the Nodes			
	CES	Aurecon	
Description	Estimated Existing Sewer	Future Sewer	Sewer Increase
Node 1	108	362	254
Node 2	121	554	433
Node 3	48	254	206
Node 4	33	194	160
Node 5	82	216	134
Node 6	26	52	27
Node 7	94	1554	1460
TOTAL	**512**	**3186**	**2674**

Ivory Park Development Nodes

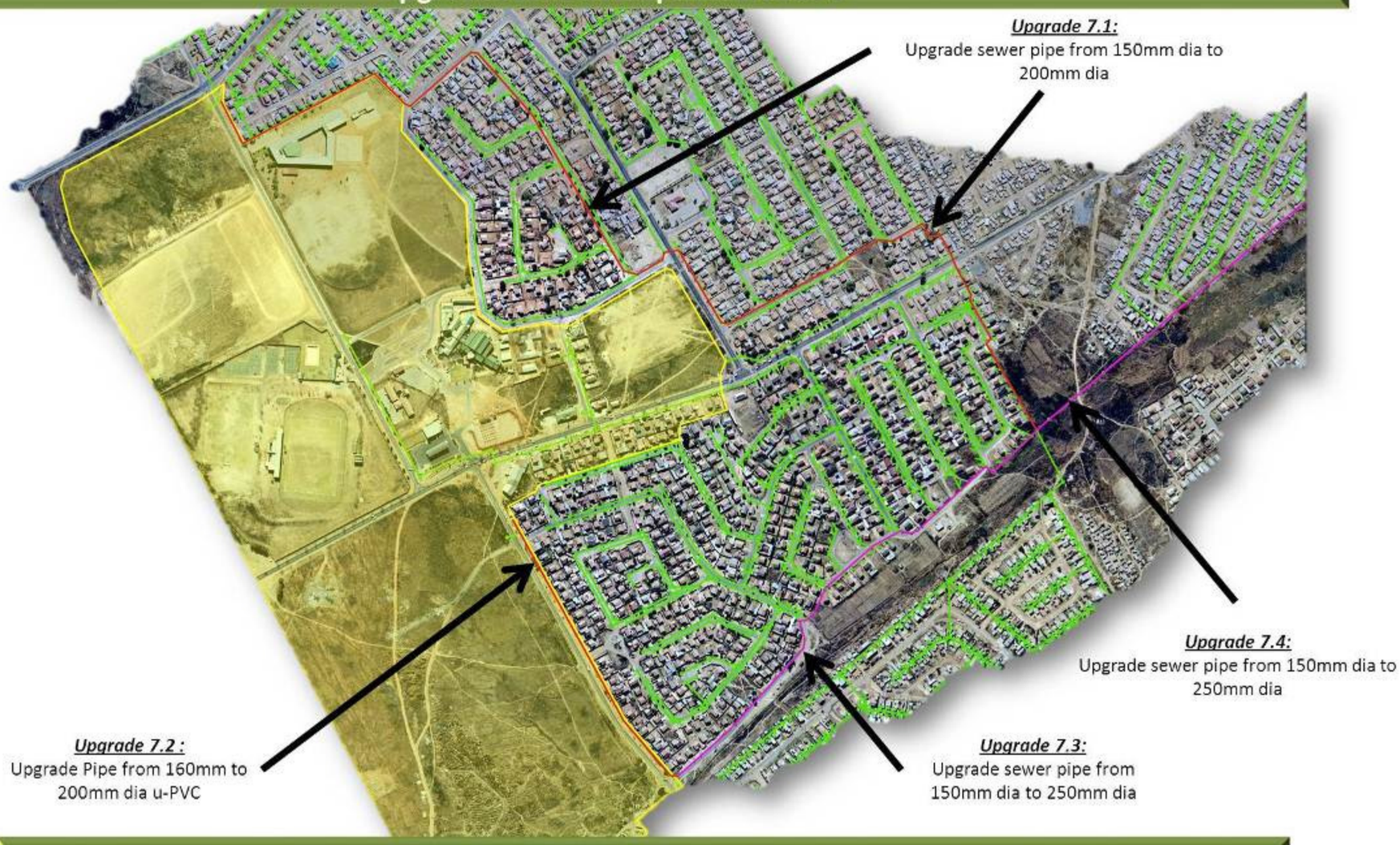


Node 1 to 6:
No upgrades to the sewer network are required to support the proposals of the UDF..

Node 7:
Upgrades to the sewer network are required to support the proposals of the UDF.

Interventions Required for Sanitation

Upgrades for Development Node 7



Cost Estimate for Upgrades due to Node 7

Item	Phasing	Description	Sub Basin	Length (m)	Existing Pipe (m)	New Pipe (m)	Cost Incl.
UDF 7.1	5 year	Upgrade Existing sewer Network	Rabie Ridge	1710	150	200	R 684,000
UDF 7.2	5 year	Upgrade Existing sewer Network	Rabie Ridge	440	150	250	R 176,000
UDF 7.3	5 year	Upgrade Existing sewer Network	Rabie Ridge	760	150	250	R 304,000
UDF 7.4	5 year	Upgrade Existing sewer Network	Rabie Ridge	2060	150	250	R 824,000
Total							R 1,988,000

Interventions Required for Sanitation

Ivory Park Sanitation Proposal

Within Ivory Park there are areas which are prone to sewer overflows. Findings on existing and possible problems were made by CES in the Johannesburg Water Sewer Network Analysis Olifantsfontein Basin, December 2008. The current problems manifesting within Ivory Park appears to be due to the fact that these findings and proposals were not attended to. It is important that further analysis be conducted and that the projects (listed) be implemented as it will be beneficial to the Ivory Park residents and the municipality. Furthermore the suggested upgrades for the Rabie Ridge Node should be implemented prior to development of the node. In addition, a cause of concern is that within the network analysis it became clear that the capacity of the Tembisa sewer outfalls was not known. The capacity of this outfall should be established and analyzed accordingly.

Projects Proposed in the Johannesburg Sewer Analysis of Olifantsfontein Basin (2008) :

Item	Phasing	Description	Sub Basin	Length (m)	Existing Pipe (m)	New Pipe (m)	Cost Incl.	Comments from Report
IS 1.1	Existing	Upgrade Existing sewer Network	Ivory Park South	187	150	200	R 238,602.00	Implement Immediately
IS 1.2	Existing	Upgrade Existing sewer Network	Ivory Park South	224	150	200	R 367,091.00	Implement Immediately
IS 1.4	Existing	Upgrade Existing sewer Network	Ivory Park South	778	200	315	R 1,179,764.00	Implement Immediately
IS 1.5	Existing	Upgrade Existing sewer Network	Ivory Park South	109	200	355	R 282,320.00	Implement Immediately
IS 1.6	Existing	Upgrade Existing sewer Network	Ivory Park South	14	150	200	R 63,320.00	Implement Immediately
KS1.1	Existing	Upgrade Existing sewer Network	Kaalspruit	484	200	250	R 535,382.00	Implement Immediately
RA1.1	Existing	Upgrade Existing sewer Network	Rabie Ridge	245	150	250	R 441,995.00	Implement When relevant areas develop
IS1.3	Existing	Upgrade Existing sewer Network	Ivory Park South	376	200	250	R 516,454.00	Implement When relevant areas develop
KF1.1	5year	Upgrade Existing sewer Network	Kaalfontein	1240	150	315	R 2,492,696.00	Implement When relevant areas develop
KF2.1	5year	Upgrade Existing sewer Network	Kaalfontein	396	200	250	R 491,371.00	Implement When relevant areas develop
RA1.2	5year	Upgrade Existing sewer Network	Rabie Ridge	237	150	200	R 335,319.00	Implement When relevant areas develop

Interventions Required for Storm Water

Ivory Park Development Nodes and Open Space

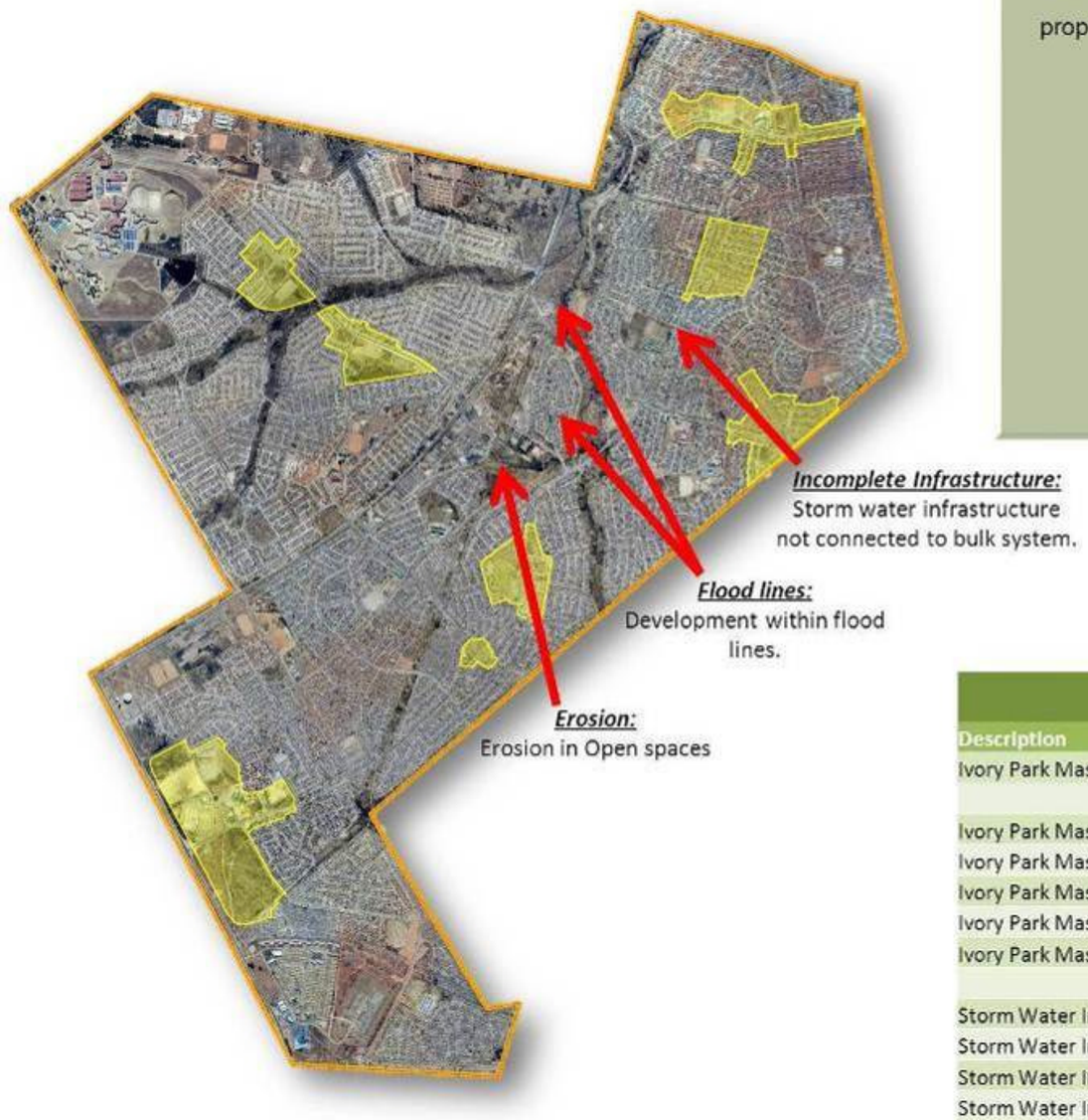
Ivory Park Stormwater

Currently in Ivory Park stormwater infrastructure consist of a local systems of V-drains, stormwater drainage pipes and culverts. These systems appear to lack maintenance and overall planning. Evidence of this could be found throughout the study area.

Bulk storm water infrastructure is required within Ivory Park to accept the run-off from and through Ivory Park to prevent flooding. Uncontrolled storm water has the potential to cause loss of life, damage to property and disruption to business and commerce supported by recent events.

Interventions Required for Storm Water

Ivory Park Development Nodes and Open Space



Ivory Park Storm Water

To augment the stormwater situation in Ivory Park the following actions are proposed:

- Flood lines should be determined and actions taken to relocate people from the flood areas;
- Stormwater Master Plan should be conducted to obtain a holistic stormwater infrastructure development plan;
- Major stormwater systems should be implemented;
- Minor systems should be built in order for it to tie in to major systems ;and
- Regular maintenance should be conducted..

Cost for Storm Water

Description	Cost Incl.	Comments from Report
Ivory Park Master Plan	R 535,780.00	Recommended
Ivory Park Master Plan Ward 77	R 122,799.14	Not Recommended
Ivory Park Master Plan Ward 78	R 128,528.60	Not Recommended
Ivory Park Master Plan Ward 79	R 110,445.90	Not Recommended
Ivory Park Master Plan Ward 80	R 109,138.49	Not Recommended
Ivory Park Master Plan Ward 93	R 214,867.87	Not Recommended
Storm Water Infrastructure at Node 1	R 4,672,848.60	Implement When relevant areas develop
Storm Water Infrastructure at Node 2	R 2,859,114.30	Implement When relevant areas develop
Storm Water Infrastructure at Node 3	R 2,594,284.70	Implement When relevant areas develop
Storm Water Infrastructure at Node 4	R 1,984,479.70	Implement When relevant areas develop
Storm Water Infrastructure at Node 5	R 1,975,768.20	Implement When relevant areas develop
Storm Water Infrastructure at Node 6	R 731,766.00	Implement When relevant areas develop
Storm Water Infrastructure at Node 7	R 3,292,947.00	Implement When relevant areas develop

3.9 MOVEMENT NETWORK

To develop Ivory Park to its full potential from a social and economic perspective the optimum land use options and urban design possibilities were identified in previous Sections of this Chapter. To enhance this vision for Ivory Park and the 7 activity nodes within the area, a transport vision were developed to support the urban and land use vision. Specific transport related mitigating measures were identified based on the outcome of the situational analysis in Chapter 2.

3.9.1. Transport Accessibility and Mobility Vision

3.9.1.1 Developing a Transport Vision

Transit is at the heart of Transport Orientated Development (TOD) and transit facilities should be well integrated into the surrounding neighbourhood. The transport system should be designed not only for its primary function of travel but also as integral part of the community. To make an interconnected network of streets and sidewalks work in a TOD, careful consideration of the interface is needed between the automobile and the pedestrian. In general, safe streets should encourage the driver to use caution and the driver and the pedestrian should always have clear sight of each other.

"Cities and towns have been engines of growth and incubators of civilisation and have facilitated the evolution of knowledge, culture and tradition as well as industry and commerce. Urban settlements, properly planned and managed, hold the promise for human development and the protection of the world's natural resources through their ability to support large numbers of people while limiting their impact on the natural environment." (Second United Nations Conference on Human Settlements (Habitat II); Paragraph 5 of the Habitat Agenda)

3.9.1.2 Transportation Vision

It is envisioned that Ivory Park will become a sustainable urban settlement, building forth on its vibrant community life and become a transit orientated development where the residents have great mobility and good access to their work place and social amenities.

The transport vision is in line with the Department of Housing's urban vision namely, "… to promote a consistent urban development policy approach for effective urban reconstruction and development, to guide development policies, strategies and actions of all stakeholders in the urban development process and to steer them towards the achievement of a collective vision". It is further noted that in order to overcome the fragmented nature of our cities and towns, an effective urban transportation network is needed. With shorter commuting distances the cost associated with travel decreases, this in turn benefit government and the public transport operators, as the cost of public transport services per capita declines.

Overview of Transit-Orientated Development Elements

COMPACT DEVELOPMENT		To achieve the density and intensity of land uses needed to support transit and create sustainable and active urban neighbourhoods, TOD should be compact and designed to intensify over time.
MIXED-USE DEVELOPMENT		TOD should offer a mix of diverse and complimentary high-activity uses rather than segregating uses. Mixed land uses can be organized horizontally or vertically, but the goal of active streetscapes require active uses, such as retail to be located at ground level along primary pedestrian frontages
PEDESTRIAN FRIENDLINESS		To make an interconnected network of streets and sidewalks work in a TOD, careful consideration of the interface is needed between the automobile and the pedestrian. In general, safe streets should encourage the driver to use caution and the driver and the pedestrian should always have clear sight of each other.
TRANSIT STATIONS & TRANSIT PLAZAS		Transit is at the heart of TOD and transit facilities should be well integrated into the surrounding neighbourhood. The primary transit station should be designed not only for its primary function of travel but also as a centre for community life.

Transport Objectives

LAND USE, DENSITY, OPEN SPACE AND AMENITY	To provide for a range of high-quality, urban areas that is responsive to their proximity to transit and integrating and attracting viable new land-uses, within the context of the wider surrounding area.
MOBILITY & ACCESSIBILITY	To create an environment that is conducive to establishing a culture of attractive, viable transport choices that is supported by public transport, suitable non-motorised transport infrastructure and facilities.
INFRASTRUCTURE & UTILITIES	To identify infrastructure building blocks in public private partnerships that would systematically unlock viable development supportive of the activity nodes.

Measure of Effectiveness

ROAD HIERARCHY AND INFRASTRUCTURE		Develop a functional road hierarchy that link formal and informal settlement nodes with the economic centre within Ivory Park and the region, and provide accessibility to resident's place of work and their community services.
PUBLIC TRANSPORT SYSTEM		Establish an integrated public transport network covering the region providing accessible, cost effective public transport to all citizens of Ivory Park, with emphasis on the marginalised users of the community.
NON-MOTORISED TRANSPORT		The spirit of sustainable development is dedicated to creating a safe and suitable environment in which Non-Motorised Transport is adequately available. Ensuring access to economic opportunities, education and quality healthcare for all including those whom do not have the financial means necessary to access private or public transport.

These measures of effectiveness combined with best practice design standards and principles will provide the mitigation measures to ensure that the proposed land use and urban vision is supported by a effective and operational transport system for all transport modes.

Nodal Priority Areas Proposed Transport Interventions

Stemming from the land use analysis 7 priority nodes was identified. These nodes are indicated below in **Figure 69**.

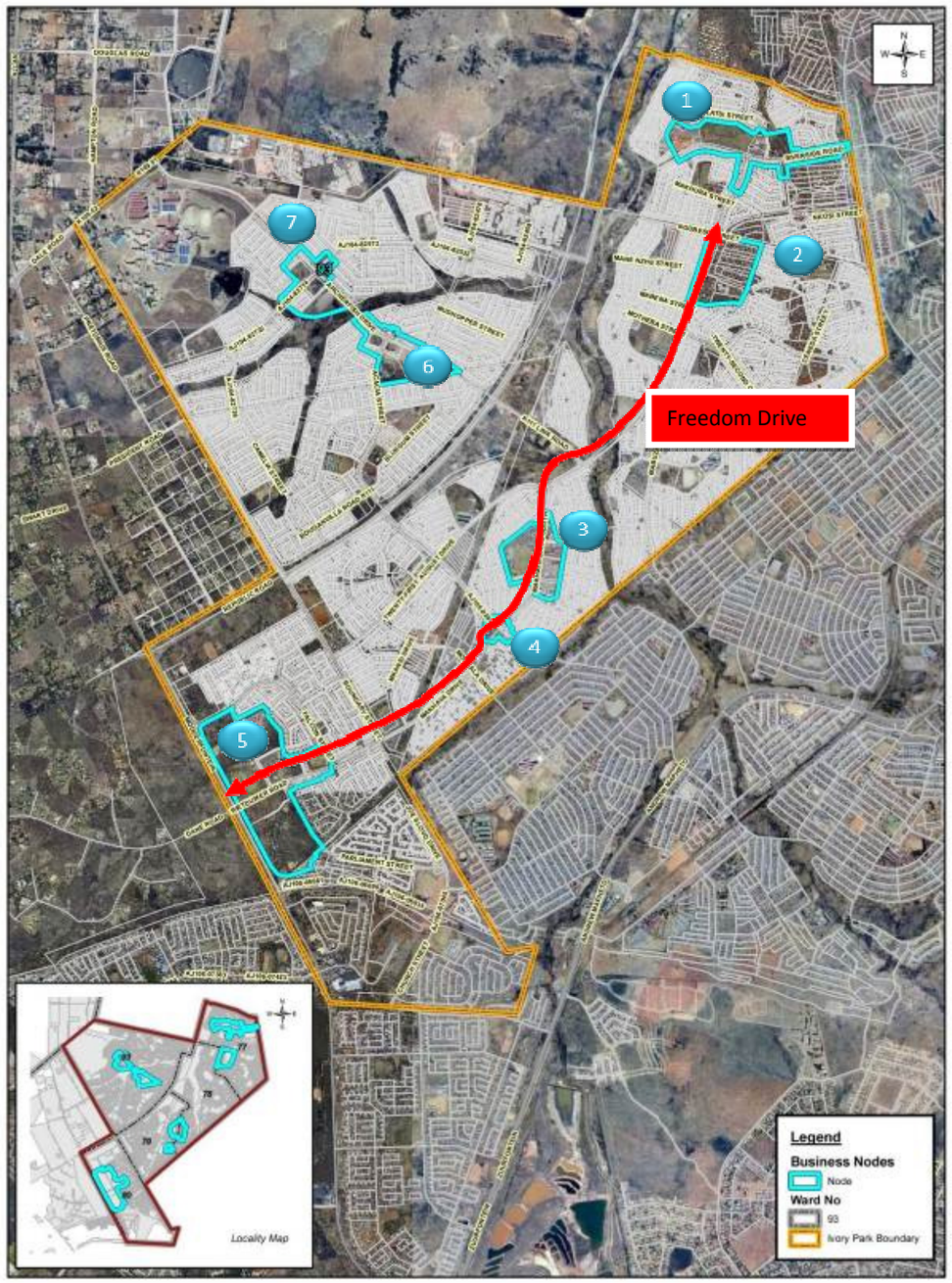


Figure 69: *Ivory Park Priority Areas*

Road Infrastructure Ivory Park:

- Within in Ivory Park the five of the seven activity nodes are linked via Freedom Drive. Freedom Drive was identified as a Class 3 road that is required to be upgraded to Class 3 geometric design standards. Currently the road is not operating as a mobility road due to the geometric design and several accesses along the road that hamper mobility. Linking these nodes with a mobility road will proved the capacity to provide effective public transport and thus feet to the proposed new business areas.
- Currently the road is constructed according to Class 3 standards where the road runs through Node 3. The rest of the road needs to be upgraded to the required design standard. The cost associated with the upgrading will be significant and a phased approach is recommended. The road can be divided into three or more projects depending on the available yearly budget.
- It is recommended that the sections within the identified priority nodes are constructed first followed by the links between the areas.

Road Markings and Signage:

- Road markings and road signage needs to be improved throughout the Ivory Park study area, a road signage and marking audit needs to be conducted to determine the cost associated to improve signage to comply with the minimum road signage standards for South Africa.
- During the site visits the inconsistency between road names shown in the Cooperate GIS street name database and the street names posted in Ivory Park was noted. A formal survey to determine the extent of the issues is required. Formal channels needs to be followed to ensure that the roads names posted are the approved street names for the area.

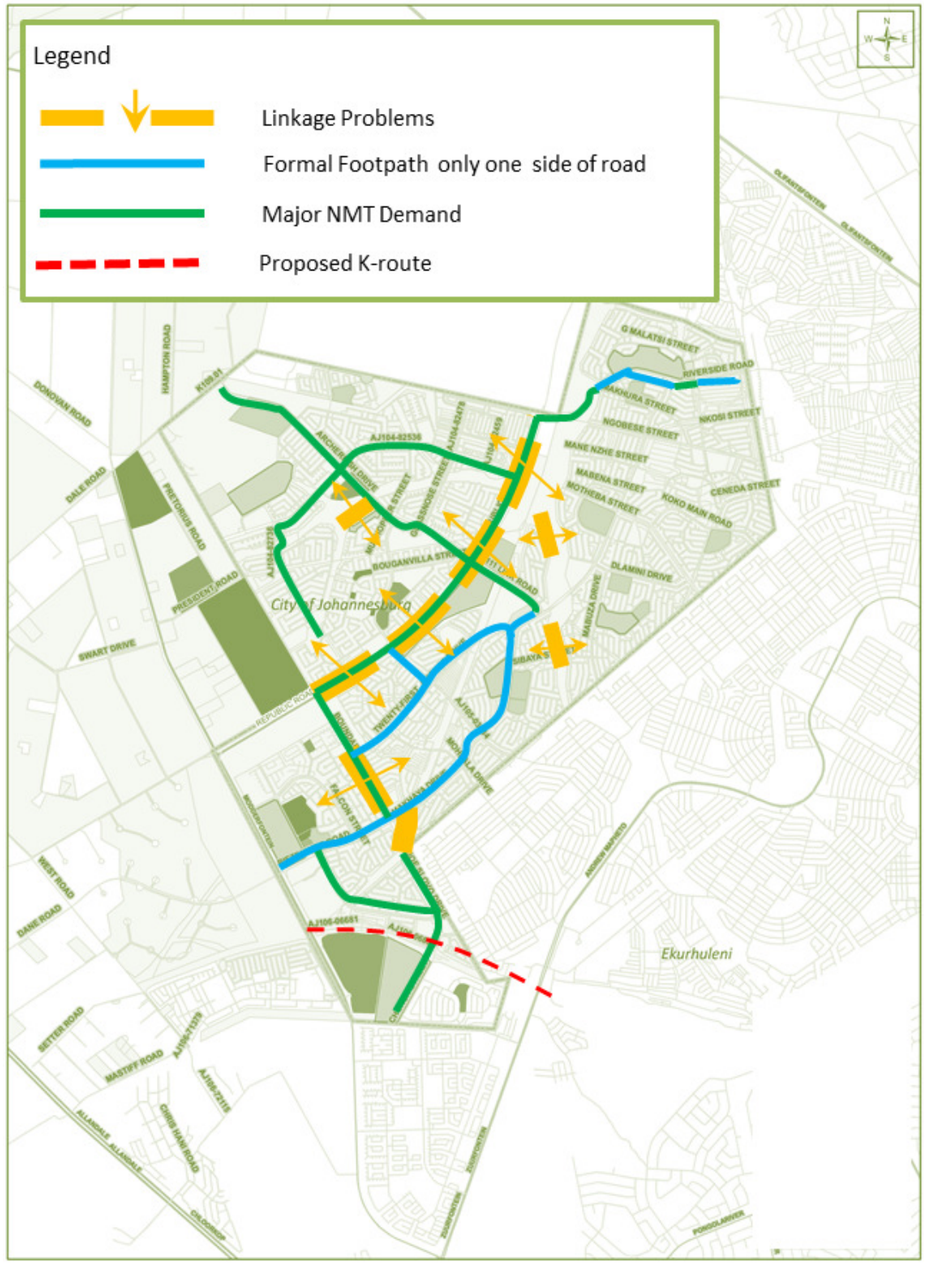


Figure 70 : Identified Issues

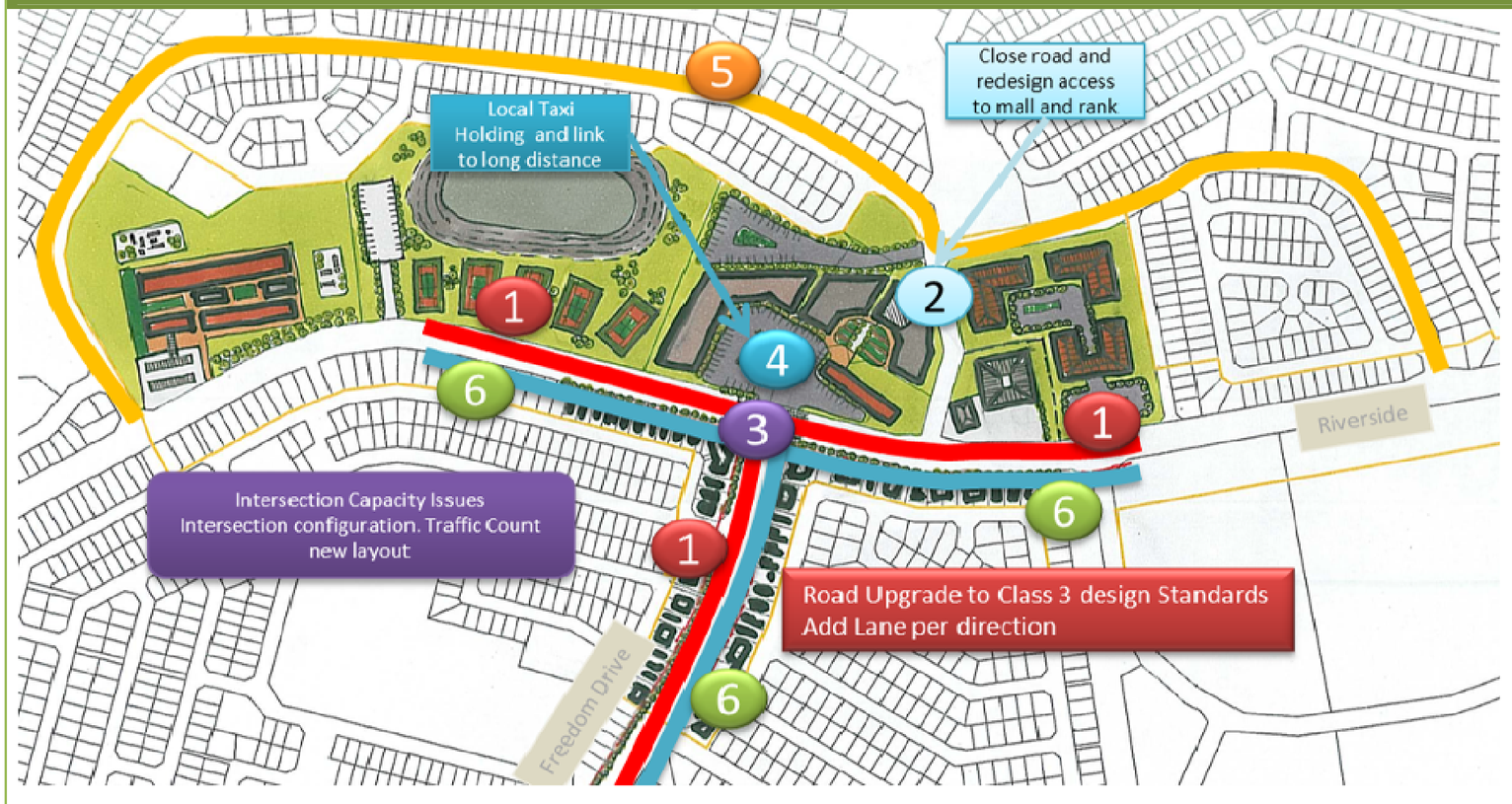
Based on the issues identified in the situational analysis, sidewalks need to be provided on one side of the road along roads indicated in blue in the above **Figure 70** and on both sides along roads indicated in green. The sidewalks indicated in **Figure 70** which form part of the 7 development nodes of Ivory Park will be excluded in the project list from the overall sidewalk project and included in the individual precinct project list for the area.

Node 1: Activity Node

Activity and Business Node

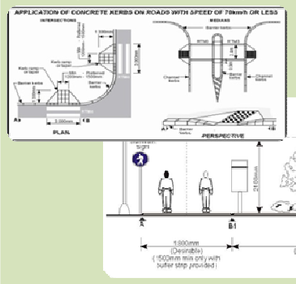
Project Nr		Issue/Concern	Intervention
Roads			
1	Class	Congestion during peak hours of the day. Public transport demand and movement hampered due to lack of operating space.	Upgrading Required add one 3.5 m lane per direction.
2	Road Closure	The current access to the mall and taxi rank is not demarcated properly.	Closing the road indicated will allow for a dedicate access to the mall and taxi rank where the demarcation of the rank and mall access will be possible.
5	Maintenance	Road is currently is poor structural condition. Several potholes were observed.	Full road reconstruction required.
3	Intersection	Intersection configuration is not according to any standards. A traffic circle is constructed as well as priority controlled.	Redesign intersection and determine appropriate intersection control.
Public Transport			
4	Public Transport Facilities	No provision for local operators to pick-up and drop-off passengers at long distance rank. Local operators hold in street and cause traffic congestion.	Commission traffic study to determine required rank capacity and optimum lay out to improve vehicular and commuter circulation. See detail 3 in Design Standard below for the proposed changes in current rank layout.
Non-Motorised Transport			
3	Pedestrian Crossing	Demarcation of pedestrian crossing not visible to pedestrians.	Provide raised pedestrian crossing. See design standard Detail 1 below for typical layout and provision for pedestrian at road intersections.
6	Sidewalks	Sidewalk widths currently provided is not adequate for the demand.	Provide sidewalks of at least 2.7 to 3 m on one side of Riverside Road and Twenty First Street. A typical cross section of a sidewalk along a Class 3 road is shown Detail 2 and 2 of Design Standards below.

Situational Analysis

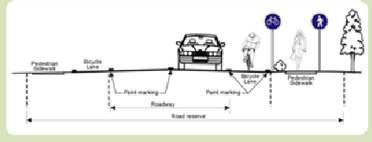


Design Standards(Detail Annexure A)

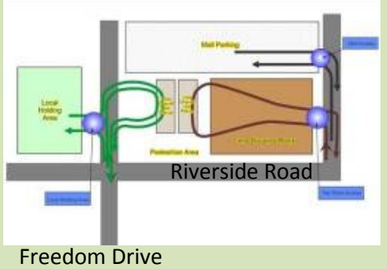
Detail 1(Pedestrian Facilities):



Detail 2 (Road Elements):



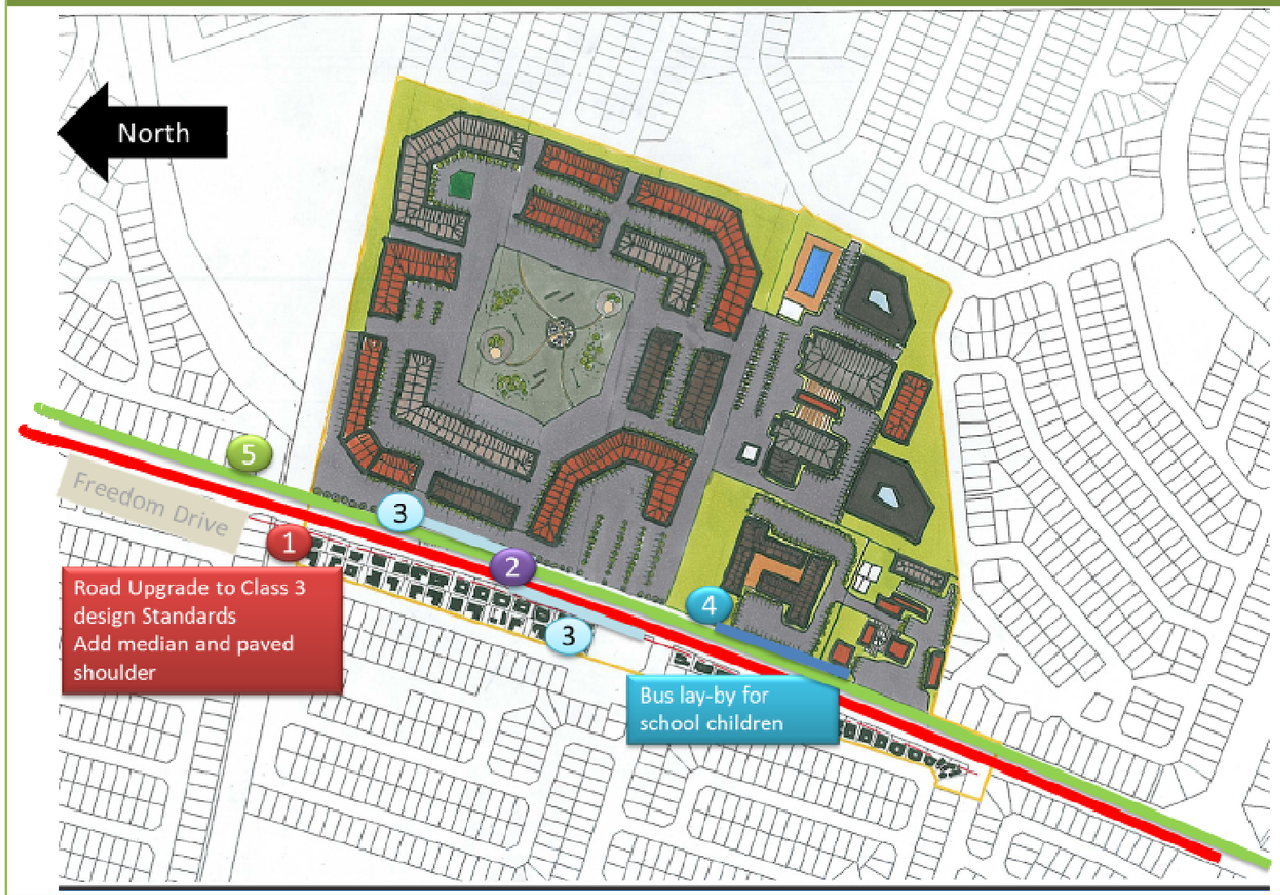
Detail 3 Proposed rank layout changes



Node 2: Activity Node

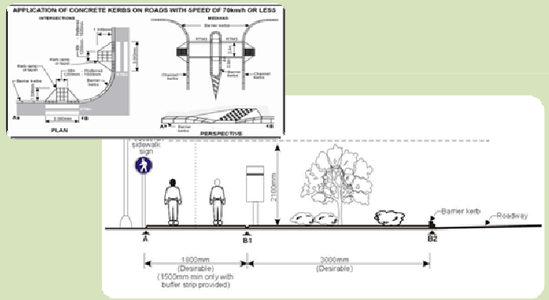
Activity and Business Node	Project Nr		Issue/Concern	Intervention
	**Roads**			
	1	Road Class	Congestion during peak hours of the day. Public transport demand and movement hampered due to lack of operating space.	Upgrading Required add one 3.5 m lane per direction.
	Public Transport			
	3	Public Transport Facilities	No provision for local operators to pick-up and drop-off passengers at long distance rank. Local operators hold in street and cause traffic congestion.	Commission traffic study to determine required rank capacity and optimum lay out to improve vehicular and commuter circulation. The typical design standard for a bus/taxi lay-by (pick up and drop off) is shown in Detail 2 of Design Standards shown below.
	4	Public Transport Facilities	A bus lay-by for school children required visiting the playground and gaining accesses to the high density residential area.	Typical lay out for a bus lay-by is provided below.
	Non-Motorised Transport			
	2	Pedestrian Crossing	Demarcation of pedestrian crossing not visible to pedestrians.	Provide raised pedestrian crossing. The design of a typical pedestrian crossing at a high volume pedestrian crossing is shown in Detail 3 of Design Standards shown below.
	5	Sidewalks	Sidewalk widths currently provided is not adequate for the demand.	Provide sidewalks of at least 2.7 to 3 m on one side of Riverside Road and Twenty First Street.

Situational Analysis

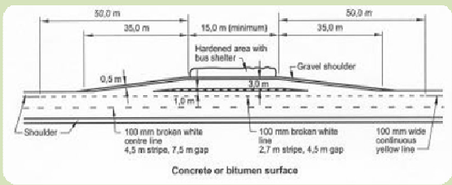


Design Standards(Detail Annexure A)

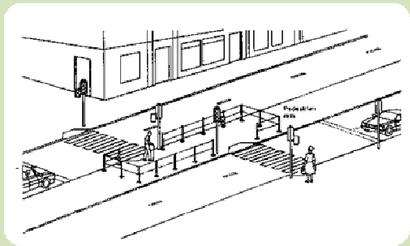
Detail 1 (Pedestrian Facilitie)s:



Detail 2(Bus by Layout):



Detail 3:



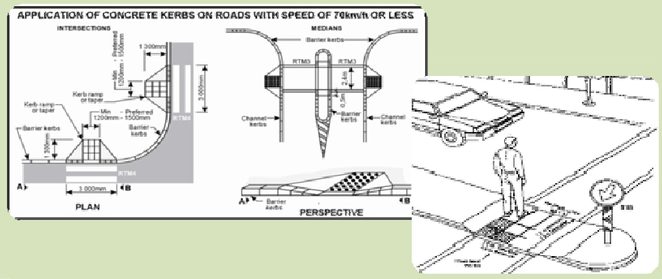
Node 3: Activity Node

Activity and Business Node	Project Nr		Issue/Concern	Intervention
	**Roads**			
	1	Accesses	The location of the access to the proposed development needs to be evaluated to conform to the minimum standard for a Class 3 road. The minimum preferred spacing on a mobility road is at least 450 m.	Align the accesses of the proposed development with existing accesses. If possible consolidate access to sports complex with new proposed development access in Freedom Drive.
	Public Transport			
		Public Transport Facilities	The public transport facility provided at the sports grounds are adequate for the area.	
	Non-Motorised Transport			
	2	Pedestrian Crossing	Demarcation of pedestrian crossing is not clear.	Road paint markings to be redone.
	3	Sidewalks	Provide sidewalk where currently is no sidewalk. Detail of kerb treatment at intersection of sidewalks with roads is shown in Design standards detail 1 below.	Provide sidewalks of at least 2.7 to 3 m on one side of Riverside Road and Twenty First Street. The typical provision of sidewalks along a Class 3 road is shown in Design Detail 2 and 3 below.

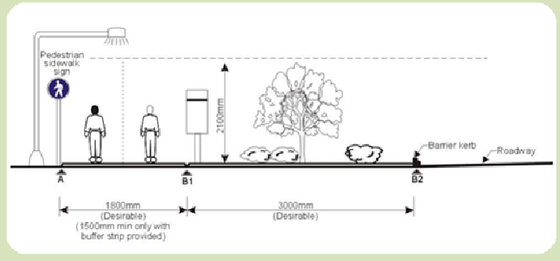
Situational Analysis

Design Standards(Detail Annexure A)

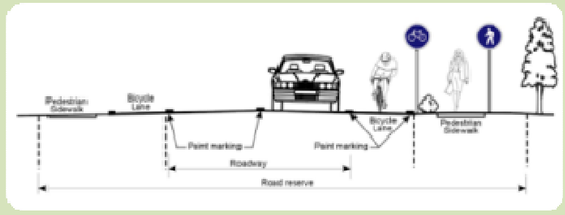
Pedestrian Facilities (Design Standard Detail 1):



Sidewalks (Detail 2):



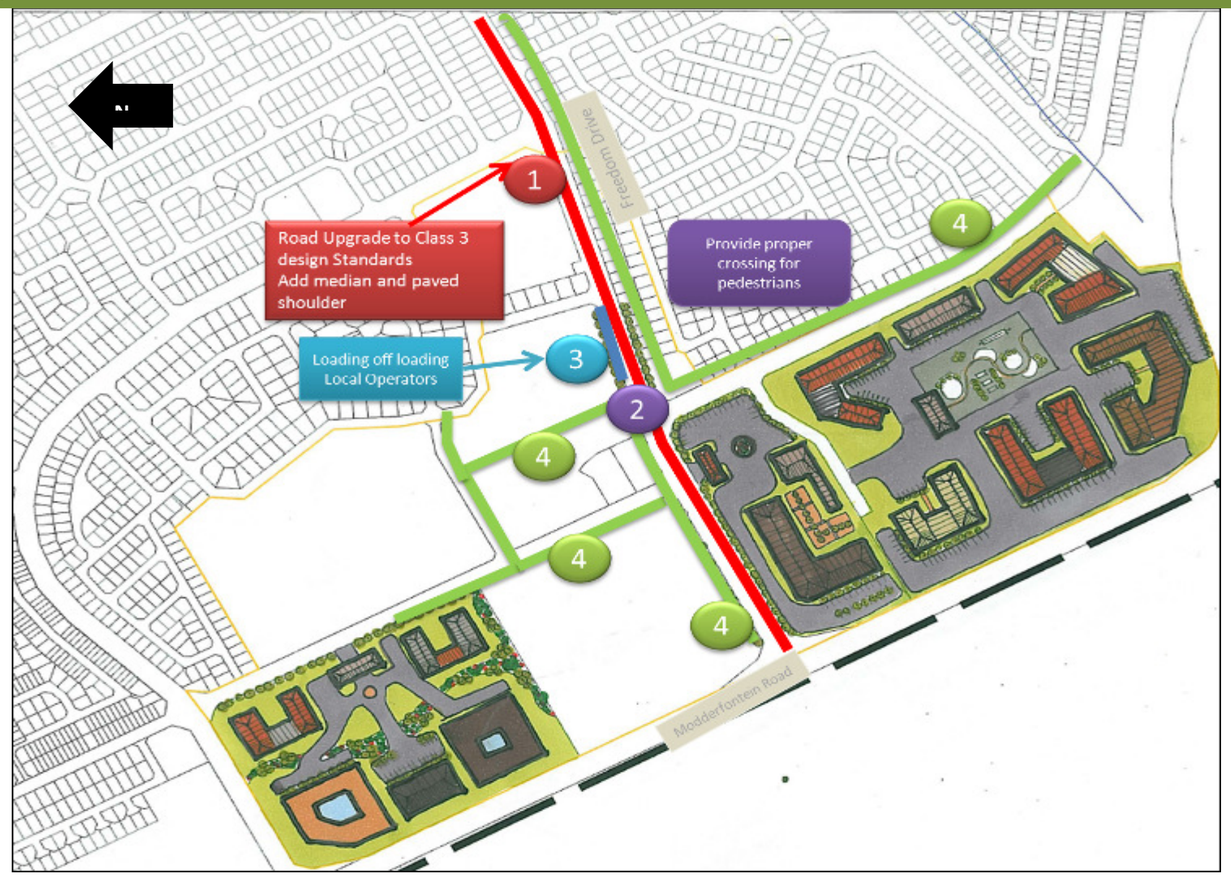
Sidewalks (Detail 3):



Node 4: Activity Node

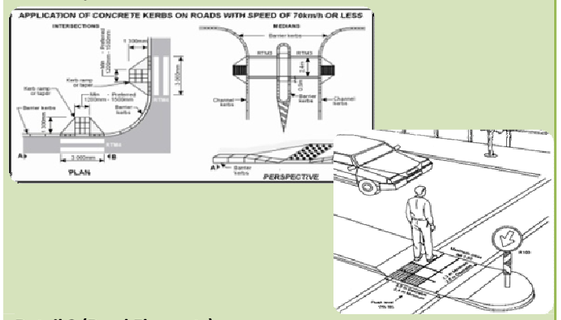
Activity and Business Node	Project Nr		Issue/Concern	Intervention
	**Roads**			
	1	Class	Congestion during peak hours of the day. Public transport demand and movement hampered due to lack of operating space and capacity.	Upgrading Required add one 3.5 m lane per direction.
	2	Intersection	Intersection configuration is not according to any standards. A traffic circle is constructed as well as priority controlled.	Redesign intersection and determine appropriate intersection control.
	Public Transport			
	3	Public Transport Facilities	No provision for local operators to pick-up and drop-off passengers at long distance rank. Local operators hold in street and cause traffic congestion.	Commission traffic study to determine required rank capacity and optimum lay out to improve vehicular and commuter circulation. See Detail 3 in Design Standards below for typical lay-outs and dimensions of lay-bys to be provided.
	Non-Motorised Transport			
	3	Pedestrian Crossing	The pedestrian demand will increase based due to the densification proposed in the land use proposal.	Provide raised pedestrian crossing at the intersection according to Detail 1 shown in Design Standard below.
	4	Sidewalks	Sidewalk widths currently provided is not adequate for the demand.	Provide sidewalks of at least 2.7 to 3 m on one side of Riverside Road and Twenty First Street. The typical provision of sidewalks is shown in Detail 2 of the Design Standards below.

Situational Analysis

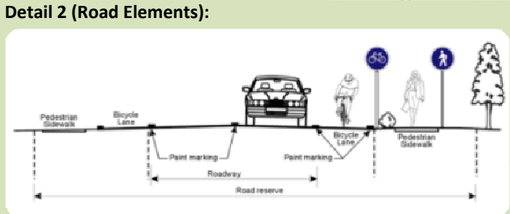


Design Standards(Detail Annexure A)

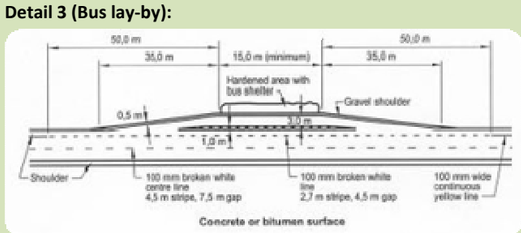
Detail 1 (Pedestrian Facilities:



Detail 2 (Road Elements):



Detail 3 (Bus lay-by):



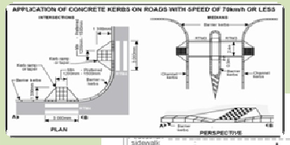
Node 5: Activity Node

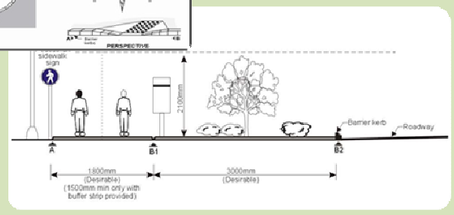
Activity and Business Node	Project Nr		Issue/Concern	Intervention
	**Roads**			
	1	Class	Congestion during peak hours of the day. Public transport demand and movement hampered due to lack of operating space.	Upgrading Required add one 3.5 m lane per direction.
	3	Intersection	Intersection configuration is not according to any standards. A traffic circle is constructed as well as priority controlled.	Redesign intersection and determine appropriate intersection control.
	Public Transport			
	2	Public Transport Facilities	No provision for local operators to pick-up and drop-off passengers at long distance rank. Local operators hold in street and cause traffic congestion.	Commission traffic study to determine required rank capacity and optimum lay out to improve vehicular and commuter circulation. See Detail 3 in Design Standards below for typical lay-out and dimensions of lay-bys.
	Non-Motorised Transport			
	3	Pedestrian Crossing	The pedestrian demand will increase based due to the densification proposed in the land use proposal.	Provide raised pedestrian crossing at the intersection according to Detail 1 shown in Design Standard below.
	4	Sidewalks	Sidewalk widths currently provided is not adequate for the demand.	Provide sidewalks of at least 2.7 to 3 m on one side of Riverside Road and Twenty First Street. The typical provision of sidewalks is shown in Detail 2 of the Design Standards below.

Situational Analysis

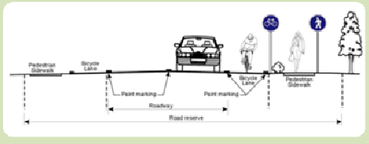
Design Standards(Detail Annexure A)

Pedestrian Facilities:

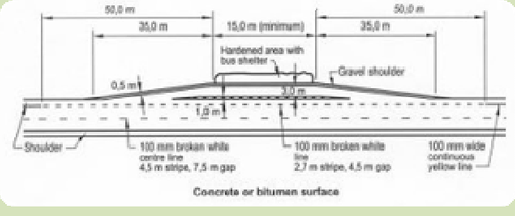




Detail 2:



Detail 3 (Bus lay-by):



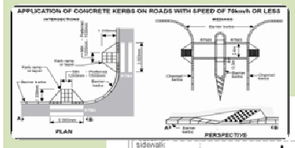
Node 6: Activity Node

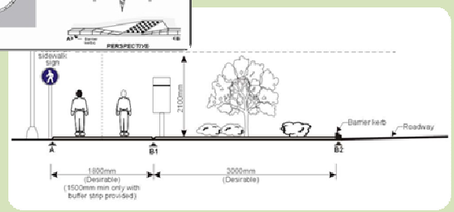
Activity and Business Node	Project Nr		Issue/Concern	Intervention
	**Roads**			
	1	Intersection	Intersection configuration is not according to any standards. A traffic circle is constructed as well as priority controlled.	Redesign intersection and determine appropriate intersection control.
	2	Traffic Calming	Large numbers of school children travel along the road to the south of the vehicular bridge. Most of the schools are situated in this area. To ensure a safe environment for these vulnerable users it is recommended that the area is demarcated with traffic calming measures to ensure a lower vehicular speed. The urban design will enhance the demarcation of the pedestrian area and create the link between this activity node and the node to the south.	Provide speed humps at the positions indicated in the situational analysis.
	Public Transport			
	2	Public Transport Facilities	No provision for local operators to pick-up and drop-off passengers at long distance rank. Local operators hold in street and cause traffic congestion.	Commission traffic study to determine required rank capacity and optimum lay out to improve vehicular and commuter circulation. See Detail 3 in Design Standards below for typical lay-outs and dimensions of lay-bys.
	Non-Motorised Transport			
	3	Pedestrian Crossing	Demarcation of pedestrian crossing not visible to pedestrians.	Provide raised pedestrian crossing at the intersection according to Detail 1 shown in Design Standard below.
	6	Sidewalks	Sidewalk widths currently provided is not adequate for the demand.	Provide sidewalks of at least 2.7 to 3 m on one side of Riverside Road and Twenty First Street. The typical provision of sidewalks is shown in Detail 2 of the Design Standards below

Situational Analysis

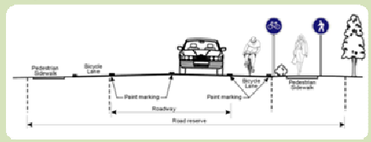
Design Standards(Detail Annexure A)

Detail 1 (Pedestrian Facilities):

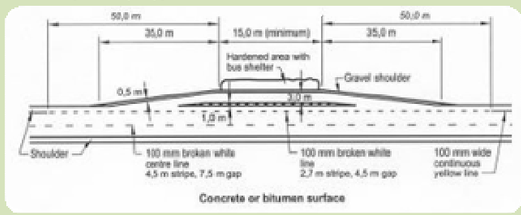




Detail 2 (Road Elements):



Detail 3 (Bus lay-by):

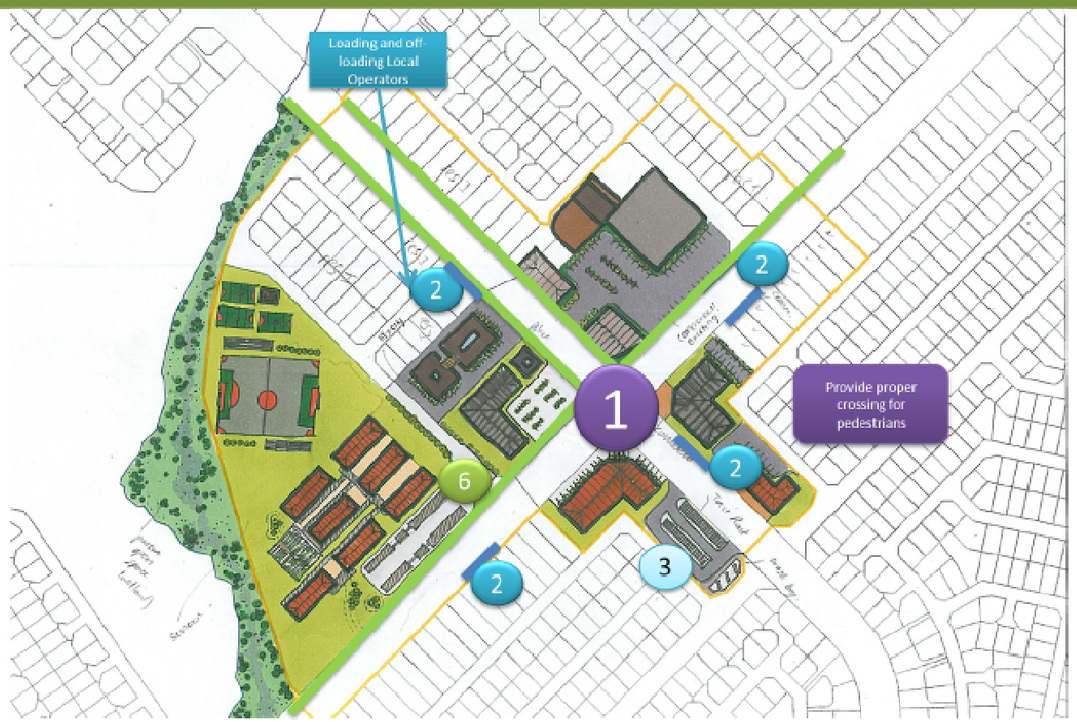


Node 7: Activity Node

Activity and Business Node

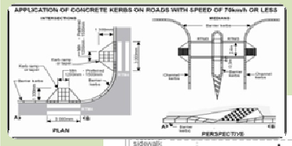
Project Nr		Issue/Concern	Intervention
Roads			
3	Intersection	Intersection configuration is not according to any standards. A traffic circle is constructed as well as priority controlled.	Redesign intersection and determine appropriate intersection control.
Public Transport			
2	Public Transport Facilities	No provision for local operators to pick-up and drop-off passengers at long distance rank. Local operators hold in street and cause traffic congestion.	Commission traffic study to determine required rank capacity and optimum lay out to improve vehicular and commuter circulation. See detail in proposal in situational analysis.
3	Taxi Rank Design		A detail traffic study is required to determine the capacity of the rank as well as the amenities that will be required a t the rank.
Non-Motorised Transport			
3	Pedestrian Crossing	Demarcation of pedestrian crossing not visible to pedestrians.	Provide raised pedestrian crossing at the intersection according to Detail 1 shown in Design Standard below.
6	Sidewalks	Sidewalk widths currently provided is not adequate for the demand.	Provide sidewalks of at least 2.7 to 3 m on one side of Riverside Road and Twenty First Street. The typical provision of sidewalks is shown in Detail 2 of the Design Standards below

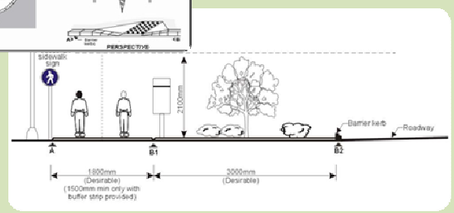
Situational Analysis



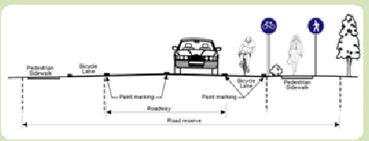
Design Standards(Detail Annexure A)

Pedestrian Facilities:





Road Elements:



Detail for Project 4:

Annexure A

ROAD CLASS 2	Regional Distributor
STRATEGIC FUNCTION	**NATURE OF ROADS**
Relatively high mobility roads with lower levels of access for the movement of large volumes of people, raw materials, manufactured goods, and agricultural produce of regional importance in rural and urban areas. 	**Public Roads:** • Between and through centres of prov. importance. • Between prov. capitals, large towns and municipal admin centres. • Between class 1 roads and key centres which have a significant economic, social, tourism or recreational role. • Between RSA and adjoining countries which carry limited economic or social road traffic. • For access to transport hubs of regional importance.
ROAD CHARACTERISTICS	
Traffic Volume: • Urban: Volumes broadly between 20 000 to 50 000 veh/day/direction • Rural: Lower in rural due to intersection restrictions (e.g. signals) • Access Spacing: • Urban Area – 0,6 to 0,8 km intersection spacing • Rural Area – Access spacing varies, and access control is an important consideration **Geometric: -** • Urban – Dual carriageway (2+ lanes) with physical separation, and no stopping / parking • Rural – Single carriageway with surfaced / gravel shoulders **Public Transport: - Formal and informal PT facilities prevalent** • Urban – High occupancy vehicles lanes and dedicated right-of-ways for BRT or other forms can be found • Rural – Can form important PT routes catering for long distance trips **Pedestrian: - Crossings provided at intersections** • Mid-block pedestrian crossings not allowed • Formal / informal walkways prevalent along routes with high pedestrian activity **Traffic Calming: -** • Prohibited – except limited sections of high pedestrian accidents	

ROAD CLASS 3	District Distributor
STRATEGIC FUNCTION	**NATURE OF ROADS**
Moderate mobility with controlled higher levels of access for the movement of people, raw materials, manufactured goods, agricultural produce in rural and urban areas of regional importance.	**Public Roads:** • Between centres, towns, and rural residential areas and villages • Between centres, towns and industrial/ farming areas. • Between residential areas and local industrial/commercial areas. • Between large residential areas which provide linkages between a Class 2 and/or Class 1 routes. • Which provide linkage between centres, towns, rural residential, industrial/farming areas and Class 2 or Class 1 routes.
	
ROAD CHARACTERISTICS	
Traffic Volume: • Urban: Minor arterials carrying up to approximately 40 000 veh/day • Rural: Lower in rural / developing areas **Access Spacing:** • Urban Area – 0,45 to 0,6 km intersection spacing • Rural Area – Spacing varies, however access spacing is an important aspect • Direct access prohibited, with marginal and partial access often permitted **Geometric:** • Urban – Dual carriageway (2 lanes) with physical separation, or undivided 4 lanes with no on-street parking permitted • Rural – Single carriageway, which can include gravel roads • Public Transport: • Important public transport routes in urban and rural areas • Formal / informal PT facilities such as taxi lay-byes can be found at intersections **Pedestrian:** • Pedestrian use road in some numbers • Pedestrian-vehicular conflict widespread, especially near public transport facilities **Traffic Calming:** Prohibited – except limited	

ROAD CLASS 4	District Collector
STRATEGIC FUNCTION	**NATURE OF ROADS**
High levels of access and lower levels of mobility for lower traffic volumes of people, raw materials, manufactured goods, agricultural produce in rural and urban areas of local importance.	**Public Roads:** • Between villages, farming areas and scattered rural settlements and communities, which primarily serve local social services as well as access to markets. • Within a commercial, residential, industrial areas. • Linking Class 3 roads.

ROAD CHARACTERISTICS

Traffic Volume:

- **Urban**: Volumes up to 10 000 veh/day/direction
- Urban capacity may be limited to 25 000 vehicle/day due to slowing moving nature of traffic, delays at intersections, and interaction between vehicular- pedestrian traffic
- Rural: Volumes typically very low, often less than 1000 vehicle/day/direction

Access Spacing:

- Urban Area – 0,2 to 0,5 km intersection spacing
- Closer than Class 03 roads, which reflects in the lower maximum speed regime

Geometric:

- **Urban** – Dual carriageway (2 lanes)
- Physical separation usually provided to protect right turn movements
- Lane widths may be as low as 3,2 m wide

Public Transport:

- Often serve as primary public transport routes
- Formal / informal PT facilities such as taxi lay-byes can be found at intersections

Pedestrian:

- Paved sidewalks and protected pedestrian crossing points are common

Traffic Calming:

Prohibited – except limited except limited sections of high pedestrian accidents / fatalities

ROAD CLASS 5	Local
STRATEGIC FUNCTION	**NATURE OF ROADS**
High access and very low mobility routes for the movement of people and goods within urban and rural areas.	**Public Roads:** • Within a residential community. From a Class 3 or 4 to a residential community. • To provide direct access to industries and businesses. • To provide access to specific destinations such as heritage sites, national parks, mines, forests etc.

ROAD CHARACTERISTICS

Traffic Volume:

- Urban – Volumes lower than 5 000 veh/day
- Commercial / Industrial – Volumes lower than 15 000 veh/day

Access Spacing:

- Urban Area – 0,2 to 0,3 km intersection spacing
- Direct access is permitted

Geometric:

- Single carriageway with single lanes per direction
- On-street parking permissible; Loading facilities permissible

Public Transport:

- Serve public transport, however not normally primary routes

Pedestrian:

- Pedestrians and cyclists widespread; Paved footpaths provided with mid-block pedestrian crossings permitted on busier roads

Traffic Calming:

Traffic calming may be found

ROAD CLASS 6	Local
STRATEGIC FUNCTION	**NATURE OF ROADS**
Public rights of ways for non – motorized transport providing the basic and dedicated movement.	**Public Right of Way:** • To provide safe access and mobility for pedestrians, cyclists and animal drawn transport. For social, recreational and economic access.

ROAD CHARACTERISTICS

Traffic Volume:

- Vehicular traffic absent as designated exclusively for pedestrian and cyclist use

Access Spacing:

- Intersection spacing is not relevant

Geometric:

- Designed as per applicable design standards

Public Transport:

- These routes often lead to public transport nodes

Pedestrian:

- High pedestrians and cyclists is prevalent

Traffic Calming:

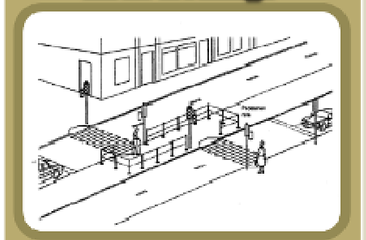
- Not Applicable

Annexure B

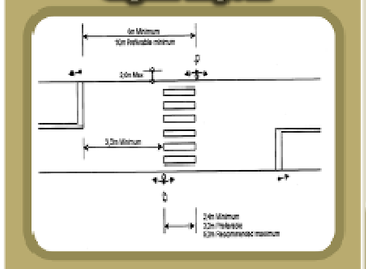
Class 3 Road Design Principles:

NON-MOTORISED TRANSPORT INFRASTRUCTURE STANDARDS CLASS 3 ROADS

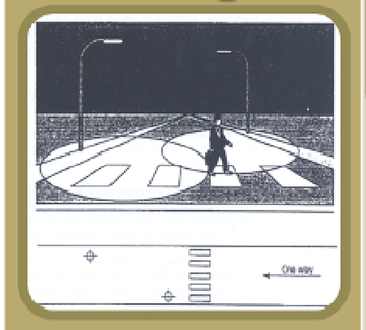
Conceptualization of Mid-block Crossings



A: Mid-block Crossing Signal Layout



B: Lighting of Mid-Block Crossings



Mid Block Pedestrian Crossings

Signal Layout (Refer to A):

- *Provide signalized mid-block crossings along Class 3 routes with S11 signal heads and pedestrian demand push-buttons.*
- *Audible signals to be implemented for sight impaired road users with growth nodes and CBD areas.*
- *RTM 4 pedestrian crossing lines to be implemented (minimum width 2.3m / desirable width 5m)*
- *Signal heads to be placed 3m from RTM1 stop line.*
- *W306 signs to be provided leading up to mid-block crossings.*

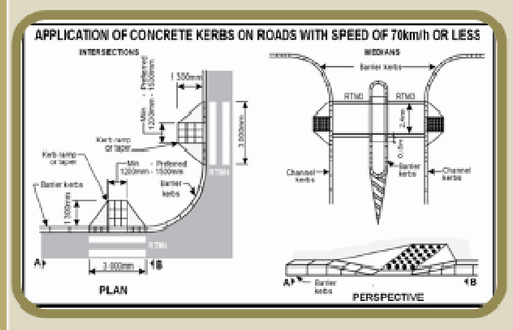
•**Road Lighting (Refer to B):**

- *Street lighting to be provided as per NDoT Pedestrian Guideline Standard (Illustrated adjacent).*

•**Kerb Transitions (Refer to C):**

- *Kerb ramps must be implemented at all crossing points to accommodate for wheelchair users and sight impaired pedestrians.*

•**C: Kerb-Ramp Details**

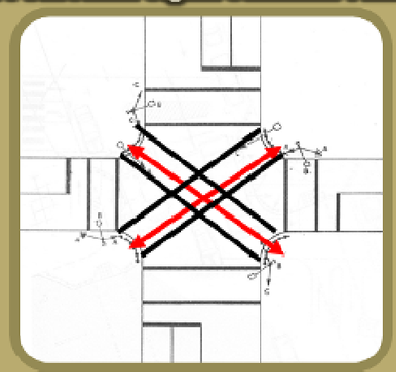


Application Areas:

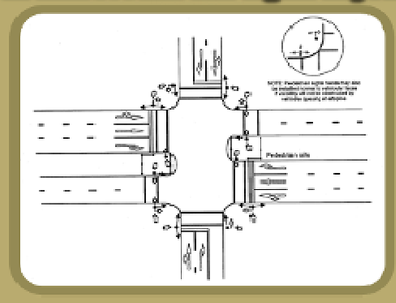
- *CBD areas and Growth Nodes*
- *High volume pedestrian crossing points that occur mid-block between two land-use attractors (Where intersection spacing is longer than 300m apart).*

NON-MOTORISED TRANSPORT INFRASTRUCTURE STANDARDS CLASS 3 ROADS

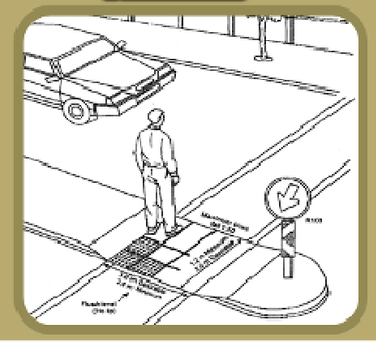
A: Pedestrian Signal Scramble Phase



B: Intersection and Signal Layout



Staged Intersection Crossing Dimensions



Intersection Crossings:

Pedestrian Signal Applications:

Three types of pedestrian signal applications are recommended for CBD and Growth Node precinct intersections:

- *Standard Pedestrian Phase*
- *Scramble Pedestrian Phase (Refer to A)*
- *Early Start Pedestrian Phase*

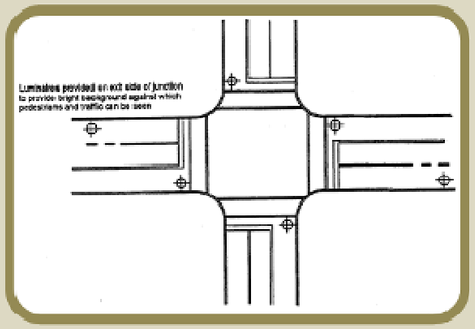
Intersection and Signal Layout (Refer to B):

- *Provide signalized pedestrian crossings at all Class 3 route intersections with S11 signal heads and pedestrian demand push-buttons.*
- *Audible signals to be implemented for sight impaired road users within CBD and Growth Node precincts.*
- *RTM 3 pedestrian crossing lines to be implemented (minimum width 1.5m / desirable width 3m)*
- *Interlocking pavers or coloured asphalt is recommended at Class 3 junctions serving as gateways to the precinct (indicates higher pedestrian volumes and entrance to the precincts).*
- *Staged crossings should be considered. Minimum median width for staged crossings 2m.*

•**Road Lighting (Refer to C):**

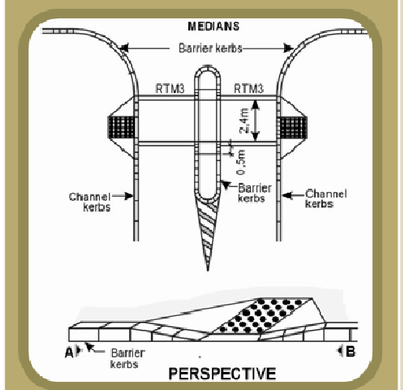
- *Street lighting to be provided as per NDoT Pedestrian Guideline Standard.*

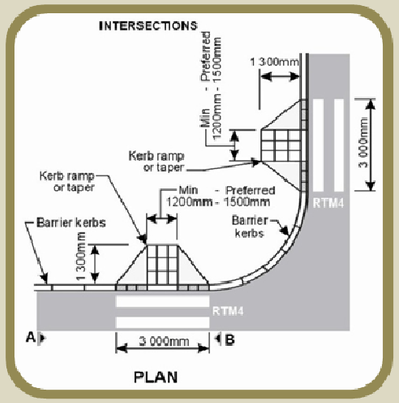
•**C: Intersection Lighting**



NON-MOTORISED TRANSPORT INFRASTRUCTURE STANDARDS CLASS 3 ROADS

D: Kerb Transitions





Kerb Transitions (Refer to D):

- *Kerb ramps must be implemented at all crossing points to accommodate for wheelchair users and sight impaired pedestrians.*

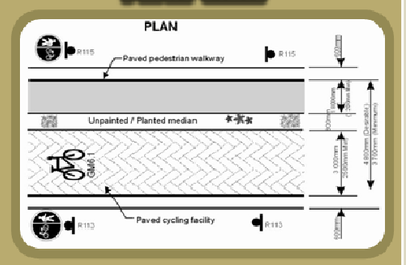
Application Areas:

- *Road intersection between Class 3 roads and any other road class (Generally Class 3 or 4)*
- *NB: Provide pedestrian crossings on left-slip lanes where high vehicle speeds conflict with pedestrian crossings.*

NON-MOTORISED TRANSPORT INFRASTRUCTURE STANDARDS CLASS 3 ROADS

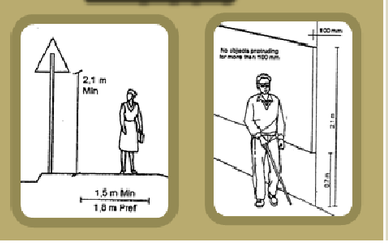
A: Class 2 Pedestrian / Cycle Ways

PLAN VIEW



PERSPECTIVE VIEW

B: Geometry and Design Dimensions



Pedestrian and Cycle Ways:

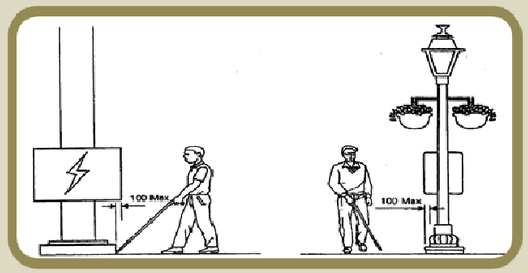
Layout and Geometry (Refer to A):

- *Walkways and cycle to be provided adjacent to all Class 3 Roads (these facilities should always be separated from the roadway itself by means of a buffer strip minimum 1.0m / desirable 3m).*
- *Walkway and cycle way also separated because of speed differential of modes (planted median 0.8m).*
- *All existing lateral obstructions should be removed from the walkway / cycle way area.*

Design Dimensions

B: Geometry and Design Dimensions

Walkway (Refer to B)	Cycle way (Refer to B)
Gradient ≤5%	Gradient ≤5%
Minimum Width 1.2m	Minimum Width 1.5m
Desirable width 1.8m	Desirable width 1.8m
Lateral clearance ≥0.1m	Lateral clearance ≥0.5m
Height clearance ≥2.1m	Height clearance ≥2.1m
Buffer strip 1m	Buffer strip 1m



Surfacing:

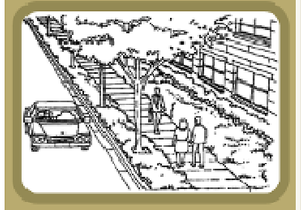
- *Surfacing should be conducive to movement of able bodied users and users with disabilities.*
- *Gratings and covers opening ≤12mm.*

Edges

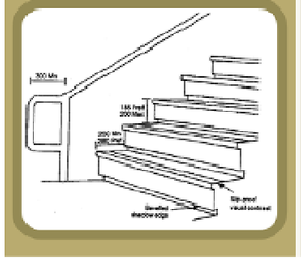
- *Edges should be defined visually and tactile.*
- *Handrails to be implemented where vertical drop of 0.8m with slope steeper than 1:2 (50%) occurs*

C: Lighting along walkways and cycle ways

D: Walkways along Urban Links



A: Stair Applications

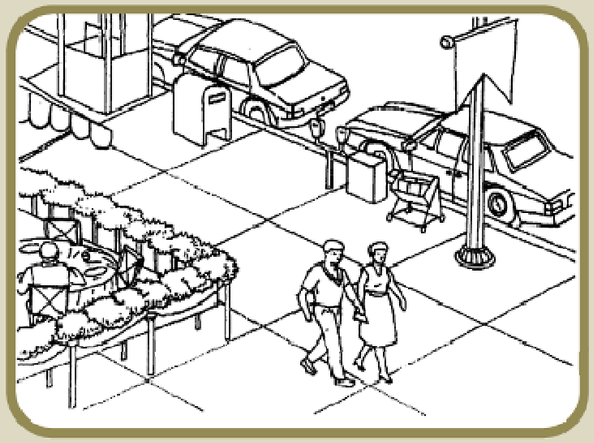


- *within 1.2m from edge.*
- *Lighting (Refer to C):*
- *Lighting should be provided along all walkways and cycle ways for safety and security as well as night-time operational reasons.*

•Application Areas (Refer to D and E):

- *Adjacent to all Class 3 roads*
- *Facilities (walkways and cycle ways) to be aligned to crossing points at intersections and mid-block crossings.*

E: Walkways at Activity Centres



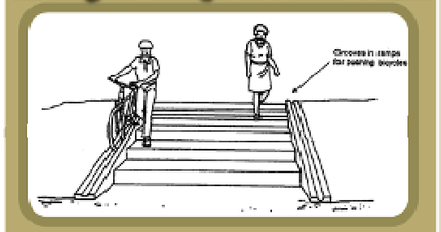
Building Frontages:

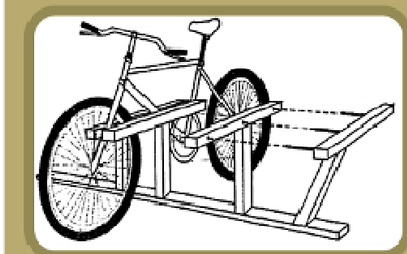
Geometry (Accessed from the Sidewalk) – Refer to A:

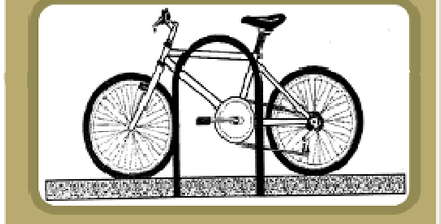
- *Ramps should be provided for disabled users at 1:12 (8.3%) gradient.*
- *Ramp rises should be stepped at ≤400mm intervals.*
- *Stairs to be implemented according to National Building Regulations (SABS 1900)*
- *Public stairs ≥1.5m width, minimum of 3 steps, non-slip materials with ~2% gradient for drainage.*

NON-MOTORISED TRANSPORT INFRASTRUCTURE STANDARDS CLASS 3 ROADS

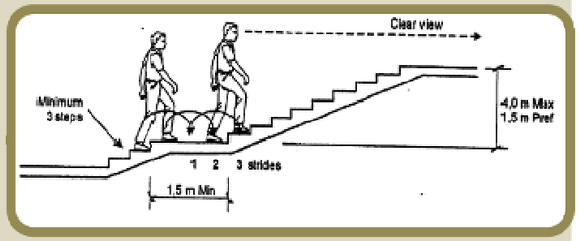
B: Bicycle Ramps at Public Stairs







Geometry (Accessed from the Sidewalk) – Refer to A:



Bicycle Ramps and Storage (Refer to B):

- *Bicycle ramps to be provided adjacent to all stairs ≤1:2 (50%) gradient.*
- *Locate bicycle storage and parking adjacent to major destinations i.e. public transport stations, railway stations, employment-, retail- and entertainment centres such as the CBD and Growth Node precincts.*

•Storage geometry:

- *Length: 1.8m*
- *Width: 0.6m*
- *Height: 2.1m*
- *Aisle: ≥1.5m*

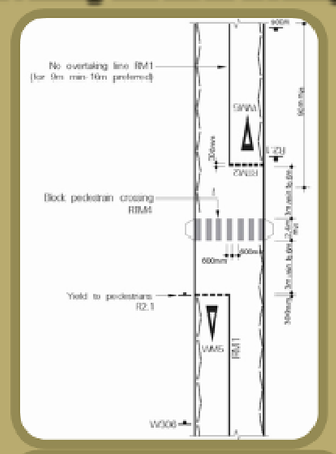
Application Areas:

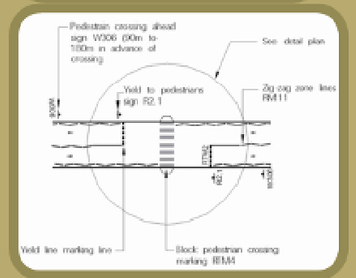
- *All building frontages leading out onto Class 3 roads.*

Class 4 and 5 Road Design Principles:

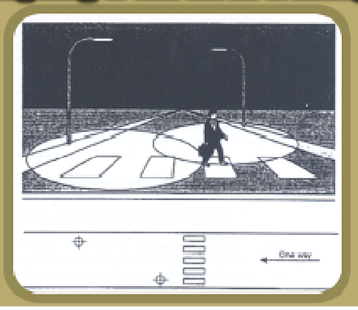
PEDESTRIAN AND CYCLE INFRASTRUCTURE STANDARDS CLASS 4 AND 5 ROADS

A: Priority Mid-block Crossing





B: Lighting of Mid-Block Crossings



Priority Mid-Block Pedestrian Crossings

Yield Layout (Refer to A):

- *Provide yield mid-block crossings along Class 4/5 routes.*
- *RTM 4 pedestrian crossing lines to be implemented (minimum width 2.4m/ desirable 5m width)*
- *No overtaking line RM1 for 9m minimum / 16m preferred.*
- *RTM2 road signage with yield sign WM5*
- *RTM2 to be placed 3m minimum – 6m from block pedestrian crossing (RTM4).*
- *Option to provide raised block pedestrian crossing to serve as further speed reduction tool.*

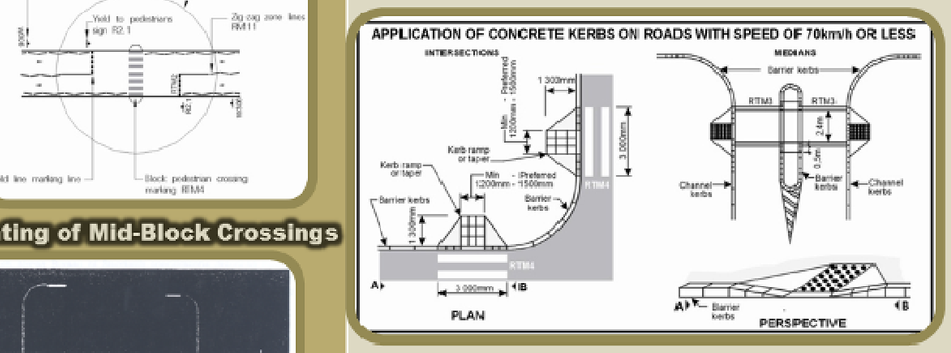
•Road Lighting (Refer to B):

- *Street lighting to be provided as per NDoT Pedestrian Guideline Standard.*

•Kerb Transitions (Refer to C):

- *Kerb ramps must be implemented at all crossing points to accommodate for wheelchair users and sight impaired pedestrians.*

•C: Kerb-Ramp Details

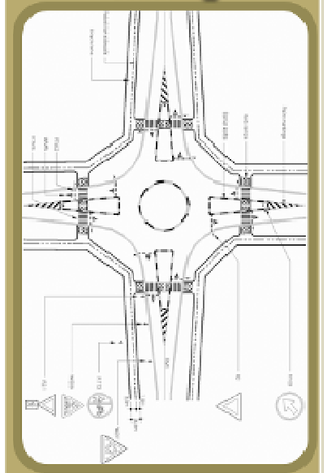


Application Areas:

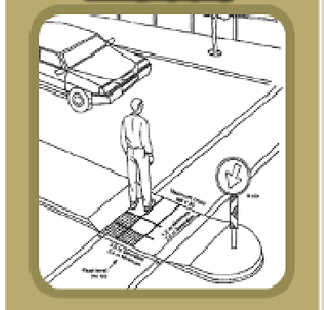
- *High volume pedestrian crossing points that occur mid-block between two land-use attractors or where intersection spacing is longer than 300m apart.*

PEDESTRIAN AND CYCLE INFRASTRUCTURE STANDARDS CLASS 4 AND 5 ROADS

A: Roundabout Intersection Pedestrian Crossing



Staged Intersection Crossing Dimensions



Intersection Crossings:

Roundabout Intersection Pedestrian Crossing (Refer to A):

- *RTM 4 pedestrian crossings to be implemented (minimum width 1.5m / desirable width 3m)*
- *RTM 2 with WM5 yield road signage on both sides of the pedestrian crossing. Therefore vehicle will yield for pedestrians before entering the circle, then vehicles upon entering the circle, again yielding before exiting the desired road.*
- *Shared pedestrian and cycle lanes provided adjacent to road with signage R113*
- *W201 Roundabout sign*
- *Provide barrier kerbing.*
- *Option to provide raised roundabout intersection to further reduce vehicular speed.*

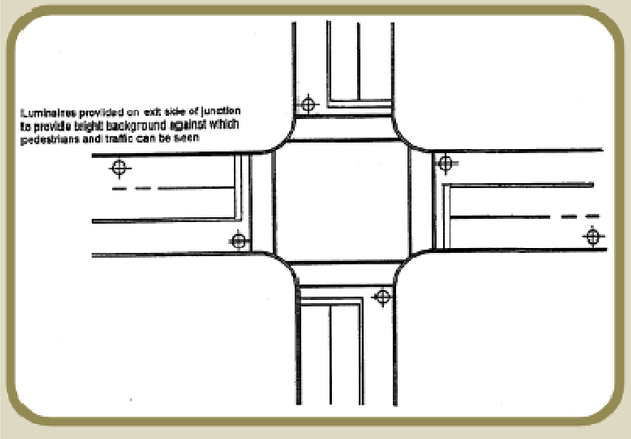
Staged Intersection Crossing (Refer to B):

- *RTM 3 pedestrian crossing lines to be implemented (minimum width 1.5m / desirable width 3m)*
- *Interlocking pavers or coloured asphalt is recommended at Class 4/5 junctions serving as gateways to a residential road.*
- *Staged crossings should be considered. Minimum median width for staged crossings 2m.*
- *Raised pedestrian crossing can be considered.*

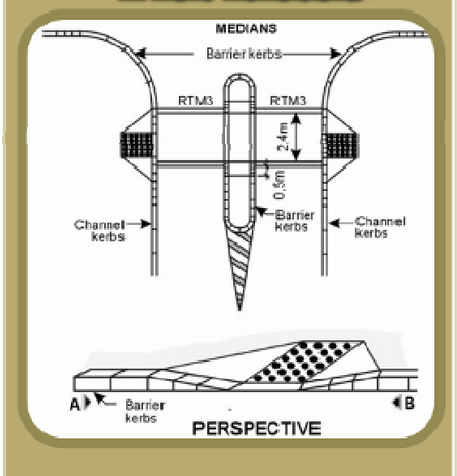
Road Lighting (Refer to C):

- *Street lighting to be provided as per NDoT Pedestrian Guideline Standard.*

•C: Intersection Lighting

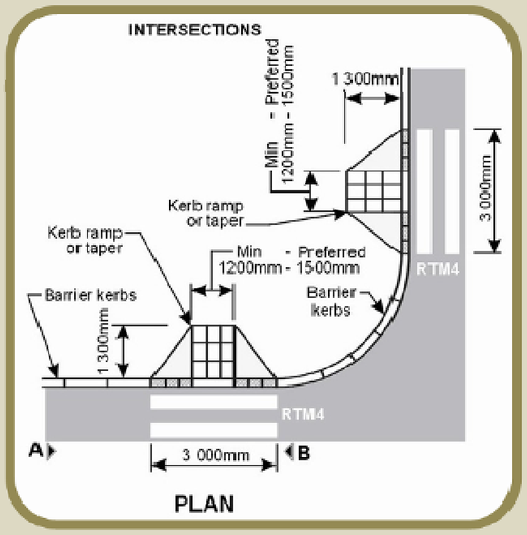


D: Kerb Transitions



Kerb Transitions (Refer to D):

•Kerb ramps must be implemented at all crossing points to accommodate for wheelchair users and sight impaired pedestrians.

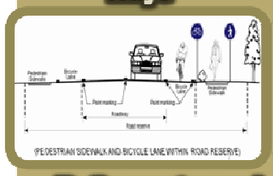


Application Areas:

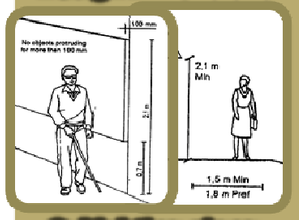
- *Road intersections between Class 4 roads and Class 5 roads and Class 5 roads and Class 5 roads.*

PEDESTRIAN AND CYCLE INFRASTRUCTURE STANDARDS CLASS 4 AND 5 ROADS

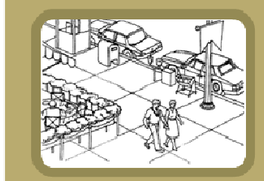
A: Class 4 / 5 Pedestrian / Cycle Ways



B: Geometry and Design Dimensions



C: Lighting along walkways and cycle ways



Pedestrian and Cycle Ways:

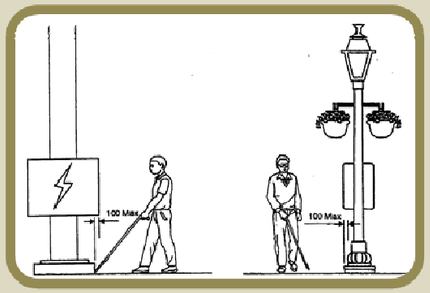
Layout and Geometry (Refer to A):

- *Walkways to be provided adjacent to all Class 4/5 Roads with cycle ways provided within roadway separated by paint marking.*
- *Walkway and cycle way also separated because of speed differential of modes (Barrier Kerb 0.3m).*
- *All existing lateral obstructions should be removed from the walkway / cycle way area.*

Design Dimensions

Walkway (Refer to B)	Cycle way
Gradient ≤5%	Gradient ≤5%
Minimum Width 1.5m	Minimum Width 2.5m
Desirable width 1.8m	Desirable width 3m
Lateral clearance ≥0.1m	Lateral clearance ≥0.5m
Height clearance ≥2.1m	Height clearance ≥2.1m
Buffer strip 0.6m	Buffer strip 0.6m

B: Geometry and Design Dimensions



Surfacing:

- *Surfacing should be conducive to movement of able bodied users and users with disabilities.*
- *Gratings and covers opening ≤12mm.*

Edges

- *Edges should be defined visually and tactile.*
- *Handrails to be implemented where vertical drop of 0.8m with slope steeper than 1:2 (50%) occurs within 1.2m from edge.*

Lighting (Refer to C):

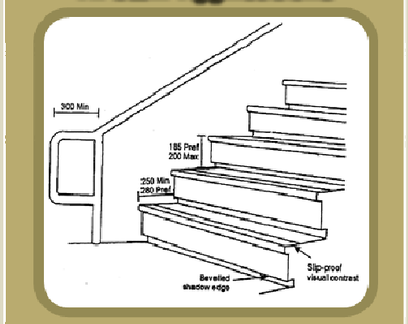
- *Lighting should be provided along all walkways and cycle ways for safety and security as well as night-time operational reasons.*

•Application Areas (Refer to D and E):

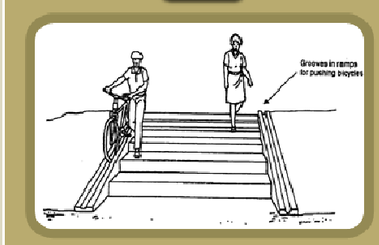
- *Adjacent to all Class 4/5 roads*
- *Facilities (walkways and cycle ways) to be aligned to crossing points at intersections and mid-block crossings.*

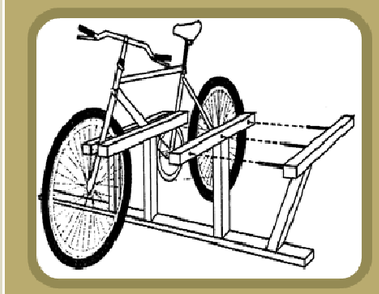
PEDESTRIAN AND CYCLE INFRASTRUCTURE STANDARDS CLASS 4 AND 5 ROADS

A: Stair Applications



B: Bicycle Ramps at Public Stairs

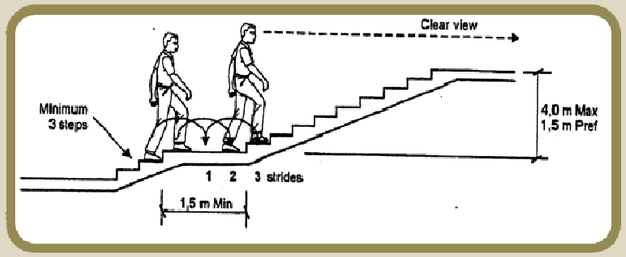




Building Frontages:

Geometry (Accessed from the Sidewalk) – Refer to A:

- *Ramps should be provided for disabled users at 1:12 (8.3%) gradient.*
- *Ramp rises should be stepped at ≤400mm intervals.*
- *Stairs to be implemented according to National Building Regulations (SABS 1900)*
- *Public stairs ≥1.5m width, minimum of 3 steps, non-slip materials with -2% gradient for drainage.*

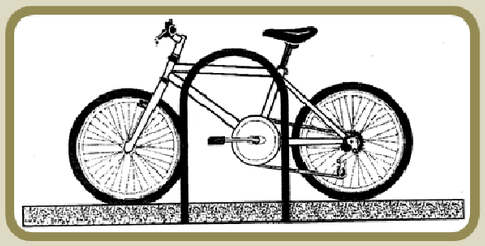


Bicycle Ramps and Storage (Refer to B):

- *Bicycle ramps to be provided adjacent to all stairs ≤1:2 (50%) gradient.*
- *Locate bicycle storage and parking adjacent to major destinations i.e. BRT stations, GRRL station, employment-, retail- and entertainment centres.*

Storage geometry:

- *Length: 1.8m*
- *Width: 0.6m*
- *Height: 2.1m*
- *Aisle: ≥1.5m*



3.10 CONCLUSION

- The existing nodal developments identified as part of the Swazi-Inn and Bambanani Urban Development Frameworks must remain as is and allowed the time to mature in its current context;
- This Urban Development Framework identified an additional seven nodes which is spread throughout the study area. The methodology used to identify these nodes is discussed in Chapter 2 and 3 above;
- The proposed nodes have been introduced over the entire area and should be sufficient to act as catalyst for development over the entire Ivory Park area. Given the current economic climate it must be noted that micro economics might vary considerably. In this instance specific projects within the proposed nodes must be considered carefully to ensure that the nodes are provided with the best chance of development as envisaged herein above;
- The conceptual framework should be considered as a guideline and not interpreted literally; and
- Projects will be identified in Chapter 4 to support the development of the nodes.

CHAPTER 4: BUSINESS PLAN

4.1 INTRODUCTION

This Chapter will deal with the compilation of the comprehensive business plan for the Ivory Park study area.

The previous chapters dealt with the following aspects:

1. Introduction and background. This chapter explained the methodology used throughout the study as well as explaining the departure of baseline date used as a departure for the study;
2. Situational analysis. This chapter set the scene in terms of confirming the current status quo within the study area;
3. Development Framework. This chapter deals with the visual representation of specific areas within the study area which will act as development catalyst in the longer term.

The following section will make use of information contained in Chapters 1 – 3 to quantify the development proposals into a consolidated list of projects which can be used in the future to develop detailed project plans for Ivory Park.

4.2 BUSINESS PLANS: TYPICAL REQUIREMENTS FROM NATIONAL TREASURY

4.2.1 INTRODUCTION

This section describes in more detail the components and requirements of the National Treasury - Neighbourhood Development Partnership Grant(NDP) to access funding for a programme where a particular Municipality has been successful in obtaining an Award/s and grant funding from the NDP. The section highlights the requirements for the approval of Business Plans and illustrates the position of this document within the hierarchy of outputs required by the NDP for capital investment.

It should be noted that the process to submit a business plan is the last step within the Project Preparation Phase of the NDP Programme Life Cycle and is the product of building a detailed business case for a particular intervention. It is thus important to view this section within the broader context of the entire NDP process as presented by means of the NDP Roadmap (http://ndp.treasury.gov.za).

4.2.2 NDP FUNDING

The Business Plan is a key output to unlock funding for capital investment and is a critical element documenting what the overall plan is for a programme which proposes to draw on NDPG to catalyse its implementation. The Business Plan must be viewed within the context of a hierarchy of terms used by the NDP to define levels, associations and relationships required to manage preparation, implementation and exit. The figure below explains the hierarchy of key NDP terms:

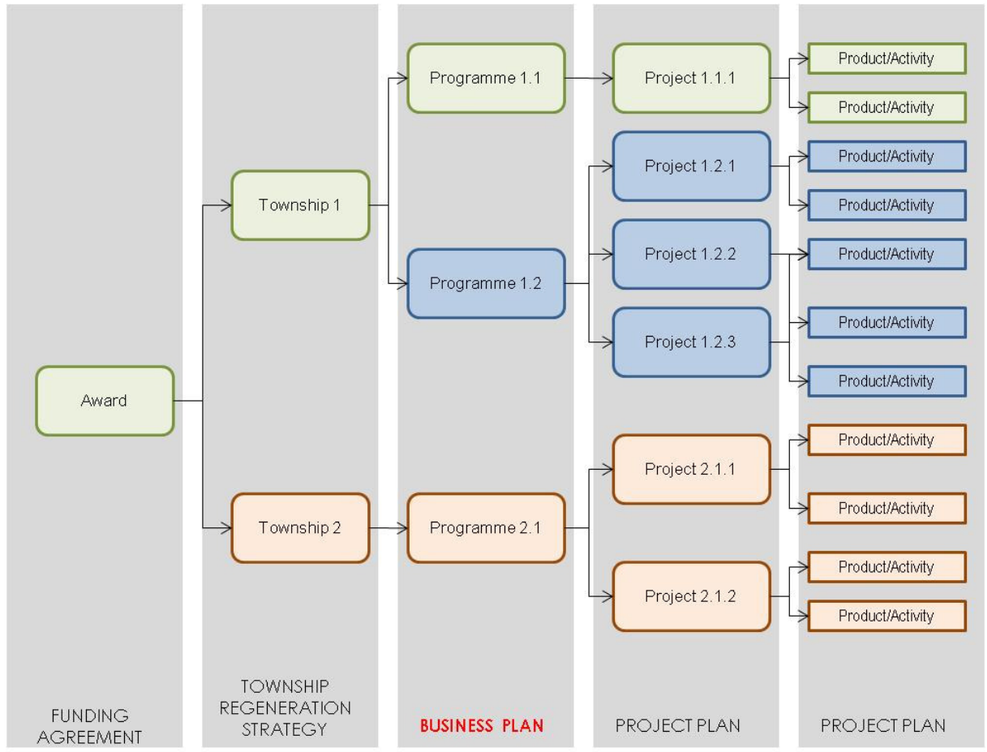


Figure 70: *NDP Business Plan Hierarchy*

Each of the components within the figure is explained in the table below:

AWARD	An Award reflects an approved funding amount from the Neighbourhood Development Partnership Grant procured by a Municipality. The value and conditions of the grant award is specified in a Funding Agreement which serves as the contract between the National Treasury of South Africa and the Municipality.
TOWNSHIP	Typically, an Award will have been made to a Municipality based upon an application for developments in a specific township, or perhaps in several of its townships. As an area-based initiative aiming to stimulate and accelerate investment in township neighbourhoods by providing technical assistance and capital grant financing through municipalities, the NDPG intends to direct developments and impacts at the level of townships. This is envisaged to be on the basis of overarching, long-range township regeneration plans or strategies (TRS) developed through the Municipalities.
PROGRAMME	Ideally, NDPG's capital grant is applied within the context of the TRS on the basis of which a business plan is developed for the specific investment of the grant. (i.e. for the portion/s of the overall TRS which can be resourced / catalyzed through the NDPG).The business plan therefore presents the case and detail for how implementation funding is to be applied to a selection of projects supporting the TRS. This set of projects designating the application of the NDPG funds

	within the TRS constitutes the municipality's Programme and is submitted by means of a Business Plan.
PROJECT	The municipality's NDPG Programme will ultimately comprise of a series of projects that are funded through the Capital Grant. These are projects that support the NDPG's objective of funding public infrastructure, places, facilities and other initiatives that will attract private and community sector investment and enable better access to government services . The projects will generally tend to be of 4 types: • Nodal and/or precinct projects • Linkage projects (internal and/or external) • General improvement projects • Other Each project is represented by a simple Project Plan, and an entry in the Award's financial records.
PRODUCT	This is the most detailed level of project activities and products – e.g. a capital asset or a study. These are listed as details within the Project Plan and are ultimately quantified among the outputs of the NDPG.

(Source: NDP WEBSITE)

4.2.1 BUSINESS PLAN REQUIREMENTS

The approval of Business Plans by the NDP is typically managed by reviewing submissions in terms of the following main criteria/components:

4.2.1.1 Motivation (Alignment With NDP)

The following information is critical to supply:

A description of the programme including:

- the intended outcomes;
- the role-players involved; and
- an understanding of the context of the programme as supplied within the Business Plan.

To explain the detail of the programme including:

- projects and products to be delivered;
- their priorities in terms of importance and urgency; and
- cost for the projects and products; and
- whether NDP funding or leverage is required to fund the components.

To provide clear reasons and objectives of the programme.
An explanation of how many people will benefit and how the need was determined and quantified.

To explain how the programme will stimulate township regeneration and improve the quality of life of its inhabitants.

To provide insight on how the programme will be catalytic for investment and economic development.

To confirm whether the programme is a municipal priority (eg. confirmed within the IDP/council resolution).

4.2.1.2 Implementability

The following needs to be explained within the Business Plan:

- It needs to be confirmed whether the programme is ready for implementation and provide information on how it will be implemented. This includes information on:
  - the professional team; and
  - the agreements and guarantees in place, etc.

The business plan needs to provide a time line for completion of the programme and explain how this will be achieved.

A breakdown of institutional arrangements for implementation is required. This includes:

- information on institutional arrangements for the management of implementation of the programme;
- resources available;
- partnership structures in place, agreements, procurement strategies; and
- municipal approvals in place.

4.2.1.3 Business Plan Financials

This section needs to provide:

Adequate financial information on costs for projects/products including planning and capital investment costs.

These costs need to be substantiated and must be realistic – eg. costed in terms of Bills of Quantity.

The costs must be within the grant overall and annual/MTEF budget requirements/limits.

4.2.1.4 Leverage

It is essential to provide detail on leverage and include:

The source of leverage (government, private, other);

The purpose for which the leverage will be used (eg. a taxi rank);

To confirm whether the leverage is for a primary development intervention or a secondary investment.

Whether the leverage is provided as cash, operational or in-kind.
The status of the leverage – whether the leverage has been committed, planned etc.

4.2.1.5 Sustainability

The following is required:

To confirm plans for operations and maintenance of the programme including:

- who will be responsible after implementation;
- whether resources are adequate and available; and
- if partnership structures are in place.

In addition to supply:

- estimated annual operations and maintenance costs for the programme;
- to indicate the sources of funding; and
- to confirm whether it has been formally agreed/not with relevant stakeholders.

4.2.1.6 Risk Management

To supply detail on risks (including the occurrence and impact thereof) and explain how the risks will be mitigated.

4.3 BUSINESS PLANS: PROJECT IDENTIFICATION

The aim of this section of the Business Plan is to develop a comprehensive list of projects already being implemented or proposed for implementation in Ivory Park and to structure these projects into a coordinated and integrated project programme for the area. The initial identification of projects that were already being implemented or planned for implementation was obtained from the City of Johannesburg CIMS database, while additional development proposals was generated from the development framework in Chapter 3.

As has been stated before, the existing and planned projects in the area are generally being implemented in a manner that, while they may have some rationale when viewed in terms of the objectives of a particular service provider, are more often than not linked to other projects being implemented by other service providers in the area. Any potential increased benefits that could be realized by a combining of the impacts of a number of related projects is therefore often lost and, in extreme situations, undermined.

In order to better understand, structure and coordinate the existing and proposed projects in Ivory Park, the process outlined below was followed.

The projects were first listed and classified according to their project status as being either “existing”, “planned” or “proposed projects”. This defines each project’s budget and programming status:

- “Existing” projects: These are projects that appear on the service provider’s budget and are currently being implemented.
- “Planned” projects: These are projects that are not as yet budgeted, but are the following phases of “existing projects” and/or are part of an ongoing project programme.
- “Proposed” projects are those projects that arise from the “gaps” identified in the Situation Analysis and the proposals of the Urban Development Framework

The projects were then graded in terms of being “short-, medium- or long-term projects” in terms of the probability of when they would be implemented.

Finally, certain projects were defined as being either “Catalytic” projects (projects which encourage or enable further development) or “Quick Win” projects (projects which have high visibility and which can be quickly implemented).

4.3.1 CONSOLIDATED LIST OF PROJECTS

The consolidated list of projects is attached in Section 4.4 below.

The following information is provided in the schedule for each project, under each Activity Sector:

Project Title	Where the project appears on the City’s Three year Medium term Budget, the project title appearing on the budget is utilised.
Project Grouping	This relates to the grouping of projects to be detailed in below.
Project Grading	This relates to the grading of projects to be detailed below.
Project Phasing	This relates to the overall categorization of a project as either a short-, medium- or long-term project. This will also be detailed below.
Implementing Agent	This is the body that is responsible for the implementation of the project, where known.
Estimate Cost	The Estimated cost of the project: This figure excludes VAT and, as far as possible, any provision for escalation in multi- year projects. Where there is a specific provision in the City’s budget for a project, this was the figure utilised. In all other cases, the figure is an estimate.
Source of Funding	Where there is a specific provision in the City’s budget for a project, the source of funding for that particular budget item is used. In all other instances, the source of funding is a proposal.
Project Status	This refers to the definition of the project as either an “Existing”, “Planned” or “Proposed” project as detailed above.
Project Programme	The indicative project programming is split into three portions: Modelling and Investigations; Planning, Design, Tender and Adjudication; and Construction or Implementation. The determination of the indicative programme was the result of a number inputs:
Comments / Notes	Any additional information relating to the specific project.

While every effort was made to correctly reflect the details of the Existing and Planned projects, the following challenges are acknowledged in the compilation of the list:

- Aligning annual budget amounts with the overall project programme for projects, particularly for projects extending over a number of years.
- Ascertaining from service providers whether any budget had been assigned to Ivory Park in cases where a provisional amount had been approved for a certain activity for a particular year, for example, street signage and road improvements.
- The reallocation of budget allocations made to Ivory Park to address higher priority items elsewhere in the city.

4.4 BUSINESS PLAN

IVORY PARK PROJECT SCHEDULE

Key:

Modelling & Investigations
Planning, Design, Tender & Adjudication
Construction & Implementation

Existing Project
Planned Project
Proposed Project

Catalytic Project
Quick Win Project

ACTIVITY SECTOR	PROJECT		GROUPING	GRADING	PHASING	IMPLEMENTATION AGENT / RESPONSIBLE PERSON	ESTIMATED COST (Excl. VAT, disbursements &escalation costs)	RECOMMENDED SOURCE OF FUNDING	PROJECT STATUS		INDICATIVE PROGRAMME																			
	TITLE	DESCRIPTION	1. Nodal Development 2. Corridor Development 3. Community Development Supporting Infrastructure	1. Catalytic 2. Quick Win 3.Planning Tool	1. Short Term 2. Medium Term 3. Long Term				1. Existing 2. New	1. Proposed 2. Approved 3. Implemented	YEAR 1 (2013/14)				YEAR 2 (2014/15)				YEAR 3 (2015/16)				YEAR 4 (2016/17)				YEAR 5 (2016/17)			
											Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Parks, Environment & Wast Management	Kaalspruit River project New Park KAALFONTEIN EXT.12 A (CIMS)	Installation of litter and sediment trap				City Parks	R 9,000,000.00		1. Existing																				
	Kaalspruit river rehabilitation and ecopark development New Park IVORY PARK EXT.9 A	River rehabilitation and ecoparks				City Parks & Dept of Environment	R 1,000,000.00		1. Existing																				
	Rebonwe Park (Ran Park 2010)	Ivory Park-Upgrade to Ran Park Status				City Parks	R 1,000,000.00		1. Existing																				
	Environmental compliance	Emergency repairs to drainage systems and other environmental and structural improvements.				JRA, City Parks and Dept of Environment	R 1,000,000.00		1. Existing																				
	Swazi Inn - Tree planting on the sidewalks:	This creates a sense of place and character for the streets			1. Short Term	City Parks	R 27,500.00		1. Existing																				
	Swazi Inn - Develop open spaces and identify new potential open spaces.	A detailed strategy should be developed for the upgrading and continuous maintenance of all parks and open space within the area.			1. Short Term	Development Planning & Facilitation and City Parks	R 185,000.00		1. Existing																				
	IVORY PARK NODE	Ivory Park Neighbourhood Park	1. Nodal Development	1. Catalytic	1. Short Term	City Parks	R 9,340,750.00		2. New																				
	KAALFONTEIN NODE	Kaalfontein Wetland park	1. Nodal Development	1. Catalytic	1. Short Term	City Parks	R 4,652,710.00		2. New																				
	MAISE RIDGE NODE	Rabie Ridge Neighbourhood Park	1. Nodal Development	1. Catalytic	1. Short Term	City Parks	R 4,170,941.00		2. New																				
	Identified small community parks		1. Nodal Development	1. Catalytic	1. Short Term	City Parks	R 9,958,000.00		2. New																				
	Link between Kaalfontein and Ebony Park nodes		2. Corridor Development	1. Catalytic	1. Short Term	City Parks	R 302,750.00		2. New																				

IVORY PARK PROJECT SCHEDULE

Key:

Modelling & Investigations
Planning, Design, Tender & Adjudication
Construction & Implementation

Existing Project
Planned Project
Proposed Project

Catalytic Project
Quick Win Project

ACTIVITY SECTOR	PROJECT		GROUPING	GRADING	PHASING	IMPLEMENTATION AGENT / RESPONSIBLE PERSON	ESTIMATED COST (Excl. VAT, disbursements &escalation costs)	RECOMMENDED SOURCE OF FUNDING	PROJECT STATUS		INDICATIVE PROGRAMME																			
	TITLE	DESCRIPTION	1. Nodal Development 2. Corridor Development 3. Community Development Supporting Infrastructure	1. Catalytic 2. Quick Win 3.Planning Tool	1. Short Term 2. Medium Term 3. Long Term				1. Existing 2. New	1. Proposed 2. Approved 3. Implemented	YEAR 1 (2013/14)				YEAR 2 (2014/15)				YEAR 3 (2015/16)				YEAR 4 (2016/17)				YEAR 5 (2016/17)			
											Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Roads	**Bantjanti Industrial Node - Upgrading of eastern and western entrances to the Bantjanti Industrial Node.**				**2. Medium Term**	**JRA**	**R 2,000,000.00**		1. Existing																				
	Conversion of Open Channels /Drains to underground in Ivory Park for Wards 77, 78 & 79	Conversion of open channels /drains to underground as identified through the CBP process				**JRA**	**R 6,000,000.00**		1. Existing																				
	Emergency, Critical and Urgent Depot Stormwater Improvements	Emergency repairs to drainage systems as determined by maintenance depots				**JRA**	**R 0.00**		1. Existing																				
	Environmental Compliance					**JRA & Dept of Environment**	**R 0.00**		1. Existing																				
	Gravel Roads: Ivory Park	Gravel roads upgrade as per IDP priority				JRA	**R 30,000,000.00**		1. Existing																				
	Pedestrian Bridge in Kaalfontein	Requested to link Kaalfontein Ext 2 and Kaalfontein Ext 5 in				JRA	**R 0.00**		1. Existing																				
	Pedestrian Bridge in Rabie Ridge (1)	Out of City's boundary. Ekurhuleni busy with it				JRA	**R 7,000,000.00**		1. Existing																				
	Pedestrian Bridge in Rabie Ridge (2)	Requested out of City's boundary but affecting community living				JRA	**R 0.00**		1. Existing																				
	Pedestrian Bridge in Rabie Ridge (3)	Requested out of City's boundary across Kaalspruit affecting				JRA	**R 0.00**		1. Existing																				
	Pedestrian Bridge in Rabie Ridge (4)	Requested also vehicular to link Joe Slovo Drive to Freedom				JRA	**R 7,000,000.00**		1. Existing																				
	RNP048_K113 - From PWV3 to K56	New K Route from Rabie Ridge to Alexandra.				Gautrans	**R 0.00**		1. Existing																				
	RNP060_Construction of K56 between K109 (Dale Road) and Walton Road	Construction of K56 between K109 (Dale Road) and Walton Road				Gautrans	**R 0.00**		1. Existing																				
	RNP068_Doubling of Dale Road - Between R101and Modderfontein Road	Doubling of Dale Road - Between R101and Modderfontein Road				JRA & Transportation	**R 0.00**		1. Existing																				
	RNP077_George Road Link over the N1	George Road Link over the N1				JRA & Transportation	**R 0.00**		1. Existing																				
	RNP088_Upgrade to Mobility Road - Akaya / Freedom Road (CIMS)	Upgrade to Mobility Road - Akaya / Freedom Road				JRA & Transportation	**R 0.00**		1. Existing																				
	RNP091_Upgrade to Mobility Road: 29th September Drive and Acacia Street (CIMS)	Upgrade to Class 3 Mobility Road: 29th September Drive and Acacia Street - Ivory Park				JRA & Transportation	**R 0.00**		1. Existing																				
	RIVERSIDE NODE	**Riverside streetscape upgrade**	**1. Nodal Development**	**1. Catalytic**	**1. Short Term**	**JDA & JRA**	**R 7,344,697.50**		2. New																				
	IVORY PARK NODE	**Ivory Park streetscape upgrade**	**1. Nodal Development**	**1. Catalytic**	**1. Short Term**	**JDA & JRA**	**R 1,204,723.13**		2. New																				
	KAALFONTEIN NODE	**Kaalfontein transport node and streetscape upgrade**	**1. Nodal Development**	**1. Catalytic**	**1. Short Term**	**JDA & JRA**	**R 3,281,583.53**		2. New																				
	EBONY PARK NODE	**Ebony Park streetscape upgrade**	**1. Nodal Development**	**1. Catalytic**	**1. Short Term**	**JDA & JRA**	**R 2,955,432.65**		2. New																				
	LORD KHAYALE NODE	**Lod Khayalle school streetscape upgrade**	**2. Corridor Development**	**1. Catalytic**	**1. Short Term**	**JDA & JRA**	**R 1,815,851.18**		2. New																				
	MATHEBULA NODE	**Mathebula intersection and streetscape upgrade**	**2. Corridor Development**	**1. Catalytic**	**1. Short Term**	**JDA & JRA**	**R 598,248.54**		2. New																				
	RABIE RIDGE NODE	**Rabie Ridge main intersection and streetscape upgrade**	**2. Corridor Development**	**1. Catalytic**	**1. Short Term**	**JDA & JRA**	**R 1,159,291.38**		2. New																				

IVORY PARK PROJECT SCHEDULE

Key:

Modelling & Investigations
Planning, Design, Tender & Adjudication
Construction & Implementation

Existing Project
Planned Project
Proposed Project

Catalytic Project
Quick Win Project

ACTIVITY SECTOR	PROJECT		GROUPING	GRADING	PHASING	IMPLEMENTATION AGENT / RESPONSIBLE PERSON	ESTIMATED COST (Excl. VAT, disbursements &escalation costs)	RECOMMENDED SOURCE OF FUNDING	PROJECT STATUS		INDICATIVE PROGRAMME																			
	TITLE	DESCRIPTION	1. Nodal Development 2. Corridor Development 3. Community Development Supporting Infrastructure	1. Catalytic 2. Quick Win 3. Planning Tool	1. Short Term 2. Medium Term 3. Long Term				1. Existing 2. New	1. Proposed 2. Approved 3. Implemented	YEAR 1 (2013/14)				YEAR 2 (2014/15)				YEAR 3 (2015/16)				YEAR 4 (2016/17)				YEAR 5 (2016/17)			
											Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Stormwater Drainage	Conversion of Open Channels/Drains to underground in Ivory Park for Wards 77, 78 & 79 New Stormwater Management Projects IVORY PARK EXT.9 A	Conversion of open channels/drains to underground as identified through the CBP process.				JRA	R 0.00		1. Existing																				
	Emergency, Critical and Urgent Depot Stormwater Improvements	Emergency Stormwater Improvements				JRA	R 25,150,000.00		1. Existing																				
	Swazi Inn - Storm Water Management Facility					JRA	**R 3,000,000.00**		1. Existing																				
	Ivory Park Storm Water Master Plan		**3. Community Development Supporting Infrastructure**	**3. Planning Tool**	**1. Short Term**	JRA	**R 535,780.00**		2. New	1. Proposed																			
	Ivory Park Masterplan Ward 77	Emergency Stormwater Improvements	**3. Community Development Supporting Infrastructure**	**1. Catalytic**	**1. Short Term**	JRA	**R 122,759.14**		2. New	1. Proposed																			
	Ivory Park Masterplan Ward 78	Emergency Stormwater Improvements	**3. Community Development Supporting Infrastructure**	**1. Catalytic**	**1. Short Term**	JRA	**R 128,528.60**		2. New	1. Proposed																			
	Ivory Park Masterplan Ward 79	Emergency Stormwater Improvements	**3. Community Development Supporting Infrastructure**	**1. Catalytic**	**1. Short Term**	JRA	**R 110,445.50**		2. New	1. Proposed																			
	Ivory Park Masterplan Ward 80	Emergency Stormwater Improvements	**3. Community Development Supporting Infrastructure**	**1. Catalytic**	**1. Short Term**	JRA	**R 109,135.49**		2. New	1. Proposed																			
	Ivory Park Masterplan Ward 83	Emergency Stormwater Improvements	**3. Community Development Supporting Infrastructure**	**1. Catalytic**	**1. Short Term**	JRA	**R 214,867.87**		2. New	1. Proposed																			
	Stormwater Infrastructure Node 1	Emergency Stormwater Improvements	**1. Nodal Development**	**3. Planning Tool**	**3. Long Term**	JRA	**R 4,072,848.00**		2. New	1. Proposed																			
	Stormwater Infrastructure Node 2	Emergency Stormwater Improvements	**1. Nodal Development**	**3. Planning Tool**	**3. Long Term**	JRA	**R 2,869,114.30**		2. New	1. Proposed																			
	Stormwater Infrastructure Node 3	Emergency Stormwater Improvements	**1. Nodal Development**	**3. Planning Tool**	**3. Long Term**	JRA	**R 2,594,284.70**		2. New	1. Proposed																			
	Stormwater Infrastructure Node 4	Emergency Stormwater Improvements	**1. Nodal Development**	**3. Planning Tool**	**3. Long Term**	JRA	**R 1,984,479.70**		2. New	1. Proposed																			
	Stormwater Infrastructure Node 5	Emergency Stormwater Improvements	**1. Nodal Development**	**3. Planning Tool**	**3. Long Term**	JRA	**R 1,975,788.20**		2. New	1. Proposed																			
	Stormwater Infrastructure Node 6	Emergency Stormwater Improvements	**1. Nodal Development**	**3. Planning Tool**	**3. Long Term**	JRA	**R 731,700.00**		2. New	1. Proposed																			
	Stormwater Infrastructure Node 7	Emergency Stormwater Improvements	**1. Nodal Development**	**3. Planning Tool**	**3. Long Term**	JRA	**R 3,232,947.00**		2. New	1. Proposed																			

IVORY PARK PROJECT SCHEDULE

Key:

- Modelling & Investigations
- Planning, Design, Tender & Adjudication
- Construction & Implementation
- Existing Project
- Planned Project
- Proposed Project
- Catalytic Project
- Quick Win Project

ACTIVITY SECTOR	PROJECT: TITLE	PROJECT: DESCRIPTION	GROUPING (1. Nodal Development / 2. Corridor Development / 3. Community Development Supporting Infrastructure)	GRADING (1. Catalytic / 2. Quick Win / 3. Planning Tool)	PHASING (1. Short Term / 2. Medium Term / 3. Long Term)	IMPLEMENTATION AGENT / RESPONSIBLE PERSON	ESTIMATED COST (Excl. VAT, disbursements &escalation costs)	RECOMMENDED SOURCE OF FUNDING	PROJECT STATUS (1. Existing / 2. New)	PROJECT STATUS (1. Proposed / 2. Approved / 3. Implemented)
Water and Sewer	Ivory park: President park/Rabie ridge district: Upgrade water infrastructure New Water Mains RABIE RIDGE D	Upgrade water infrastructure				Joburg Water	R 8,000,013.00		1. Existing	
	Midrand: Water network upgrade :ivory park New Waterworks IVORY PARK EXT.2 A water network upgrade	water network upgrade				Joburg Water	R 0.00		1. Existing	
	Provision: for Emergency Work Renewal Operate and Maintenance Assets JOHANNESBURG F	Provision: for Emergency Work				Joburg Water	R 31,000,000.00		1. Existing	
	Replacement of covers: Manholes, meters and fittings Renewal Operate and Maintenance Assets JOHANNESBURG F	Replacement of covers: Manholes, meters and fittings				Joburg Water	R 20,000,000.00		1. Existing	
	Sandton/ Alexandra: Woodmead Reservoir New Reservoirs WOODMEAD B	Woodmead Reservoir				Joburg Water	R 33,700,000.00		1. Existing	
	Swazi Inn - All service infrastructures (water, electricity, sanitation) must be properly maintained and upgraded after a detailed infrastructure assessment is done to determine the exact condition of services and capacity within the area.				3. Long Term				1. Existing	
	Swazi Inn - Facilitate the service provision and maintenance of infrastructure and service through the urban management processes				3. Long Term				1. Existing	
	Upgrade Ivory Park Water Reticulation Network	Upgrade 1950m (250mm UPC PN12)	3. Community Development Supporting infrastructure	2. Quick Win	1. Short Term	Joburg Water	R 1,170,000.00		2. New	1. Proposed
	Upgrade Existing Sewer Network	Ivory Park South	3. Community Development Supporting infrastructure	1. Catalytic	1. Short Term	Joburg Water	R 238,602.00		2. New	1. Proposed
	Upgrade Existing Sewer Network	Ivory Park South	3. Community Development Supporting infrastructure	1. Catalytic	1. Short Term	Joburg Water	R 367,091.00		2. New	1. Proposed
	Upgrade Existing Sewer Network	Ivory Park South	3. Community Development Supporting infrastructure	1. Catalytic	1. Short Term	Joburg Water	R 1,179,764.00		2. New	1. Proposed
	Upgrade Existing Sewer Network	Ivory Park South	3. Community Development Supporting infrastructure	1. Catalytic	1. Short Term	Joburg Water	R 282,320.00		2. New	1. Proposed
	Upgrade Existing Sewer Network	Ivory Park South	3. Community Development Supporting infrastructure	1. Catalytic	1. Short Term	Joburg Water	R 63,320.00		2. New	1. Proposed
	Upgrade Existing Sewer Network	Kaalspruit	3. Community Development Supporting infrastructure	1. Catalytic	1. Short Term	Joburg Water	R 535,382.00		2. New	1. Proposed
	Upgrade Existing Sewer Network	Rabie Ridge	3. Community Development Supporting infrastructure	3. Planning Tool	3. Long Term	Joburg Water	R 441,995.00		2. New	1. Proposed
	Upgrade Existing Sewer Network	Ivory Park South	3. Community Development Supporting infrastructure	3. Planning Tool	3. Long Term	Joburg Water	R 516,454.00		2. New	1. Proposed
	Upgrade Existing Sewer Network	Kaalfontein	3. Community Development Supporting infrastructure	3. Planning Tool	3. Long Term	Joburg Water	R 2,492,696.00		2. New	1. Proposed
	Upgrade Existing Sewer Network	Kaalfontein	3. Community Development Supporting infrastructure	3. Planning Tool	3. Long Term	Joburg Water	R 491,371.00		2. New	1. Proposed
	Upgrade Existing Sewer Network	Rabie Ridge	3. Community Development Supporting infrastructure	3. Planning Tool	3. Long Term	Joburg Water	R 335,319.00		2. New	1. Proposed

INDICATIVE PROGRAMME

YEAR 1 (2013/14)				YEAR 2 (2014/15)				YEAR 3 (2015/16)				YEAR 4 (2016/17)				YEAR 5 (2016/17)			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

IVORY PARK PROJECT SCHEDULE

Key:

Modelling & Investigations
Planning, Design, Tender & Adjudication
Construction & Implementation

Existing Project
Planned Project
Proposed Project

Catalytic Project
Quick Win Project

ACTIVITY SECTOR	PROJECT TITLE	PROJECT DESCRIPTION	GROUPING	GRADING	PHASING	IMPLEMENTATION AGENT / RESPONSIBLE PERSON	ESTIMATED COST (Excl. VAT, disbursements &escalation costs)	RECOMMENDED SOURCE OF FUNDING	PROJECT STATUS		INDICATIVE PROGRAMME																			
											YEAR 1 (2013/14)				YEAR 2 (2014/15)				YEAR 3 (2015/16)				YEAR 4 (2016/17)				YEAR 5 (2016/17)			
			1. Nodal Development 2. Corridor Development 3. Community Development Supporting Infrastructure	1. Catalytic 2. Quick Win 3. Planning Tool	1. Short Term 2. Medium Term 3. Long Term				1. Existing 2. New	1. Proposed 2. Approved 3. Implemented	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Electricity	132 kV Cable New Bulk Infrastructure HALFWAY GARDENS EXT 11 A	Install a 132/88 kV interconnector between Grand Central sub station and New Road sub station.				ESKOM/ CITY POWER	R 0.00		1. Existing																				
	Allandale: Upgrade 2 X 10 MVA transformes to 20 MVA Renewal Bulk Infrastructure COMMERCIA EXT 11 E	At Allandale, upgrade the existing 10 MVA transformers to 20 MVA each.				ESKOM/ CITY POWER	R 10,000,000.00		1. Existing																				
	Electrification of K-09 New Electrification COMMERCIA E	Electrification of 2119 erven in K-09				ESKOM/ CITY POWER	R 21,391,100.00		1. Existing																				
	Establishment of new townships New Network Development ERAND GARDENS EXT 9A	Reticulation of new townships				ESKOM/ CITY POWER	R 20,000,000.00		1. Existing																				
	Install 300 mm Cu XLPE cable from Grand Central sub station to Stauch Vorster and New Road New Medium Voltage Network RANDJESPARK EXT 9 A	install two 300 mm XLPE cables from Grand Central to Stauch Vorster and New Road				ESKOM/ CITY POWER	R 2,053,000.00		1. Existing																				
	Upgrage Grand Central sub station New Bulk Infrastructure GRAND CENTRAL EXT 4 A	Install 3 rd transformer and switchgear				ESKOM/ CITY POWER	R 0.00		1. Existing																				
	Bambanani Industrial Node - Installation of electrical grid to entire area.				1. Short Term	ESKOM/ CITY POWER	R 10,000,000.00		1. Existing																				
	Bambanani Industrial Node - Installation of street lighting.				2. Medium Term	ESKOM/ CITY POWER	R 1,500,000.00		1. Existing																				
	IVORY PARK EBONY 22KV ELECTRIFICATION REDESIGN & UPGRADE	Existing FDR	3. Community Development Supporting Infrastructure	1. Catalytic	1. Short Term	ESKOM/ CITY POWER	R 0.00		1. Existing																				
	IVORY PARK TSWELOPELE 22KV ELECTRIFICATION REDESIGN & UPGRADE	Existing FDR	3. Community Development Supporting Infrastructure	1. Catalytic	1. Short Term	ESKOM/ CITY POWER	R 0.00		1. Existing																				
	IVORY PARK - KAKAI, NEW 22 KV FEEDER (WJ.S9JZE)	New FDR	3. Community Development Supporting Infrastructure	1. Catalytic	2. Medium Term	ESKOM/ CITY POWER	R 0.00		2. New																				
	IVORY PARK - LOCUST, NEW 22 KV FEEDER (WJ.S9JZF)	New FDR	3. Community Development Supporting Infrastructure	1. Catalytic	2. Medium Term	ESKOM/ CITY POWER	R 0.00		2. New																				
	IVORY PARK - MACABIL, NEW 22 KV FEEDER (WJ.S9JZG)	New FDR	3. Community Development Supporting Infrastructure	1. Catalytic	2. Medium Term	ESKOM/ CITY POWER	R 0.00		2. New																				
	IVORY PARK - NAMTAP, NEW 22 KV FEEDER (WJ.S9JZH)	New FDR	3. Community Development Supporting Infrastructure	1. Catalytic	2. Medium Term	ESKOM/ CITY POWER	R 0.00		2. New																				
	IVORY PARK - OSAC, NEW 22 KV FEEDER (WJ.S9JZI)	New FDR	3. Community Development Supporting Infrastructure	1. Catalytic	2. Medium Term	ESKOM/ CITY POWER	R 0.00		2. New																				
	IVORY PARK - SLOTH, NEW 22 KV FEEDER (WJ.S9JZM)	New FDR	3. Community Development Supporting Infrastructure	1. Catalytic	2. Medium Term	ESKOM/ CITY POWER	R 0.00		2. New																				
	LEBANI IVORY PARK 88KV LINES REBUILD	Sub-transmission	3. Community Development Supporting Infrastructure	1. Catalytic	2. Medium Term	ESKOM/ CITY POWER	R 0.00		2. New																				
	IVORY PARK ESKOM COLLEGE 88KV LINES REBUILD	Sub-transmission	3. Community Development Supporting Infrastructure	1. Catalytic	2. Medium Term	ESKOM/ CITY POWER	R 0.00		2. New																				
	IVORY PARK UPGRADE 88KV LINE BAYS	Sub-transmission	3. Community Development Supporting Infrastructure	1. Catalytic	3. Long Term	ESKOM/ CITY POWER	R 0.00		2. New																				
	IVORY PARK INSTALL 2X40MVA TRFR	Sub-transmission	3. Community Development Supporting Infrastructure	1. Catalytic	2. Medium Term	ESKOM/ CITY POWER	R 0.00		2. New																				
	IVORY PARK UPGARDE LINE BAY CONDUCTOR TO BULL	Sub-transmission	3. Community Development Supporting Infrastructure	1. Catalytic	2. Medium Term	ESKOM/ CITY POWER	R 0.00		2. New																				
	ESKOM COLLEGE-RELOCATE 1Z 1 X 20MVA, 88/22KV TRANSFORMER FROM IVORY PARK TO ESKOM COLLEGE, 1 X 88KV TRANSFORMER BAY	Sub-transmission	3. Community Development Supporting Infrastructure	1. Catalytic	3. Long Term	ESKOM/ CITY POWER	R 0.00		2. New																				
	IVORY PARK REPLACE 1Z WITH 1 X 40MVA 88/22KV TRANSFORMER, UPGRADE 1 X 88KV TRANSFORMER BAY	Sub-transmission	3. Community Development Supporting Infrastructure	1. Catalytic	3. Long Term	ESKOM/ CITY POWER	R 0.00		2. New																				
	Riverside Node	- Determination of the Maximum Demand of the shopping centre extension, by the Developer's electrical consultant;	1. Nodal Development	2. Quick Win	1. Short Term	ESKOM/ CITY POWER	R 25,000.00		2. New	1. Proposed																			
		- Determination of the Maximum Demand of the office park, by the Developer's electrical consultant or the City's electrical consultant, should the office space be envisaged for public usage;	1. Nodal Development	2. Quick Win	1. Short Term	ESKOM/ CITY POWER	R 25,000.00		2. New	1. Proposed																			
	Ivory Park Node	- Determination of the Maximum Demand of the new shopping centre, by the Developer's electrical consultant;	1. Nodal Development	2. Quick Win	1. Short Term	ESKOM/ CITY POWER	R 25,000.00		2. New	1. Proposed																			
		- Determination of the Maximum Demand of the high density residential development, by the Developer's electrical consultant;	1. Nodal Development	2. Quick Win	1. Short Term	ESKOM/ CITY POWER	R 25,001.00		2. New	1. Proposed																			
	Kaalfontein Node	- Determination of the Maximum Demand of the proposed business centres., by the various Developer's electrical consultants;	1. Nodal Development	2. Quick Win	1. Short Term	ESKOM/ CITY POWER	R 25,000.00		2. New	1. Proposed																			
		- The shopping centre developes would have to apply to Eskom for the required bulk connection	1. Nodal Development			ESKOM/ CITY POWER			2. New	1. Proposed																			
		- Determination of the Maximum Demand of the Police Station, and library, by the City's electrical consultant;	1. Nodal Development	2. Quick Win	1. Short Term	ESKOM/ CITY POWER	R 25,000.00		2. New	1. Proposed																			
	Ebony Park Node	- Determination of the Maximum Demand of the proposed business centres., by the various Developer's electrical consultants;	1. Nodal Development	2. Quick Win	1. Short Term	ESKOM/ CITY POWER	R 25,000.00		2. New	1. Proposed																			
		- The shopping centre developes would have to apply to Eskom for the required bulk connection	1. Nodal Development	2. Quick Win	1. Short Term	ESKOM/ CITY POWER	R 25,000.00		2. New	1. Proposed																			
	Lord Khanyile Node	The node is also located within the Eskom supplied area. This Node is located within the "Locust" feeder supply zone, possibly overlapping with the "Jackal" and/or "Hippo" feeder zone.	1. Nodal Development	3. Planning Tool	2. Medium Term	ESKOM/ CITY POWER			2. New	1. Proposed																			
		Given that Eskom has already embarked on an project to split the feeder zones within the area, this exercise should yield approximately 4 MVA of spare capacity on the existing feeders., thus there would be spare capacity on the reticulation infrastructure to realise the envisaged developments.	1. Nodal Development	3. Planning Tool	2. Medium Term	ESKOM/ CITY POWER			2. New	1. Proposed																			
	Mathebula Node	This Node is located within Eskom's "Locust" feeder supply zone, possibly overlapping with the "Elephant" feeder zone.	1. Nodal Development	3. Planning Tool	2. Medium Term	ESKOM/ CITY POWER			2. New	1. Proposed																			
		Given that Eskom has already embarked on an project to split the feeder zones within the area, this exercise should yield approximately 4 MVA of spare capacity on the existing feeders., thus there would be spare capacity on the reticulation infrastructure to realise the envisaged developments.	1. Nodal Development	3. Planning Tool	2. Medium Term	ESKOM/ CITY POWER			2. New	1. Proposed																			
	Rabie Ridge Node	This node is located within the City Power area of supply. The current feeders are overloaded, thus it is necessary to increase the feeders to alleviate the overloading. Thus for the realisation of the Node implementation, it shall be necessary to effect a feeder normalisation project.	1. Nodal Development	3. Planning Tool	3. Long Term	ESKOM/ CITY POWER	R 3,000,000.00		2. New	1. Proposed																			

IVORY PARK PROJECT SCHEDULE

Key:

Modelling & Investigations
Planning, Design, Tender & Adjudication
Construction & Implementation

Existing Project
Planned Project
Proposed Project

Catalytic Project
Quick Win Project

ACTIVITY SECTOR	PROJECT TITLE	PROJECT DESCRIPTION	GROUPING	GRADING	PHASING	IMPLEMENTATION AGENT / RESPONSIBLE PERSON	ESTIMATED COST (Excl. VAT, disbursements &escalation costs)	RECOMMENDED SOURCE OF FUNDING	PROJECT STATUS		INDICATIVE PROGRAMME																			
											YEAR 1 (2013/14)				YEAR 2 (2014/15)				YEAR 3 (2015/16)				YEAR 4 (2016/17)				YEAR 5 (2016/17)			
			1. Nodal Development 2. Corridor Development 3. Community Development Supporting Infrastructure	1. Catalytic 2. Quick Win 3. Planning Tool	1. Short Term 2. Medium Term 3. Long Term				1. Existing 2. New	1. Proposed 2. Approved 3. Implemented	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Transportation	Ivory Park Transport facilities (Part of Phepha Nathi) New Nodal Transport Facilities IVORY PARK EXT.8 A	Development of a transportation facility				Dept of Transport	R 52,000,000.00		1. Existing																				
	Kaalfontein/Ebony Park Public Transport Facilities (Part of Phepha Nathi) New Nodal Transport Facilities KAALFONTEIN EXT.6 A	Improvements at undeveloped taxi rank in Kaalfontein				Dept of Transport	R 20,000,000.00		1. Existing																				
	Swazi Inn - Design of Taxi holding areas					Dept of Transport	**R 150,000.00**		1. Existing																				
	KAALFONTEIN NODE	**Kaalfontein taxi rank upgrade**	**1. Nodal Development**			Dept of Transport	**R 211,535.00**		2. New																				
	Preliminary., Detail Design for all Road Related Projects in Node 1		**1. Nodal Development**	**3. Planning Tool**	**2. Medium Term**	**Dept of Transport/URA**	**R 1,490,170.00**		2. New																				
	Road Closure Node 1		**1. Nodal Development**	**2. Quick Win**	**2. Medium Term**	**Dept of Transport/URA**	**R 50,000.00**		2. New																				
	Road Upgrade and Bridge Node 1		**1. Nodal Development**	**1. Catalytic**	**3. Long Term**	**Dept of Transport/URA**	**R 4,840,000.00**		2. New																				
	Pedestrian Crossing Node 1		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 5,000.00**		2. New																				
	Sidewalks Node 1 (Width 2.5m)		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 240,000.00**		2. New																				
	Redesign Intersection & Road Upgrade Node 1		**1. Nodal Development**	**2. Quick Win**	**2. Medium Term**	**Dept of Transport/URA**	**R 1,800,000.00**		2. New																				
	Rank Capacity Study Node 1		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 240,000.00**		2. New																				
	Taxi Rank Reconstruction First Order Cost Node 1		**1. Nodal Development**	**2. Quick Win**	**2. Medium Term**	**Dept of Transport/URA**	**R 3,022,800.00**		2. New																				
	Preliminary., Detail Design for all Road Related Projects in Node 2		**1. Nodal Development**	**3. Planning Tool**	**1. Short Term**	**Dept of Transport/URA**	**R 81,000.00**		2. New																				
	PT Bus Lay-by Node 2		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 174,000.00**		2. New																				
	PT Pick-up & Drop-off Node 2		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 240,000.00**		2. New																				
	Pedestrian Crossing Node 2		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 10,000.00**		2. New																				
	Sidewalks Node 2 (Width 2.5m)		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 120,000.00**		2. New																				
	Preliminary., Detail Design for all Road Related Projects in Node 3		**1. Nodal Development**	**3. Planning Tool**	**1. Short Term**	**Dept of Transport/URA**	**R 33,000.00**		2. New																				
	Access Node 3		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 100,000.00**		2. New																				
	Sidewalks Node 3 (Width 2.5m)		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 120,000.00**		2. New																				
	Preliminary., Detail Design for all Road Related Projects in Node 4		**1. Nodal Development**	**3. Planning Tool**	**1. Short Term**	**Dept of Transport/URA**	**R 157,350.00**		2. New																				
	Intersection Upgrade Node 4		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 150,000.00**		2. New																				
	Pedestrian Crossing Node 4		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 5,000.00**		2. New																				
	PT Pick-up & Drop-off Node 4		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 294,000.00**		2. New																				
	Sidewalks Node 4		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 600,000.00**		2. New																				
	Preliminary., Detail Design for all Road Related Projects in Node 5		**1. Nodal Development**	**3. Planning Tool**	**1. Short Term**	**Dept of Transport/URA**	**R 229,350.00**		2. New																				
	Intersection Upgrade Node 5		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 150,000.00**		2. New																				
	Pedestrian Crossing Node 5		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 5,000.00**		2. New																				
	PT Pick-up & Drop-off Node 5		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 894,000.00**		2. New																				
	Sidewalks Node 5 (Width 2.5m)		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 480,000.00**		2. New																				
	Preliminary., Detail Design for all Road Related Projects in Node 6		**1. Nodal Development**	**3. Planning Tool**	**1. Short Term**	**Dept of Transport/URA**	**R 124,350.00**		2. New																				
	Intersection Upgrade Node 6		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 150,000.00**		2. New																				
	Traffic Calming Node 6		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 20,000.00**		2. New																				
	PT Pick-up & Drop-off Node 6		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 414,000.00**		2. New																				
	Pedestrian Crossing Node 6		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 5,000.00**		2. New																				
	Sidewalks Node 6 (Width 2.5m)		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 240,000.00**		2. New																				
	Preliminary., Detail Design for all Road Related Projects in Node 7		**1. Nodal Development**	**3. Planning Tool**	**1. Short Term**	**Dept of Transport/URA**	**R 654,225.00**		2. New																				
	Intersection Upgrade Node 7		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 150,000.00**		2. New																				
	Pedestrian Crossing Node 7		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 5,000.00**		2. New																				
	PT Pick-up & Drop-off Node 7		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 534,000.00**		2. New																				
	Taxi Rank Design Study Node 7		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 200,000.00**		2. New																				
	Taxi Rank Design First Order Cost		**1. Nodal Development**	**1. Catalytic**	**2. Medium Term**	**Dept of Transport/URA**	**R 3,432,500.00**		2. New																				
	Sidewalks Node 7 (Width 2.5m)		**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 240,000.00**		2. New																				
	NMT (Regional) Sidewalks	**NMT Regional**	**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Dept of Transport/URA**	**R 3,800,000.00**		2. New																				

IVORY PARK PROJECT SCHEDULE

Key:

Modelling & Investigations
Planning, Design, Tender & Adjudication
Construction & Implementation

Existing Project
Planned Project
Proposed Project

Catalytic Project
Quick Win Project

ACTIVITY SECTOR	PROJECT TITLE	PROJECT DESCRIPTION	GROUPING (1. Nodal Development; 2. Corridor Development; 3. Community Development Supporting Infrastructure)	GRADING (1. Catalytic; 2. Quick Win; 3. Planning Tool)	PHASING (1. Short Term; 2. Medium Term; 3. Long Term)	IMPLEMENTATION AGENT / RESPONSIBLE PERSON	ESTIMATED COST (Excl. VAT, disbursements &escalation costs)	RECOMMENDED SOURCE OF FUNDING	PROJECT STATUS (1. Existing; 2. New)	PROJECT STATUS (1. Proposed; 2. Approved; 3. Implemented)	INDICATIVE PROGRAMME YEAR 1 (2013/14) Q1	Q2	Q3	Q4	YEAR 2 (2014/15) Q1	Q2	Q3	Q4	YEAR 3 (2015/16) Q1	Q2	Q3	Q4	YEAR 4 (2016/17) Q1	Q2	Q3	Q4	YEAR 5 (2016/17) Q1	Q2	Q3	Q4
Town planning, Land Ownership and Tenure	Swazi Inn - Transfer of ownership.	ownership is an important base for the creation of wealth and investment.			2. Medium Term	DPUM & JPC			1. Existing																						
	Bambanani Industrial Node: Functional Area A - Consolidation of Erven 19000 and 19010, subdivision into 3 erven and rezoning (filling station, fast rank and business).				1. Short Term	DPUM & JPC	R 0.00		1. Existing																						
	Bambanani Industrial Node: Functional Area B - Consolidation of Erven 19011 to 19015				1. Short Term	DPUM & JPC	R 0.00		1. Existing																						
	Bambanani Industrial Node - Resolve ownership and Lease Agreements with existing tenants.				1. Short Term	DPUM & JPC	R 0.00		1. Existing																						
	Land regularization Node 1	Rezoning of land to align with UDF	1. Nodal Development	1. Catalytic	1. Short Term	DPUM & JPC	R 150,000.00		2. New	1. Proposed																					
	Land regularization Node 2	Rezoning of land to align with UDF	1. Nodal Development	1. Catalytic	1. Short Term	DPUM & JPC	R 150,000.00		2. New	1. Proposed																					
	Land regularization Node 3	Rezoning of land to align with UDF	1. Nodal Development	1. Catalytic	1. Short Term	DPUM & JPC	R 150,000.00		2. New	1. Proposed																					
	Land regularization Node 4	Rezoning of land to align with UDF	1. Nodal Development	1. Catalytic	1. Short Term	DPUM & JPC	R 150,000.00		2. New	1. Proposed																					
	Land regularization Node 5	Rezoning of land to align with UDF	1. Nodal Development	1. Catalytic	1. Short Term	DPUM & JPC	R 150,000.00		2. New	1. Proposed																					
	Land regularization Node 6	Rezoning of land to align with UDF	1. Nodal Development	1. Catalytic	1. Short Term	DPUM & JPC	R 150,000.00		2. New	1. Proposed																					
	Land regularization Node 7	Rezoning of land to align with UDF	1. Nodal Development	1. Catalytic	1. Short Term	DPUM & JPC	R 150,000.00		2. New	1. Proposed																					
	Transfer of ownership (all outstanding erven)	Transfer all outstanding erven to beneficiaries	3. Community Development Supporting infrastructure	3. Planning Tool	3. Long Term	DPUM & JPC	R 15,000,000.00		2. New	1. Proposed																					
Housing	Bambanani Industrial Node: Functional Area B - Relocation and formalisation of informal structures currently located on Erven 19014 and 19015.				2. Medium Term	CoJ Housing	R 20,000,000.00		1. Existing																						
	LORD KHANYILE NODE	Lord Khanyile high density mixed development	1. Nodal Development			CoJ Housing/Joshco	R 1,084,224.69		2. New																						
	Formalization of informal settlements within the Ivory Park area (awaiting final numbers from audit, expected to be in the region of 7500)	Formalization of 7500 informal settlers	3. Community Development Supporting infrastructure	3. Planning Tool	3. Long Term	Provincial Department of Human Settlements	R 700,000,000.00	National Treasury	2. New	1. Proposed																					

IVORY PARK PROJECT SCHEDULE

Key:

Modelling & Investigations
Planning, Design, Tender & Adjudication
Construction & Implementation

Existing Project
Planned Project
Proposed Project

Catalytic Project
Quick Win Project

ACTIVITY SECTOR	PROJECT		GROUPING	GRADING	PHASING	IMPLEMENTATION AGENT / RESPONSIBLE PERSON	ESTIMATED COST (Excl. VAT, disbursements &escalation costs)	RECOMMENDED SOURCE OF FUNDING	PROJECT STATUS		INDICATIVE PROGRAMME																			
	TITLE	DESCRIPTION	1. Nodal Development 2. Corridor Development 3. Community Development Supporting Infrastructure	1. Catalytic 2. Quick Win 3. Planning Tool	1. Short Term 2. Medium Term 3. Long Term				1. Existing 2. New	1. Proposed 2. Approved 3. Implemented	YEAR 1 (2013/14)				YEAR 2 (2014/15)				YEAR 3 (2015/16)				YEAR 4 (2016/17)				YEAR 5 (2016/17)			
											Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Community Facilities	CBP 2009/10 Ivory Park Swimming Pool New Community Centre IVORY PARK EXT.6 A Construction of the new swimming pool	New Swimming Pool				Sports & Rec & Com Dev	R 4,000,000.00		1. Existing																				
	Completion of community Hall facility – youth centre and senior citizens centre and swimming pool New Community Centre IVORY PARK EXT.12 A	Completion of community Hall facility – youth centre and senior citizens centre and swimming pool				Sports & Rec & Com Dev	R 6,000,000.00		1. Existing																				
	Construction of the new creche New Community Centre IVORY PARK EXT.13 A	Construction of the Communal Creche				Com Dev	R 5,000,000.00		1. Existing																				
	Construction of the new multipurpose centre New Community Centre EBONY PARK EXT.6 A	New Development				Com Dev	R 25,000,000.00		1. Existing																				
	Constructionof the new sports centre New Community Centre RABIE RIDGE EXT.5 A	Construction of the new sports facilities.				Sports & Rec	R 1,500,000.00		1. Existing																				
	Ivory Park Multipurpose and Skills Renewal Building Alterations IVORY PARK EXT.9 A	Upgrading of the facility				Com Dev	R 1,000,000.00		1. Existing																				
	Ivory Park Stadium Renewal Stadium IVORY PARK EXT.2 A	Revamping of the stadium				Sports & Rec	R 2,800,000.00		1. Existing																				
	Kanana Community Hall Renewal Community hall RABIE RIDGE EXT.4 A	Upgrading to the hall				Com Dev	R 500,000.00		1. Existing																				
	Kanana Sports Grounds Renewal Community Centre RABIE RIDGE EXT.4 A	Upgrading of the sports centre				Sports & Rec	R 1,500,000.00		1. Existing																				
	Lesedi Creche Renewal Community hall IVORY PARK EXT.9 A	Upgrading of the facility (painting)				Com Dev	R 400,000.00		1. Existing																				
	Libraries: Internet Upgrade Computer Upgrades JOHANNESBURG F	**Literacy Centre**				Com Dev	**R 5,000,000.00**		**1. Existing**																				
	Rabie Ridge Stadium Renewal Stadium RABIE RIDGE A	**Upgrading of the facility**				Sports & Rec	**R 5,000,000.00**		**1. Existing**																				
	The refurbishment of the Lord Khanyile Community Hall (flooring, ventilation, kitchen, seating etc) – Better facility for the community and more revenue for the council. Upgrade Community hall IVORY PARK EXT.8 A	**The refurbishment of the Lord Khanyile Community Hall (flooring, ventilation, kitchen, seating etc) – Better facility for the community and more revenue for the council.**				**Com Dev**	**R 1,000,000.00**		**1. Existing**																				
	Upgrading of the stadium Renewal Stadium IVORY PARK EXT.2 A	**Upgrading of the stadium**				**Sports & Rec**	**R 4,000,000.00**		**1. Existing**																				
	Mayibuye Fire Station New Building Alterations IVORY PARK EXT.13 A	**Mayibuye Fire Station in the Ivory Park area for Fire and ambulance emergency response**				**EMS**	**R 9,000,000.00**		**1. Existing**																				
	CBP 09/10 Upgrade Clinic IVORY PARK EXT.9 A Expansion of Hlomelo Clinic eg establishment of maternity ward (nearest hospital is overcrowded	**Expansion of Hlomelo Clinic eg establishment of maternity ward (nearest hospital is overcrowded**				**Com Dev**	**R 2,000,000.00**		**1. Existing**																				
	Thuthukani Clinic Renewal Building Alterations IVORY PARK EXT.2 A	**Design and layout of extension to existing clinic including buildings and carports, furniture, landscaping, equipment and signage**				**Com Dev**	**R 3,000,000.00**		**1. Existing**																				
	Wakwali Cemetery WAVERLEY EXT.1 D	**New Cemetery**					**R 2,000,000.00**		**1. Existing**																				
	Swazi Inn - Develop community gardens:	**active land for community to produce food for subsistence purposes and these can grow over time.**			**1. Short Term**	**City Parks**			**1. Existing**																				
	Swazi Inn - Maintenance and upgrade of community facilities, that currently exists within the node.	**Over time and in line with the intensification of development it is proposed that 10 per cent of developments within the core area be directed towards the development of community facilities.**			**1. Short Term**	**Com Dev**			**1. Existing**																				
	Swazi Inn - Community facilities (Community Gardens) :	**the description and roll-out of the facilities should be discussed and investigated further. The role of the business communities and partnerships in the provision and operations of facilities ought to form part of the discussions. Information received from Escom (Annexure A) indicates that the servitude is of a much less magnitude than what was perceived, The community gardens should therefore be seen as transition uses until a more detailed plan is developed on the Ekhuhuleni side.**			**2. Medium Term**	**Com Dev**			**1. Existing**																				
	IVORY PARK NODE	Ivory Park Community Hall Upgrade	**1. Nodal Development**		**2. Medium Term**	**Com Dev**	**R 4,239,401.59**		2. New																				
	KAALFONTEIN NODE	Extension and upgrading of link between school police station and library grounds	**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**City Parks/JDA**	**R 2,053,035.20**		2. New																				
	LORD KHANYILE NODE	Lord Khanyile Health Centre - outdoor space upgrade	**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**City Parks/JDA**	**R 1,666,510.09**		2. New																				
	RABIE RIDGE NODE	Rabie Ridge Youth Centre Educational Park	**1. Nodal Development**	**2. Quick Win**	**1. Short Term**	**Com Dev**	**R 3,301,552.59**		2. New																				

IVORY PARK PROJECT SCHEDULE

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	TITLE	DESCRIPTION	1. Nodal Development 2. Corridor Development 3. Community Development Supporting Infrastructure	1. Catalytic 2. Quick Win 3. Planning Tool	1. Short Term 2. Medium Term 3. Long Term				1. Existing 2. New	1. Proposed 2. Approved 3. Implemented	YEAR 1 (2013/14)				YEAR 2 (2014/15)				YEAR 3 (2015/16)				YEAR 4 (2016/17)				YEAR 5 (2016/17)			
											Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Economic Development	Swazi Inn - Develop traders facilities according to the diverse needs based on the goods sold				1. Short Term	DED;DA	R 1,000,000.00		1. Existing																					
	Swazi Inn - Develop trading space:	to accommodate the traders in a more formalized manner, this will enable a cleaner and more pedestrian friendly trading environment. The diversity of the products that are being trade, demands a specific designed space for trading from which all the traders can benefit. This will result in a need for more space as well as a commited understanding of the traders culture.			1. Short Term	DED;DA			1. Existing																					
	Swazi Inn - Maintenance and upgrade of the trading space:	continuous maintenance and upgrade is essential in ensuring the sustainability of the proposed developments. Also of importance here is the sense of responsibility and ownership by the traders themselves, thus taking care of their area of business.			2. Medium Term	MIC			1. Existing																					
	Swazi Inn - A strong focus on local economic development (LED):	in order to build up the economic capacity of a local area, improving its economic future and the quality of life for all. It is a process by which public, business and nongovernmental sector partners work collectively to create better conditions for economic growth and employment generation			3. Long Term	DED			1. Existing																					
	Bambanani Industrial Node: Functional Area A - Tender invitations for filling station and shopping centre.				2. Medium Term	DED	R 0.00		1. Existing																					
	Bambanani Industrial Node: Functional Area A - Construction of taxi rank and informal trade area.				2. Medium Term	DED;DRAVJDA	R 10,000,000.00		1. Existing																					
	Bambanani Industrial Node: Functional Area B - Tender invitations for construction of light industrial incubator centre and training facility.				2. Medium Term	DED	R 0.00		1. Existing																					
	Bambanani Industrial Node: Functional Area B - Establishment of institutional structure to manage and maintain the light industrial incubator centre and training facility.				3. Long Term	DED	R 0.00		1. Existing																					
	Bambanani Industrial Node: Functional Area C - Launce marketing campaign for industrial even.				1. Short Term	DED	R 0.00		1. Existing																					
	Bambanani Industrial Node - Establishment of Bambanani Stakeholdes Forum.				1. Short Term	DED	R 0.00		1. Existing																					
	Bambanani Industrial Node - Facilitate establishment of SETA Leaderships and linkage with EPWP.				3. Long Term	DED	R 0.00		1. Existing																					

IVORY PARK PROJECT SCHEDULE

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											Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Public Environment Upgrades	Swazi Inn - Boulevard					JDA	R 300,000.00		1. Existing																				
	Swazi Inn - Street Furniture					JDA	R 105,000.00		1. Existing																				
	Swazi Inn - Gateways and land marks					JDA	R 200,000.00		1. Existing																				
	Extended streetscape upgrade and placemaking		2. Corridor Development	1. Catalytic	1. Short Term	JDA	R 3,123,999.50		2. New																				
	RIVERSIDE NODE	Riverside streetscape upgrade	1. Nodal Development	1. Catalytic	1. Short Term	JDA & JRA	R 7,344,057.50		2. New																				
	IVORY PARK NODE	Ivory Park streetscape upgrade	1. Nodal Development	1. Catalytic	1. Short Term	JDA & JRA	R 1,204,723.13		2. New																				
	KAALFONTEIN NODE	Kaalfontein transpot node and streetscape upgrade	1. Nodal Development	1. Catalytic	1. Short Term	JDA & JRA	R 3,281,593.53		2. New																				
	EBONY PARK NODE	Ebony Park streetscape upgrade	1. Nodal Development	1. Catalytic	1. Short Term	JDA & JRA	R 2,995,432.05		2. New																				
	LORD KHANYILE NODE	Lord Khanyile school streetscape upgrade	2. Corridor Development	1. Catalytic	1. Short Term	JDA & JRA	R 1,819,031.18		2. New																				
	MATHEBULA NODE	Mathebula intersection and streetscape upgrade	2. Corridor Development	1. Catalytic	1. Short Term	JDA & JRA	R 598,246.34		2. New																				
	RABIE RIDGE NODE	Rabie Ridge main intersection and streetscape upgrade	2. Corridor Development	1. Catalytic	1. Short Term	JDA & JRA	R 1,159,201.88		2. New																				
	RIVERSIDE NODE	Riverside shopping centre parking and surrounding landscape upgrade	1. Nodal Development	1. Catalytic	2. Medium Term		R 2,002,435.92		2. New																				
	IVORY PARK NODE	Ivory Park Shopping Facility Landscape Upgrade	1. Nodal Development	1. Catalytic	2. Medium Term		R 666,206.00		2. New																				
	RIVERSIDE NODE	Riverside Office Park	1. Nodal Development	3. Planning Tool	2. Medium Term		R 2,500,050.87		2. New																				

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

This Urban Development Framework and Comprehensive Business Plan for Ivory Park can be utilized to serve various purposes:

- As an identification tool of further studies and investigations to be conducted;
- As a budgeting and programming tool in the preparation of city budgets;
- As an oversight tool in terms of which the performance of the various service providers in Ivory Park can be assessed;
- As a means of better coordinating the project activities of the various service providers in Ivory Park;
- As a resource to assist in the motivation for additional funding for the area (especially from external funders);
- As a means of planning and guiding the future spatial development of Ivory Park;
- As a means of determining where future developments can best be located;
- As a basis for the correct reporting of the development status of projects and future proposals to groups external to the city administration;
- As a basis to the increased common understanding of development imperatives in the area by officials, councilors and community leaders;
- As a basis for the securing agreement on development priorities between different spheres of government, City departments and MOE's, and the City administration and community groups.

A critical issue that severely impacts on the proposals made in the Business Plan is the severe constraints on further development caused by the lack of detailed studies within the study area as well as the lack of existing capacity in bulk engineering services infrastructure.

5.2 INSTITUTIONAL ARRANGEMENTS FOR IMPLEMENTATION OF THE BUSINESS PLAN

In the preparation of the Urban Development Framework and Business Plan for Ivory Park, it was found that the lack of coordination between the various providers and other stakeholders, the lack of communication between the various spheres of government and the local community is leading to confusion, wastage of resources and the loss of securing development opportunities for the area.

The situation is evidenced by the following:

- JPC is currently conducting a new study to survey the entire study area;
- The Gauteng Department of Human Settlements have appointed a service provider to identify land and resettle the informal settlements within the subject area;
- The general *ad hoc* approach towards this marginalised area by service providers to get involved and provide the area with the necessary attention it deserves;
- The fact that similar areas within the jurisdiction of the City of Johannesburg receives more attention due to political pressure;
- Anger on the part of residents and local leadership structures who are not kept informed of progress of projects, have little change to interact with the various service providers and consequently do not understand where there are delays or a lack of activity on various projects;
- Residents and local leadership becoming disillusioned by existing planning processes in which they table various needs and requests which they feel are not acted upon; and
- Changing budget and programming priorities that are not property or timeously communicated to other stakeholders.

The following recommendations are accordingly made in an attempt to remedy the situation:

- More detailed studies is needed from a civil engineering point of view given the fact that baseline data is irregular and questioned;
- A central focus of responsibility for the coordination of planning and project activity in Ivory Park needs to be created or identified that is known to all service providers and stakeholders. This can either take the form of a coordinating committee of sorts of merely be one official who is tasked with this responsibility;
- The structure or responsible official identified must have sufficient resources, status and providers and relevant stakeholders without hindrance;
- The emphasis needs to rather be placed on the role this structure or person is to play rather than on the structure of any organizational entity in which this activity takes place (that is, the effectiveness of the function is more important that the structure of the function). For example, regular, frequent meetings of the various service providers and stakeholders may not be necessary and more infrequent interactions driven by predetermined development milestones may be deemed more appropriate;
- Existing coordinating structures and functions should be examined to ascertain whether they can be amended to incorporate the objectives of this proposed function.