

From Analysis to Proposals

- Lephalale Analysis
- Thabazimbi Analysis
- Northam Analysis
- Lephalale Proposals
- Thabazimbi Proposals
- Northam Proposals
- Thembaletu Analysis and Proposals

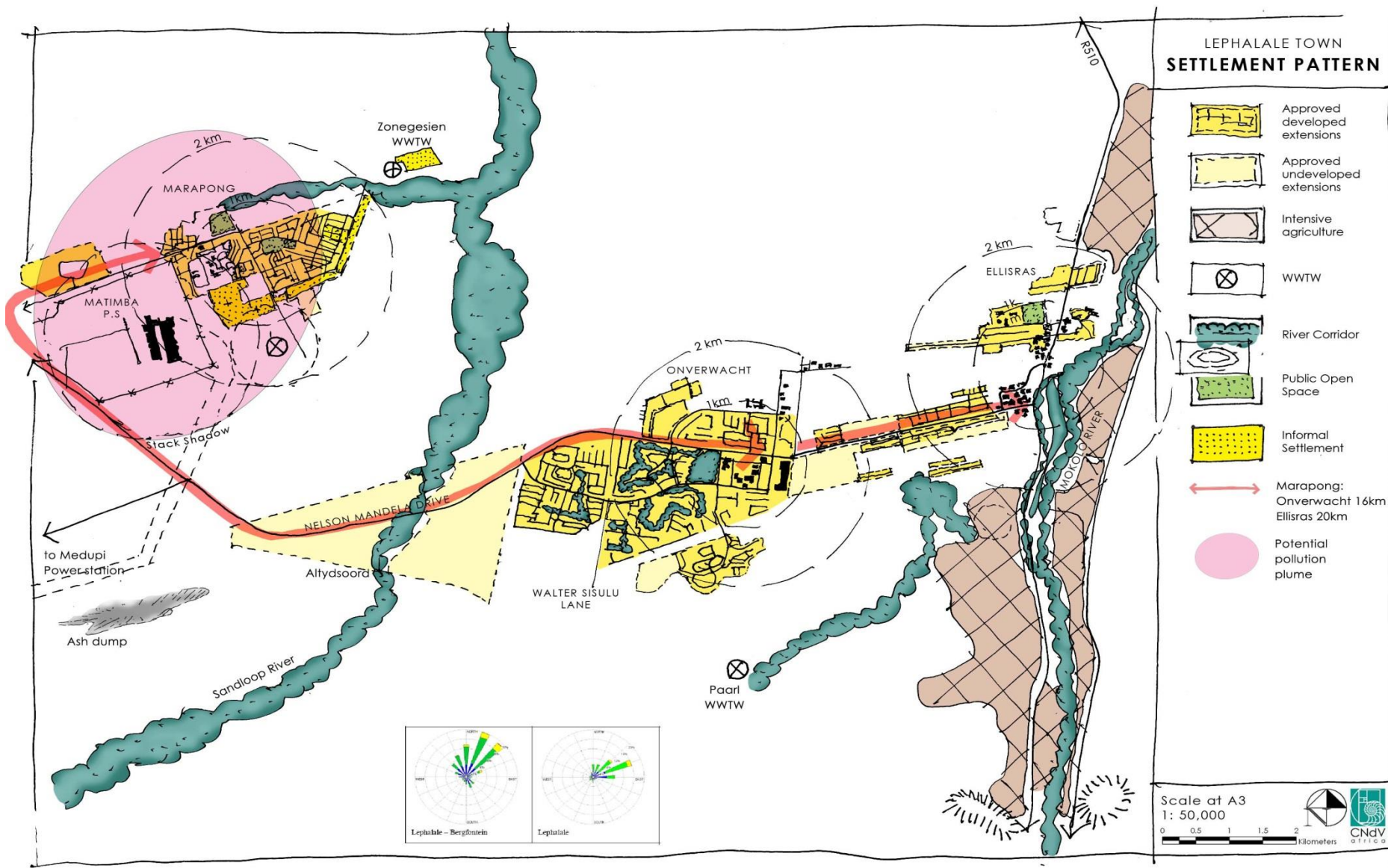
BRINGING IT ALL TOGETHER...

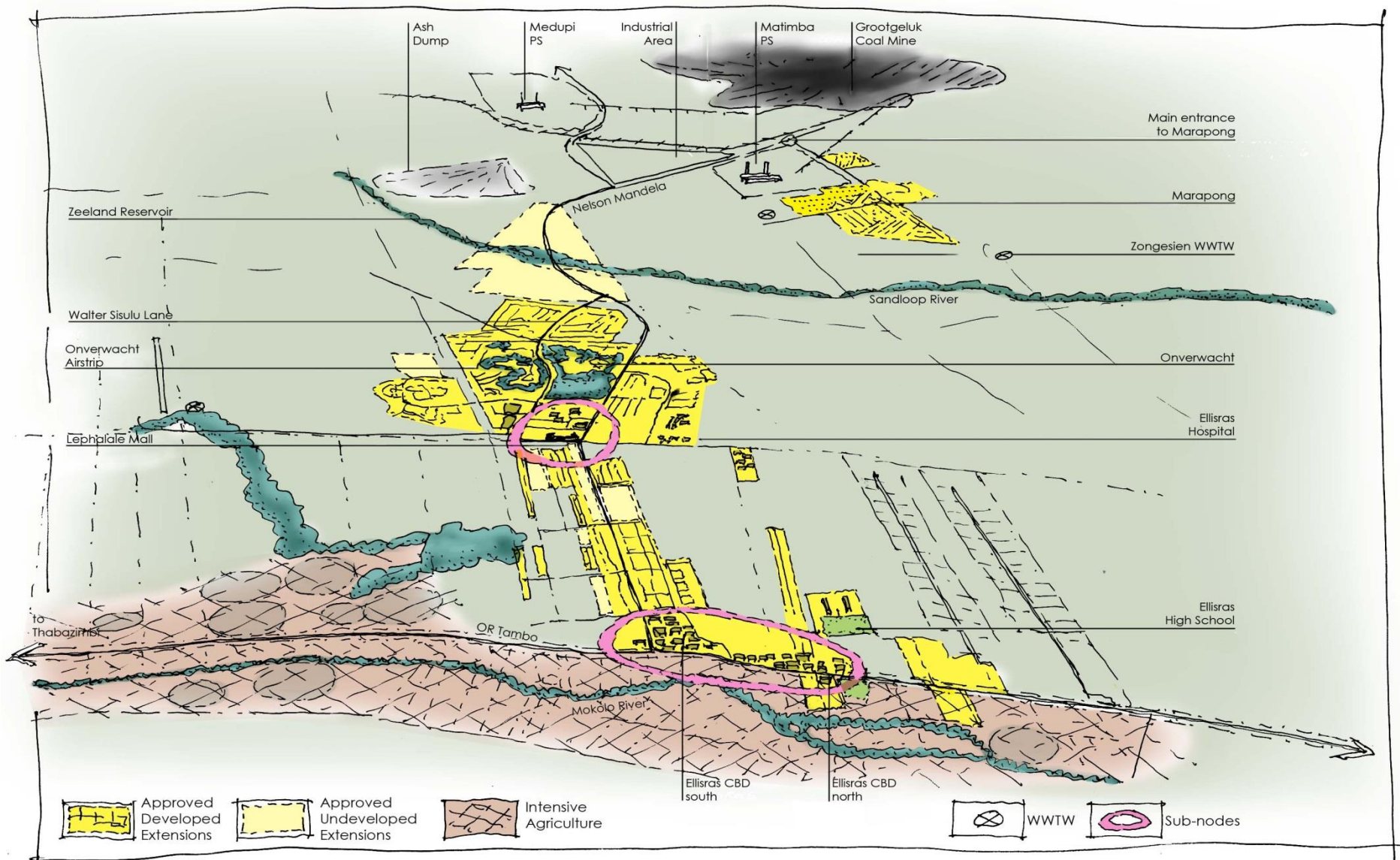
ANALYSIS to PROPOSALS: ...

4.1 SETTLEMENT LEVEL

4.1.1 Lephale Analysis







- It refers to Medupi as Project Alpha, which was still in the planning phase. "Project Alpha and [name redacted] would result in health risks being doubled from 1.5 to 3 premature deaths and from 144 to 300 respiratory hospital admissions per year," it said.

- The deaths could be decreased if flue gas desulphurisation technology is used, lowering sulphur dioxide emissions by 90%, it said.

- This is one of the requirements of the World Bank loan given to Eskom for Medupi's construction.

- The report said the use of such technology would lead to "the avoidance" of about one mortality and 50 respiratory hospital admissions a year.

- The technology is being built into Eskom's other new power station at Kusile in Mpumalanga, but the utility has asked for its introduction at Medupi to be delayed until 2027.

- Earlier this year, it told the M&G this was because of water constraints and that delaying Medupi would lead to prolonged periods "when Eskom is simply unable to meet the national electricity demand".

- Matimba was started in 1981 in Lephalale, near the Botswana border, with Eskom saying the location was chosen "due to concerns about the air pollution levels around Witbank [eMalahleni]".



By 2006, the Matimba plant was responsible for an average of 1.2 deaths a year (Madeline Cronje. M&G) 20.6.14

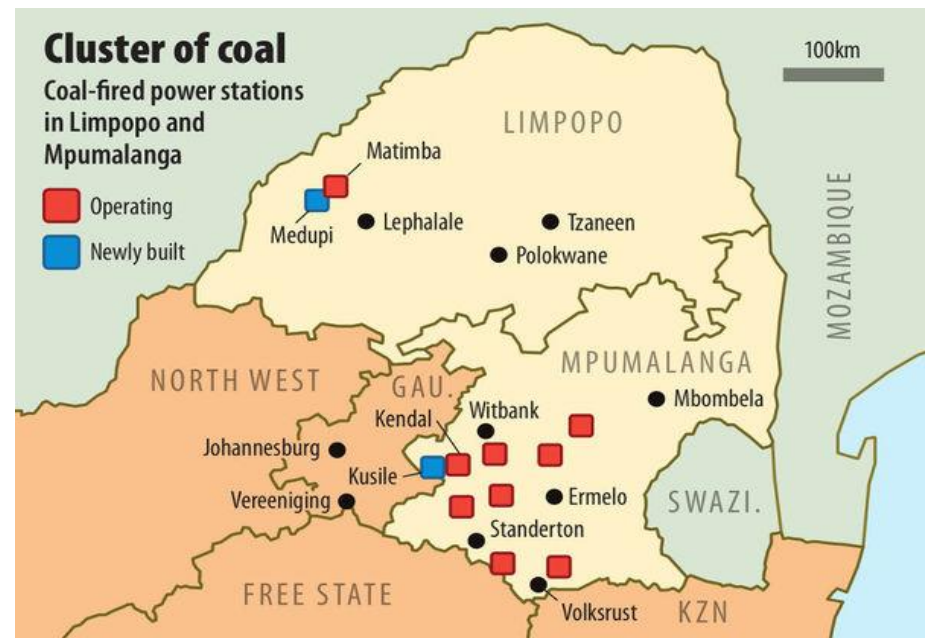
- Previously, and again this week, Eskom said that it was impossible to link its operations to health problems. It said there were so many other sources of air pollution that blame was difficult to attribute.

- When the M&G asked whether its stations were killing people, Eskom avoided giving a direct answer and said: "Studies have shown conclusively that the primary contributor to negative health impacts is domestic coal and wood burning." Therefore, the best way to improve people's health is to provide them with electricity, it said.

- The 2006 Limpopo report states that Matimba, the coal mines that supply it, a brickworks and people burning fuel in their homes were the largest sources of emissions in Lephalale.

- About 1.5 "premature mortalities" and 140 "respiratory hospital admissions", for conditions such as asthma attacks, are caused as a result every year. But the report says Matimba is responsible for 80% of these mortalities (1.2 deaths) and half of the hospital admissions annually.

- In its application to postpone compliance at Medupi, and to bring flue gas desulphurisation (technology to cut out 90% of sulphur emissions) on line only in 2027, the parastatal said there was not enough water available to introduce the technology. "It is not practically feasible or beneficial to South Africa to fully comply with the minimal emissions standards."



Eskom is moving electrical generation from Mpumalanga because of air pollution around Witbank and depletion of these coalfields to the Waterberg coal field

PROPERTY PRICES

The table indicates the nature of the urban and rural property market in Lephalale Municipality.

There are a number of properties for sale in both the urban and rural property markets. The table below indicates the following:

- Currently there are 92 urban properties for sale and it can be assumed that the majority of these are located in Lephalale town.
- The average property size per property for sale is 1341.32m² at the average property price of R1,555,375.

- Currently there are approximately 62 rural properties for sale, mainly farms located in Lephalale Municipality.
- The average property size per property for sale is 568,96Ha at the average price of R8,680.68.
- There are 10 commercial properties for sale with an average property size of 35,120m² at an average price of R7,435,457.

Urban and Rural Property Market						
LEPHALALE	No of Properties	Total Size	Average Size	Total Price	Average Price	R/m ² or Ha
Urban (m ²)	92	123,401	1,341	R143,094,500	R1,555,375	R1,159
Rural (Ha)	62	35,275	568	R538,204,000	R8,680,709	R15,257
Commercial (m ²)	10	35,120	3,512	R74,354,575	R7,435,457	R2,117

Urban and Rural Property Market (Source: Property24.com)

Lephalale Municipality's economy is anchored mainly by the Mining, Tourism and agricultural sectors.

The municipality has a comparative advantage with the existence of the Waterberg Coal Fields (WCF) located in close proximity to Lephalale town.

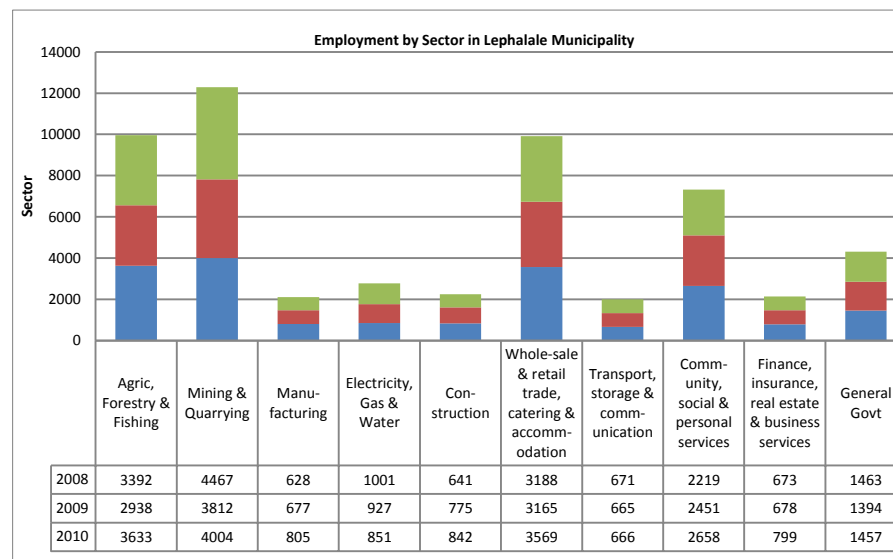
The WCF contains over 50 billion tons of coal of which 12.5 billion can be mined through open cast mining methods. These are estimated to be approximately 40% of South Africa's coal reserves and are estimated 300 years of export potential at current production rates. (Lephalale IDP 2014 – 2016).

Mining is the largest contributor to the GDP in Lephalale Municipality at 59.2%. It also was the largest contributing sector to employment in 2010, employing approximately 4 467 people, followed by wholesale and retail trade, catering and accommodation.

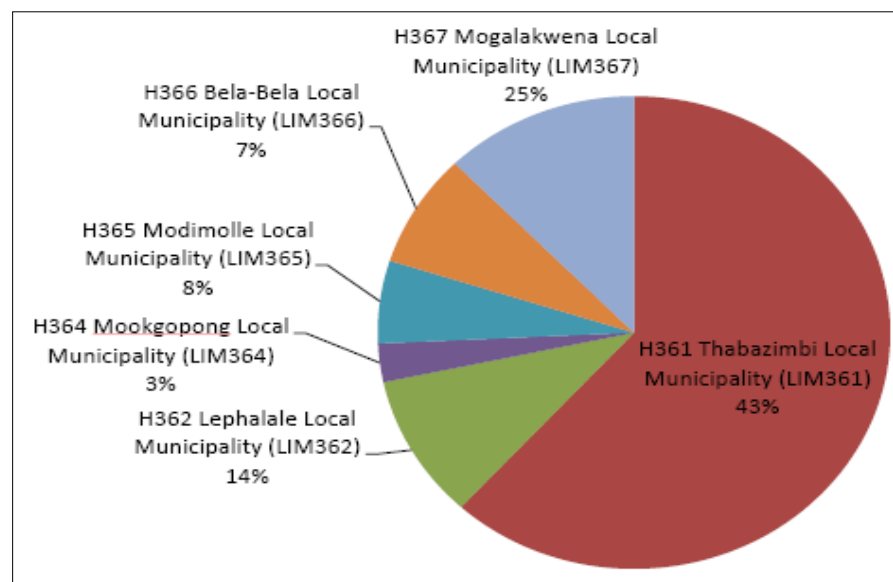
Tourism attractions include the nearby D'yala and Mokolo nature reserves and many game reserves. According to the IDP 2014-2016, ecotourism and game related tourism have shown considerable growth in recent years.

Agriculture was the third largest contributor to employment in 2010.

According to the Department of Agriculture there are 36 000 commercially farmed and 16 000 head of cattle owned by commercial farmers in Lephalale Municipality.



Sector contribution to employment in Lephalale Municipality (Source: Lephalale IDP, 2014 – 2016)



Lephalale LM GDP contribution to Waterberg District (source: Lephalale IDP 2014-2016)

POPULATION GROWTH

Lephalale Local Municipality comprised 115,766 (Census 2011) people. The municipal population increased significantly between 2001 and 2011 because of the inclusion of rural villages along its northern border, some 30kms north of the town; previously in the abutting municipality, as a result of a demarcation adjustment. The table below indicates the total population in Lephalale town.

The total population in Lephalale town in 2001 was 15,069 and in 2011 it was 43,869, showing an increase from 2001 to 2011. In 2011, Lephalale town made up 37.9% of the municipal population .

Should the population growth continue at the same rate between 2011 and 2021, Lephalale town's population will increase to 127,702 people.

Black Africans are the dominant population group, comprising 65.3% of the population in 2001 and 81.7% in 2011. They are followed by the white population group, who comprised 34.0% and 15.4% of the Lephalale town population in 2001 and 2011 respectively.

	Population			% (10 yrs.)
	2001	2011	2021	
				2001-2011
Lephalale Town	15 069	43 869	127 702	191,1%

Increase in population

HOUSEHOLD GROWTH

The table below indicates that the number of households in the municipality increased by 8,113 households from 4,142 in 2001 to 12,255 in 2011. This represents a household growth rate of 195.9% over the 10 years.

The table below indicates that there is likely to be an increase in households of 24,008 in all income groups should the trend between 2001 and 2011 continue to 2021.

HOUSING NEED AND DEMAND

The backlog of approximately 2,451 informal dwelling units can be added to the 24,008 additional households in order achieve the total future housing need projection for the year 2021, see table below.

Household Growth					
HH Size 2011	No. of HH 2011	Growth over 10 yrs. (%)	Informal dwelling units	Housing need projection (2021)	Total Future Housing Need to 2021
3.58	12 255	195.9%	2 451	24 008	26 459

Housing Need 2011 – 2021

The following definitions should be noted.

Need refers to the total housing need according to the backlog and projected forecasts.

Demand refers to the ability of a household to afford a house via a subsidy, bank loan or own funds.

Need

Therefore the total future housing need in Lephalale town is 26,459 households.

Demand

Based on the number of subsidies allocated to Marapong and Altoostyd the housing demand is 5,551 (Appraisal and Planning of Urban Housing Delivery Pipeline Projects in Waterberg District, Limpopo Province, 2013). These are however split between CRU and Middle Income IRDP, see table opposite.

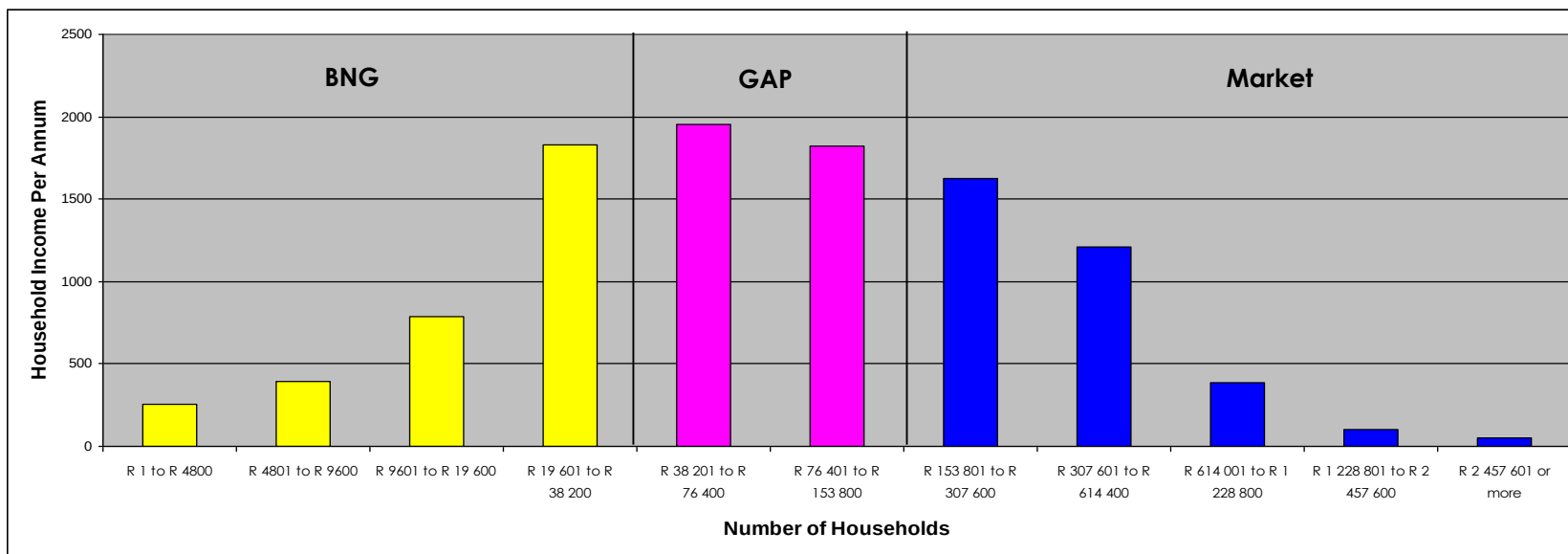
The Lephalale town housing demand is 5,551 subsidies were allocated to (Appraisal and Planning of Urban Housing Delivery Pipeline Projects in Waterberg District, Limpopo Province, 2013).

The total number of households that qualify for BNG subsidies are 5,099 (see table on page 2.6), therefore there is a subsidy deficit of 3,592. Lephalale town has 2,451 households in informal dwellings according to the 2011 Census.

The table below describes the household income split in Lephalale town at the time of the 2011 Census.

Ave. Monthly Income Census 2011		Income Distribution		Distribution of Housing Demand 2021 Using Census 2011 income distribution	
	Households		% Total		Households
BNG	R0 - R3,183	5,090	42%	BNG	11,113
Gap	R3,184 - R12,817	3,777	31%	GAP	8,202
Market	Over 12,817	3,371	27%	Market	7,144
Total		12,238	100%	Total	26,459

Average Household Income and Income Distribution 2011 and 2021 (Census 2011)



Household Income Distribution (Census 2011)

The table below shows the Lephalale Municipality housing project pipeline.

Projects	Stands	Readiness Ranking	Financial Year					Cost
			2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	
Marapong Extension 3 (CRUs)	526	1						R39,3m
Altoostyd (IRDP / Middle Income)	5025	2						R376.0m
Municipal Total	5,551							R415,3m

Lephalale Local Municipality housing Pipeline: 2014/2015 – 2018/2019

(Source: The Appraisal and Planning of Urban Delivery Pipeline Projects in the Waterberg District, Limpopo Province (2013))

Two (2) projects are located in Lephalale town.
These include:

1. Marapong Ext 3, 526; and,
2. Altoostyd Middle Income 5025.

Map To follow

The total housing need to 2021 is 26 459 across all income groups. This was calculated by projecting the household growth rate between 2001 and 2011 to 2021. The housing backlog of 2 451 informal dwellings was added to the projection.

To understand the land required to accommodate the future housing need, this figure is split between BNG, social/gap and market housing categories.

The BNG market requires approximately 185ha, social/gap 286ha and market approximately 286ha of land. In total Lephalale town requires approximately 676ha of land to accommodate the future housing need. It appears that Lephalale town has sufficient land to accommodate this need.

Land Requirements								
BNG		GAP		Market		Total	SDF (2012)	Surplus/ Deficit
11 113 units		8202 units		7144 units		26 459 units	Land proposed	
density	ha	density	ha	proposed	ha			
60/du (average plot size = 100m ²)		40/du (average plot size = 150m ²)		25/du (average plot size = 240m ²)				
60	185	40	205	25	286	676 ha	1,460 ha	784 ha

Land Requirements

NOTE: Figures are based on census 2001 and 2011 data. The assumptions applied to the calculation of the figures require confirmation with government stakeholders and the municipality.

SUMMARY

BNG

Based on the number of subsidies allocated to Marapong CRU the BNG housing demand is 526 (Appraisal and Planning of Urban Housing Delivery Pipeline Projects in Waterberg District, Limpopo Province, 2013). According to Census 2011, there were 5 090 (42%) households that qualify for BNG housing in Lephalale. This suggests a subsidy deficit of 4 564.

Social/GAP

3 777 (31%) households fell within the social and gap category in 2011. This category may now include a large number of mine workers as recent wage increases may have hurled many workers into the social/gap market. Care must be taken with this market as if it is not supplied it will crowd out the BNG markets. This usually results in increasing informal settlements.

Market

In 2011, the market housing category comprised of 3 371 (27%) households. This potentially bodes well for municipal finances but care must be taken to ensure the town remains attractive in terms of management of crime, grime and service delivery.

		2011			2021
		Qualifiers	Subsidies	Balance	
BNG	42%	5,090	526	4,564	11,113
GAP	31%	3,777	5,025	1,248	8,202
Market	27%	3,371	-	-	7,144
TOTAL		12,238			26,459

4.1.2 Thabazimbi Analysis



THABAZIMBI TOWN ANALYSIS

Population: ± 28 100 (2011)



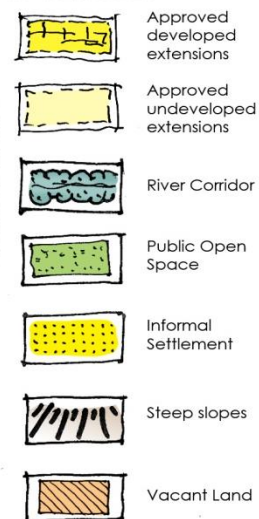
LIMPOPO MINING TOWNS
TRANSFORMATION PLAN

Topo-cadastral and Aerial Photograph

2.1a



THABAZIMBI TOWN ANALYSIS

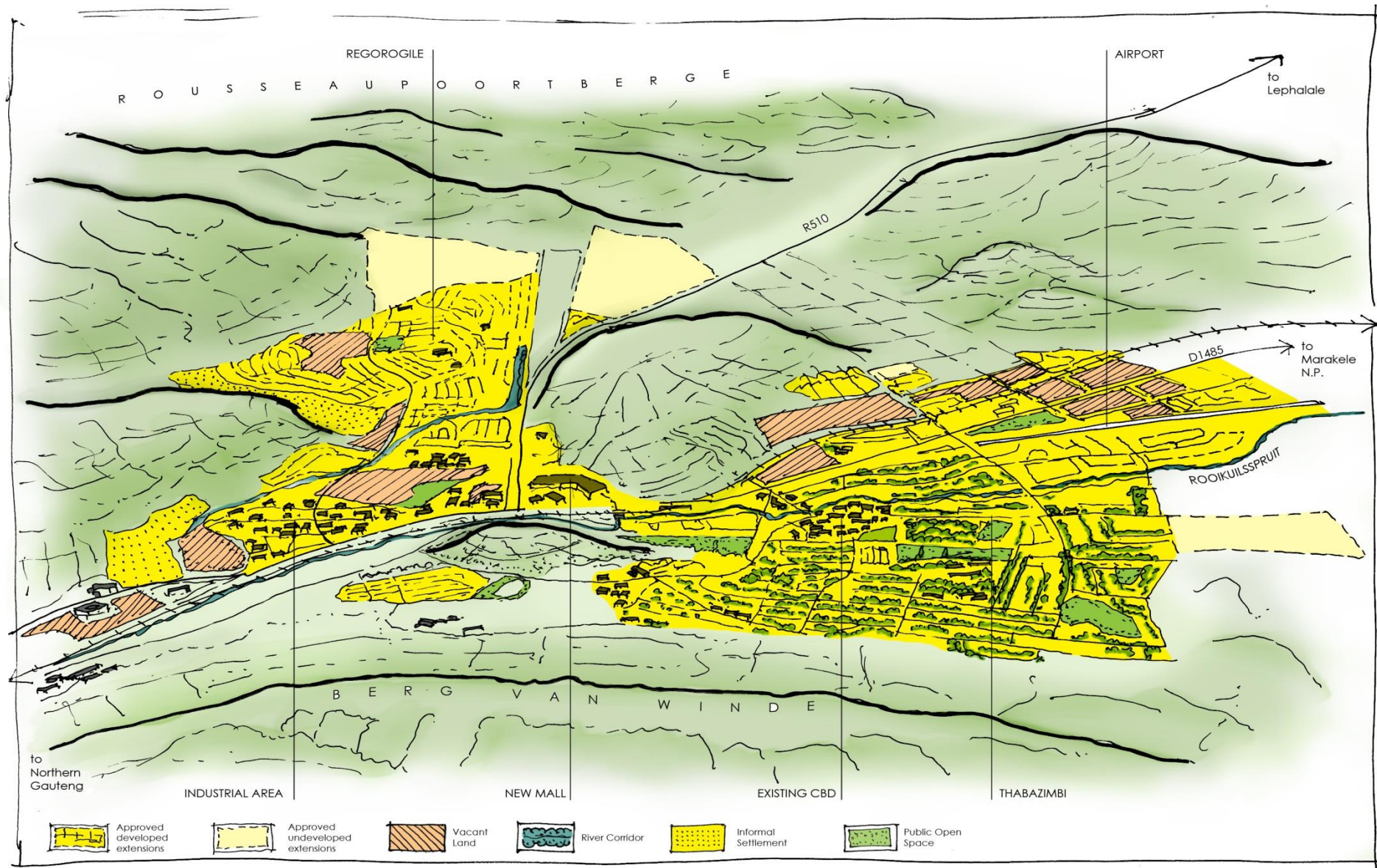


- Layout highly impacted by topography
- Best located areas constrained by Kloof containing rail, road and river corridors
- Centre of gravity (CBD) moving west to R510/D1485 intersection (new mall)
- Large extensions undeveloped on north and east periphery

Scale at A3
1: 50,000

0 0.5 1 1.5 2 Kilometers





PROPERTY PRICES

Currently there are 188 urban properties for sale and it can be assumed that the majority of these are located in Thabazimbi town.

The average property size per property for sale is 928,57m² at the average property price of R 954 640.96.

There are approximately 105 rural properties for sale, mainly farms located in Thabazimbi Municipality.

The average agricultural property size per property for sale is 348,57Ha at an average price of R 6 966 200.

There are 4 commercial properties for sale with an average property size of 4 956m² at an average price of R 4 841 250.

Urban and Rural Property Market						
Thabazimbi	No of Properties	Total Size	Average Size	Total Price	Average Price	R/m ² or Ha
Urban (m ²)	188	174 571	928,57	R 179 472 500,00	R 954 640,96	R 1 028,08
Rural (Ha)	105	36 599,64	348,57	R 731 462 200,00	R 6 966 306,67	R 19 985,50
Commercial (m ²)	4	4956	1239,00	R 19 365 000,00	R 4 841 250,00	R 3 907,38

Urban and Rural Property Market (Source: Property24.com)

The Thabazimbi LED Strategy relies on mainly three (3) strategic thrusts in order to achieve its objectives:

1. Agricultural;
2. Mining; and,
3. Tourism.

Agriculture is mainly livestock farming with crop in the Crocodile River irrigation scheme some 20km south-west of Thabazimbi.

Mining is currently the biggest contributor to the GGP and Employment, contributing 59% and 49% respectively. Thabazimbi was a pre-capitalist iron ore mining entire and this because the town's economic core since the 1930s when Iscor established the mine. This supplied the iron and steel manufacturing plant at Vanderbijl Park.

However, recently Khumba, which took over the mining interests of Iscor, has shown signs of wanting to disinvest and sell to a junior minor.

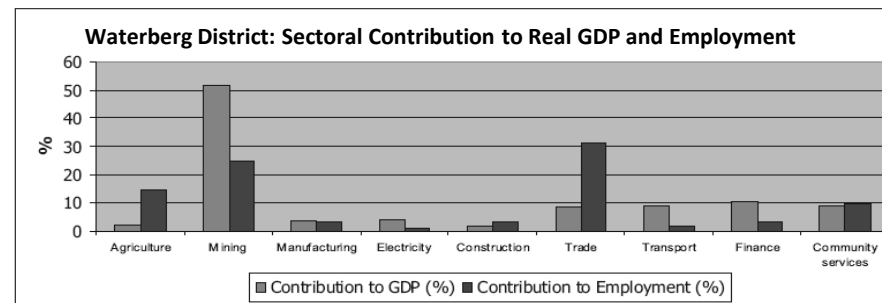
Mining is followed by Community services which contributes 30% to the GDP and agriculture contributes 20% to the GDP.

Tourism includes the nearby Marakele National Park, music festivals and hunting is very popular in the winter.

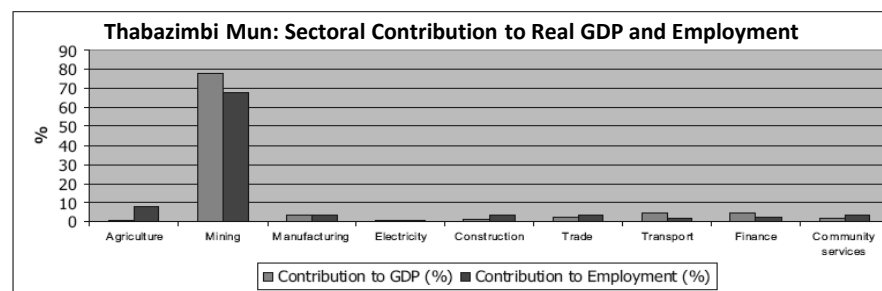
Mining and tourism in Thabazimbi are exposed to vulnerable international commodity markets, such as iron ore prices (mining) and visa availability (negative) and exchange rates (positive with declining rand) (more than 50% of international tourists come from the USA – Thabazimbi is a popular hunting destination).

Mining as a future economic activity cannot be relied on, other sectors need to be strengthened and the economy diversified.

Thabazimbi is fortunate in this regard having good agriculture and tourism resources and the town itself has a quality scenic setting.



Estimated Sectoral Contribution to Total Employment (2006) (Source: Global Insight 2008)



Estimated Sectoral Contribution to Total Employment (2006) (Source: Global Insight 2008)

POPULATION GROWTH

The table below indicates that the population has increased from 2001 to 2011. Should the population growth continue at the same rate between 2011 and 2021, the Thabazimbi population will increase to 59 634 people.

This appeared mainly due to the increase in mining and tourism activity over this period. However, latterly, mining's prospects do not appear so good.

Municipality	Population			% (10 yrs.)
	2001	2011	2021 (projected)	
				2001-2011
Thabazimbi Town	13 243	28 103	59 634	112.2%

HOUSEHOLD GROWTH

The table below also indicates that there is likely to be an increase in households of 10 487 in all income groups should the trend between 2001 and 2011 continue to 2021.

The backlog of approximately 1 950 informal dwelling units (Census 2011) can be added to the 10 487 additional households in order achieve the total future housing need projection for the year 2021.

Note: The 2014 SDF on page 59 shows a backlog for Donkerpoort of 300 and for Regorogile of 800. (Thabazimbi SDF, 2014)

Household Growth					
HH Size 2011	No. of HH 2011	Growth over 10 yrs. (%)	Informal dwelling units (existing)	Housing need projection (2021)	Total Future Housing Need to 2021
3.29	8 547	122.7%	1 950	10 487	12 437

Household Growth 2011 – 2021

Population and housing need/demand projections

The following definitions should be noted.

Need refers to the total housing need according to the backlog and projected forecasts.

Demand refers to the ability of a household to afford a house via a subsidy, bank loan or own funds.

Need

Therefore, the estimated future need for 2021 is approximately 12 437 households.

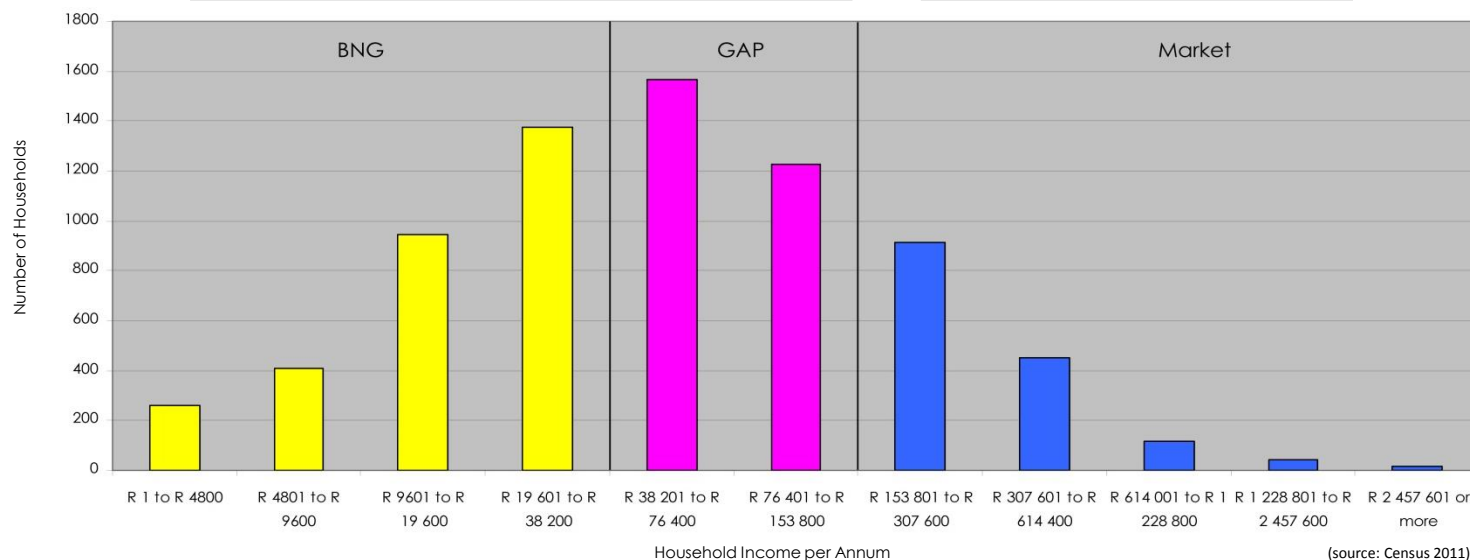
Income Distribution

Census 2011 indicates the following income category distribution, see graph below.

If this income distribution is applied to estimated housing demand to 2021 it suggests the following demand categories:

Income Split (2011 Census)		Income Distribution
	Households	% Total
BNG	2991	41%
GAP	2792	38%
Market	1536	21%
TOTAL	7319	100%

Distribution of Housing Demand Using Census 2011 income distribution	
	Households
BNG	5099
GAP	4726
Market	2611
TOTAL	12436 (source: Census 2011)



Household Income Distribution

(source: Census 2011)

SUMMARY

BNG

The available housing subsidies for Thabazimbi town is 4 171 (Appraisal and Planning of Urban Housing Delivery Pipeline Projects in Waterberg District, Limpopo Province, 2013). This suggests a subsidy deficit of 928 subsidies when compared to the potential 5099 BNG households, see page 2.6.

Social/GAP

Quite a high percentage, 38%, will fall into the social/GAP market, 4726. Care must be taken with this market as if it is not supplied it will crowd out the BNG markets. This usually results in increasing informal settlements.

Market

There may be a market housing need of approximately 2600 units until 2021. This potentially bodes well for municipal finances but care must be taken to ensure the town remains attractive in terms of management of crime, grime and service delivery.



Table 2.7.1 shows the Thabazimbi Municipality housing project pipeline.

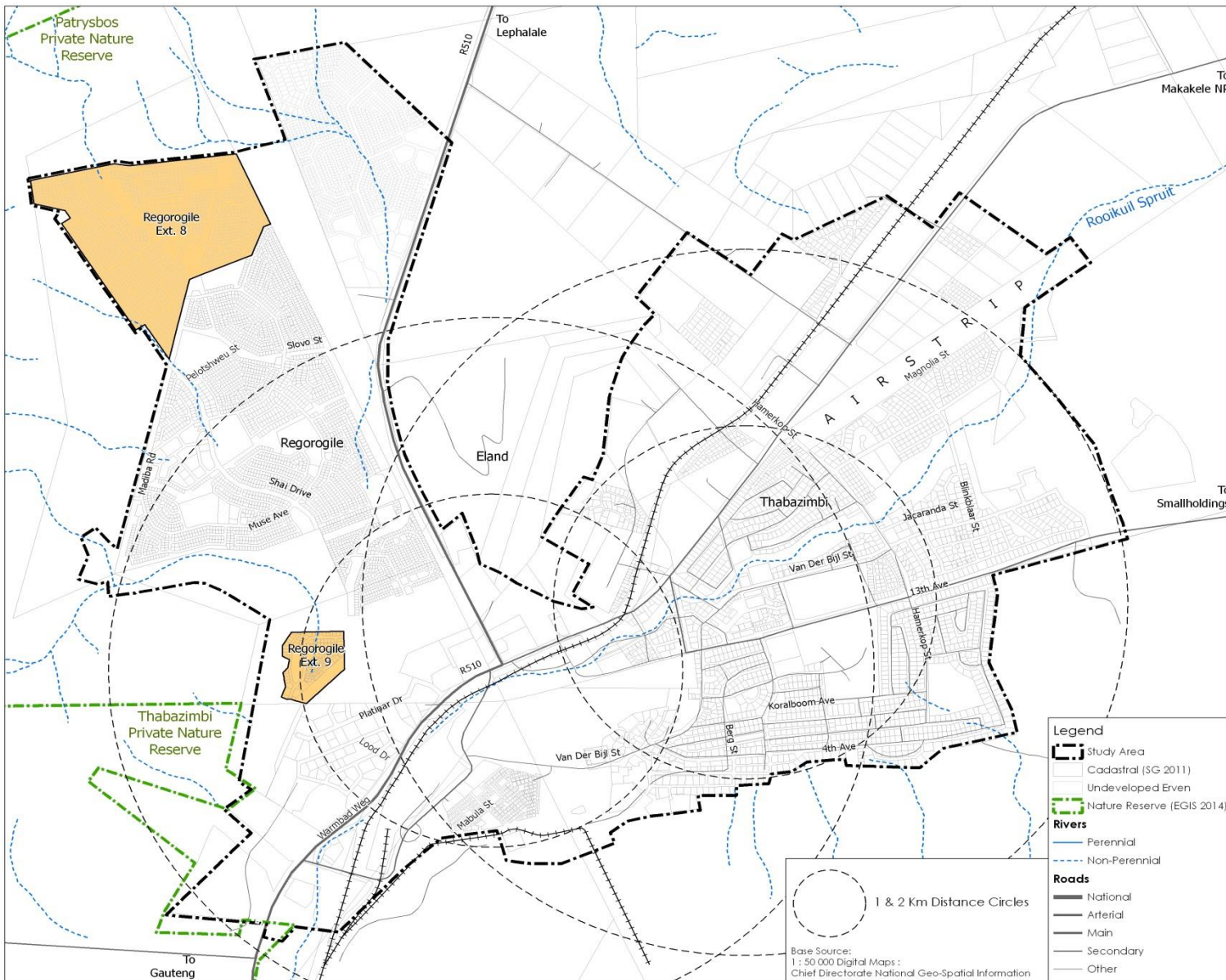
Projects	Stands	Readiness Ranking	Financial Year					Cost
			2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	
Regorogile Township	100	1						R18.0m
Regorogile Ext 8	960	2						R72.0m
Regorogile Ext 9	134	3						R10.0m
Regorogile Ext 10	313	3						R23.0m
Northam Ext 5	1,000	5						
Northam Ext 7	1,000	5						
Northam Ext 17	584	5						
Kroomdraai	80	5						
Total	1,507							R120,0M

Table 2.7.1 Thabazimbi Local Municipality Housing Pipeline: 2014/2015 – 2018/2019

Four (4) projects are located in Thabazimbi town, at Regorogile township. These projects include:

1. Regorogile 100;
2. Regorogile Ext 8;
3. Regorogile Ext 9; and,
4. Regorogile Ext 10.

These are estimated to cost approximately R 123m over two (2) financial years.



Thabazimbi Town: HOUSING PIPELINE

Key:
Project Areas

CNdV africa

Infraplan Consulting

HDA

Scale at A3 1:20,000

0 200 400 600 800 1,000 Meters

Job: 2015-2380 | Drawn: RE | Checked: RE | Date: 26-05-2015

Table 2.8.1 indicates the land requirements at an average density of 25du/ha. Thabazimbi town requires approximately 498 ha of land to accommodate the future housing need up until 2021 if growth rates continue between 2011 to 2021 as they did between 2001 and 2011.

Land Requirements			
12 437 units			
Urban			
density	ha	SDF (2011)	Surplus/Deficit
25/du		land	
(average plot size = 240m²)		proposed	
25	498	Not Available	Not Available

Table 2.8.1 Land Requirements

NOTE: Figures are based on census 2001 and 2011 data. The assumptions applied to the calculation of the figures require confirmation with government stakeholders and the municipality.

4.1.3 Northam Analysis



Figure 2.1 Aerial Photograph

2. NORTHAM TOWN ANALYSIS

Sub-regional location

Northam town is strategically situated on the intersection of the Rustenburg, Brits and Thabazimbi roads as well as the railway junction between Union mine and Thabazimbi and Lephalale, and Gauteng, see Figure 2.1.

It is also at the northern tip of the western link of the Bushveld Platinum complex with Union mine to the west and the Amandebult Block mines (Dishaba, Northam, Tumela) to the north. The Crocodile River irrigation scheme extends for many kilometres to the east. It is thus well located as a service centre for these various primary activities and the town has become an important formal and informal retail node. This means its economic health is very much dependent on the economic health of these activities. Thabazimbi iron ore mine has recently announced closure and there is significant uncertainty in the platinum industry due to the global decline in car sales and the recent VW emissions scandal which may affect demand for platinum catalysts. A resilient and efficient spatial settlement is therefore of particular importance in these times.

Settlement Pattern

Northam town has developed in a north-west, south-east direction across a central point cut by the rail intersection at Ruby street, see Figure 2.2b. The railway line prevents car access to the east but there is considerable pedestrian traffic across this intersection due to its centrality and convenience. This point forms the junction

between the relatively rich north west and relatively poor south east areas of the town. The rail line reinforces the cut off nature between these two quadrants of the town.

- The most recent development proposals, two of which have been approved but not developed, Hlogayatu and Ext 12/13 are on the periphery, as is Ext 17, currently under construction. The northern part of Extension 11, being privately developed by one of the mining companies, is also approved but only partially serviced.
- A feature of this pattern is the large tracts of better located but undeveloped land closer to the CBD than these approved development extensions;
- While one of the reasons for this “leapfrog” pattern may be that the ownership of many of these land parcels is private, it has the effect of creating a long term, very expensive, inefficient and inconvenient settlement layout.
- Vacant land parcel 14, see figure 2.1b, designated as a massive industrial area in the current SDF, see Figure 7.2b in section 7 is regarded as particularly problematic in this regard. But it could be an excellent opportunity for an integrated mixed income, mixed use mega-project as an exemplar to the whole Mining Towns Transformation Strategy.

Opportunities

- Notwithstanding the above Northam Town is relatively compact. If the well located vacant land parcels can be developed, see Figure 2.2c, the town has the potential to be better integrated and easier to travel around and create business and jobs than many other similar South African towns.



Figure 2.2a Informal market along R510 bringing life to rear wall of shopping centre devoid of greenery except for trees provided by informal nursery



Figure 2.2b Key link between NW and SE quadrants of town cut by rail



Figure 2.2c Only formal vehicle road access to Northam town SE urban areas showing large tracts of well located vacant land

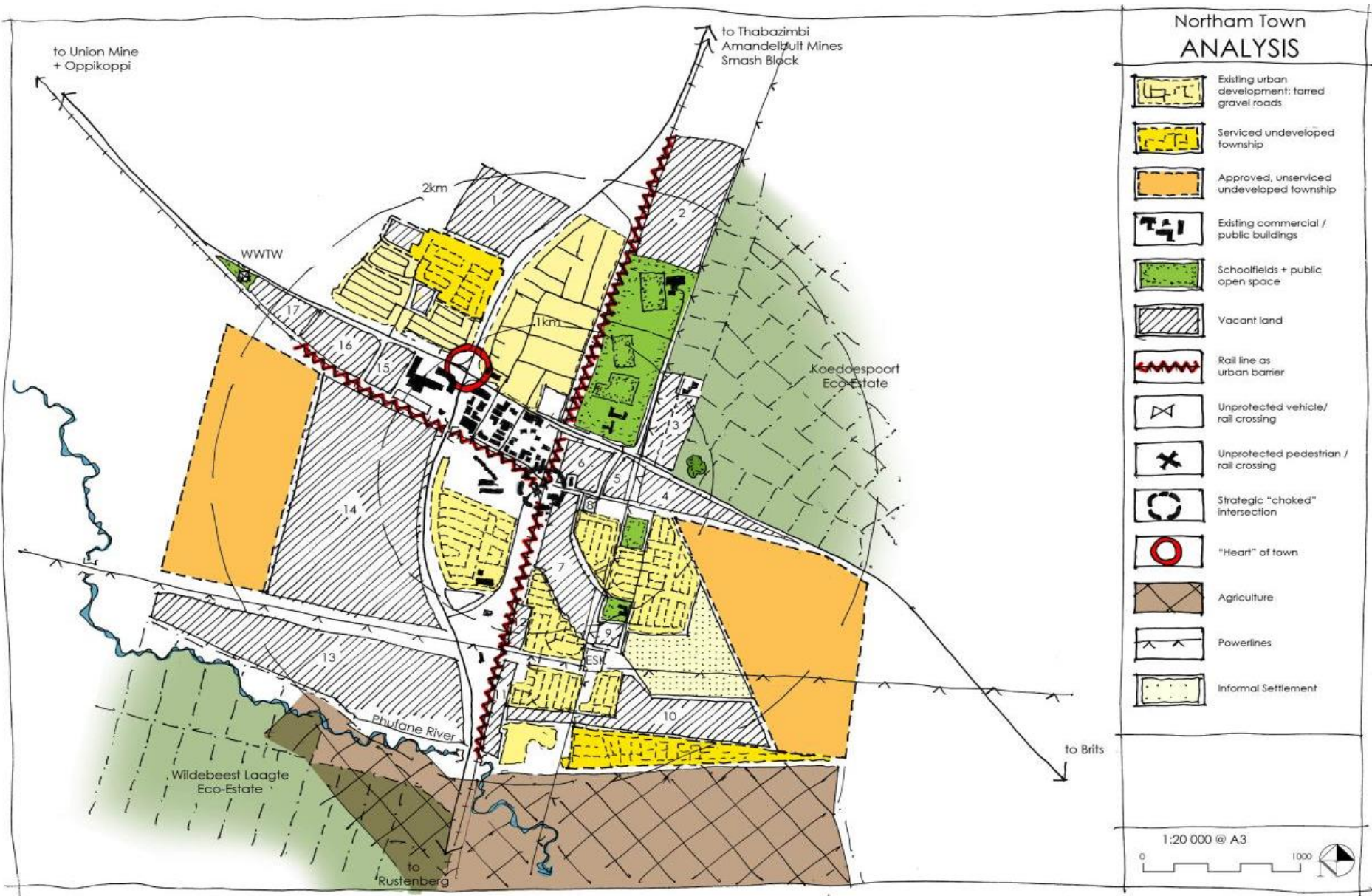


Figure 2.3 Town scale analysis

PROPERTY PRICES

Table 2.1 indicates the nature of the urban and rural property market in Northam Town and its surrounds.

There are a number of properties for sale in both the urban and rural property markets. The table below indicates the following:

- Currently there are 15 urban properties for sale and it can be assumed that the majority of these are located in Northam Town.
- The average property size per property for sale is 576m² at the average property price of R1 030 693.

- Currently there are approximately 15 rural properties for sale, mainly smallholding farms located around Northam town on Wildebeestlaagte and Koedoespoort eco-estates.
- The average rural property size per property for sale is 10 Ha at the average price of R3,714,200.
- These property prices suggest there is relatively high demand for property in and around Northam town.
- If this can be sustained and especially if more permanent residents are attracted to the town, more demand will be available to sustain the local economy.

NORTHAM TOWN Urban and Rural Property Market						
Settlement	No of Properties	Total Size	Average Size	Total Price	Average Price	R/m ² or Ha
Urban (m ²)	15	8643 m ²	576 m ²	R 15 460 400	R 1 030 693	R 1 789
Rural (Ha)	15	152 Ha	10 Ha	R 55 713 000	R 3 714 200	R 366 533

Table 2.1 Urban and Rural Property Market (Source: Property24.com)

ECONOMY AND EMPLOYMENT

Northam Town falls within Thabazimbi municipality. The Thabazimbi LED Strategy relies on mainly three (3) strategic thrusts in order to achieve its objectives (source: TLM, 2009):

1. Agricultural;
2. Mining; and,
3. Tourism.

Agriculture is mainly livestock farming with crop farming in the Crocodile River irrigation scheme some 20km south-west of Thabazimbi Town and east of Northam Town.

Mining is by far the biggest contributor to the GGP and Employment in Thabazimbi Municipality, contributing 74% and 68% respectively in 2006.

Unlike Thabazimbi town (iron ore) Northam town's economy is based on the platinum mining sector. This sector has major challenges due to a decline in international demand and local unrest in the labour sector but should have better long term prospects than iron ore mining at Thabazimbi town.

Mining is followed by Community Services which contributes 30% to the GDP and Agriculture contributes 20% to the GDP.

Northam town is further from Marakele National Park than Thebazimbi town, but is the nearest service centre to the internationally famous annual Oppikoppi music festival held a few kilometres north west on the Union mine road. It is also the centre of two private game lodge complexes; Koedoespoort and Wildebeestlaagte bush lifestyle estates. This second home or retirement opportunity is likely to be come increasingly popular to nearby Gauteng residents and care should be taken to protect this land use activity and maintain its attraction.

Mining as a future economic activity cannot be relied on and other sectors need to be strengthened and the economy diversified.

Thabazimbi municipality is fortunate in this regard having good agriculture and tourism resources. Northam town should improve its urban quality to the greatest extent possible so as to be a nice place to live.

Care must be taken with Figure 2.5 as a higher contribution to tourism (trade) should be expected for Thabazimbi Municipality.

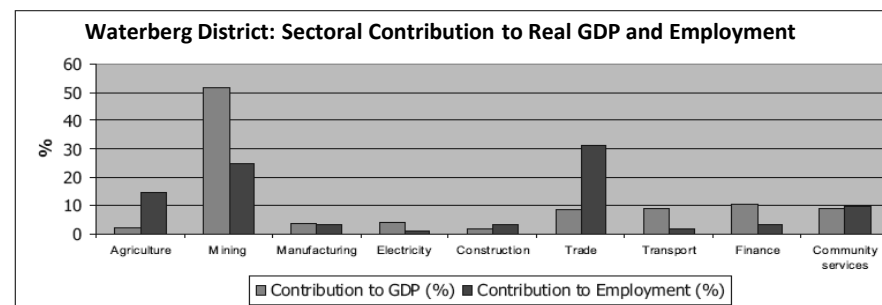


Figure 2.4 Estimated Sectoral Contribution to Total Employment (2006) : Waterberg District (Source: Global Insight 2008)

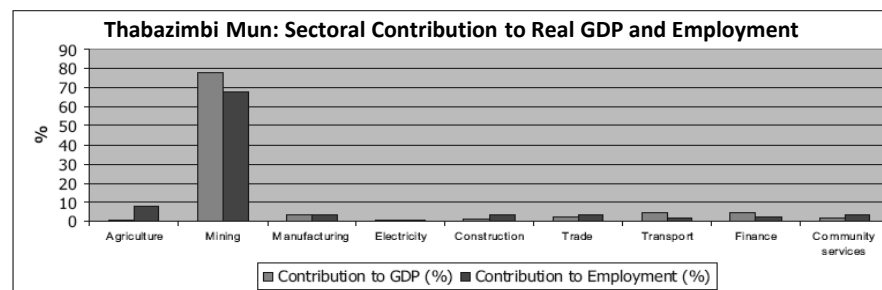


Figure 2.5 Estimated Sectoral Contribution to Total Employment (2006) : Thabazimbi Municipality (Source: Global Insight 2008)

POPULATION GROWTH

Table 2.2 below indicates the population increased from 2001 to 2011. Should the population growth continue at the same rate between 2001 and 2011 to 2021, the Northam Town's population will increase to 25 449 people.

The increase between 2001 and 2011 appeared to be mainly due to the increase in mining and tourism activity over this period. However, latterly, mining's prospects do not appear so good so a slower than forecast growth could well be expected.

Care must be taken not to over provide infrastructure.

Municipality	Population			% (10 yrs.)
	2001	2011	2021 (projected)	
				2001-2011
Table 2.2 Northam Town	Increase in population 2001 – 2011 (projected) 4 082	12 445	25 499	204.9

HOUSEHOLD GROWTH

Table 2.3 indicates that there is likely to be an increase in household need of 9 422 in all income groups should the trend between 2001 and 2011 continue to 2021, i.e. an additional 9 325 households.

This included a backlog of approximately 96 informal dwelling units (Census 2011) can be added to the 9 325 additional households in order achieve the total future housing need projection for the year 2021.

Note: scanning aerial photos indicates there are at least 200 to 300 informal dwellings on Extension 16 so an accurate count may result in a higher housing need projection.

Household Growth					
HH Size 2011	No. of HH 2011	Growth over 10 yrs. (%)	Informal dwelling units (existing)	Housing need projection (2021)	Total Future Housing Need to 2021
Table 2.3 3.01	Household growth 2011 – 2021 4 128	227.4%	96	9 326	9 422

POPULATION, INCOME AND HOUSING DISTRIBUTION / DEMAND PROJECTIONS

The following definitions should be noted.

Need refers to the total housing need according to the backlog and projected forecasts.

Demand refers to the ability of a household to afford a house via a subsidy, bank loan or own funds. Three categories are referred to that correspond with the Human Settlement Program demand thresholds:

- BNG
- GAP
- Market

NEED

Therefore, the estimated future need for 2021 is approximately 9 325 households, see section 2.5.

INCOME DISTRIBUTION

Figure 2.6 indicates the following income category distribution, see graph below (Census 2011).

Applying this income distribution the housing need provides estimated housing demand to 2021 suggests the following demand categories, see Table 2.4:

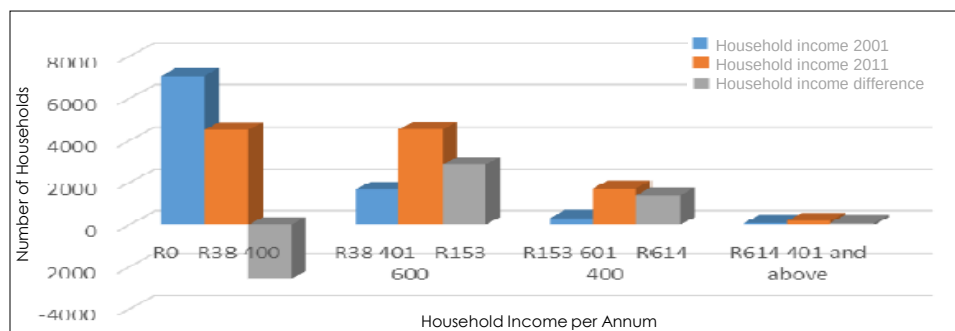


Figure 2.6 Household Income Distribution

(source: Census 2011)

Income Split (2011 Census)		Income Distribution
	Households	% Total
BNG	1753	42%
GAP	1884	46%
Market	491	12%
TOTAL	4128	100%

Table 2.4 Income distribution and housing demand

Distribution of Housing Demand Using Census 2011 income distribution	
	Households
BNG	3957
GAP	4334
Market	1131
TOTAL	9422

(source: Census 2011)

Table 2.7.1 shows the Thabazimbi Municipality housing project pipeline. (source: The HDA, 2013)

Projects	Stands	Readiness Ranking	Financial Year					Cost
			2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	
Regorogile Township	100	1						R18.0m
Regorogile Ext 8	960	2						R72.0m
Regorogile Ext 9	134	3						R10.0m
Regorogile Ext 10	313	3						R23.0m
Northam Ext 5	1,000	5						
Northam Ext 7	1,000	5						
Northam Ext 17	584	5						
Kroomdraai	80	5						
Total	1,507							R120,0M

Table 2.5 Thabazimbi Local Municipality Housing Pipeline: 2014/2015 – 2018/2019

Three (3) projects are located in Northam Town. These projects include:

1. Northam Ext 5
2. Northam Ext 7
3. Northam Ext 17

These are greenfield projects estimated to cost approximately R 415.7m over five (5) financial years. However, it appears Extensions 5 and 7 have been developed and it is not clear whether there are any planned projects in the near future. **(The concerns with their peripheral locations have been noted in section 2.1)**

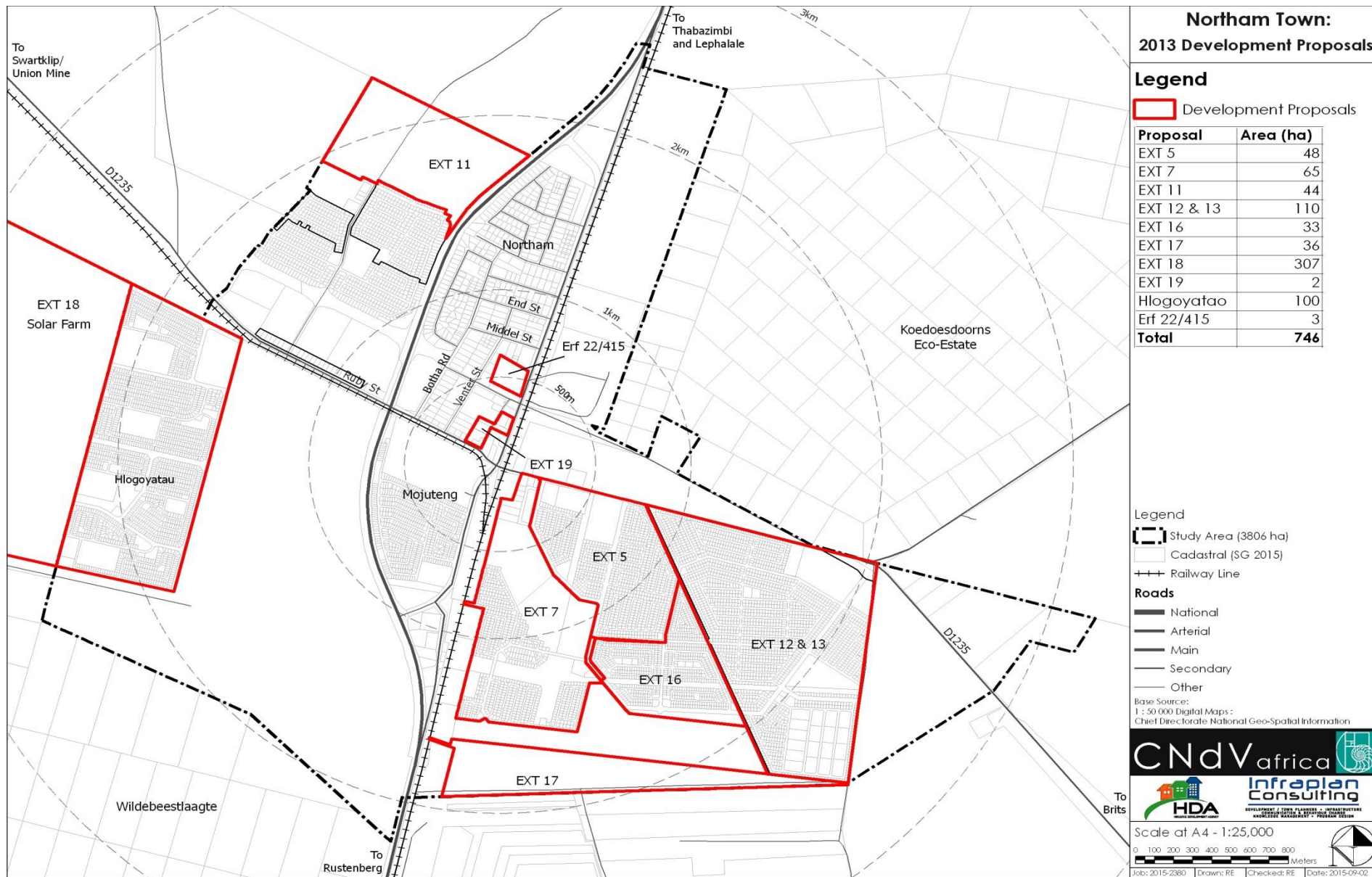


Figure 2.7 Northam town development proposals (source: Northam Town Development Plan, 2013)

Table 2.6 indicates suggests that land requirements at an average density of 25du/ha. Northam town requires approximately 380 ha of land to accommodate the future housing need up until 2021 if growth rates continue between 2011 to 2021 as they did between 2001 and 2011.

Land Requirements			
9 422 units			
Urban			
density	ha	SDF (2011)	Surplus/Deficit
25/du		land	
(average plot size = 240m ²)		proposed	
25	380	Not Available	Not Available

Table 2.6 Land Requirements

NOTE: All the figures in this section are based on census 2001 and 2011 data. The assumptions applied to the calculation of the figures require confirmation with government stakeholders and the municipality.

SUMMARY

BNG

The available housing subsidies for Northam Town is 2 584 (Appraisal and Planning of Urban Housing Delivery Pipeline Projects in Waterberg District, Limpopo Province, 2013). This suggests a subsidy deficit of 1 383 subsidies when compared to the potential 3 957 BNG households, see Table 2.4.

Social/GAP

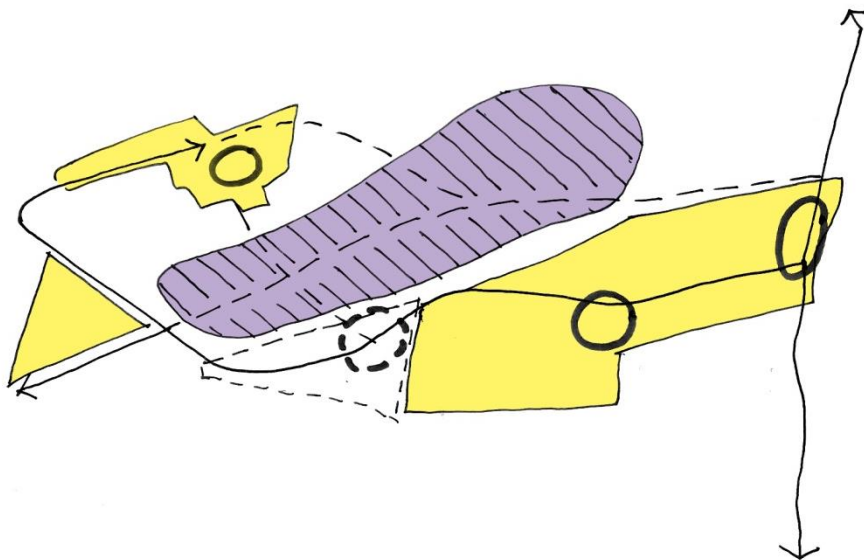
Quite a high percentage of housing demand, 46%, is likely to fall into the social/GAP market, 4334, see Table 2.4. Care must be taken with this market as, if it is not supplied, it will crowd households out of the BNG market. This usually results in increasing informal settlements. The Status Quo report for Northam Sub-region revealed that many miners earn in excess of the BNG housing income threshold and, thus, qualify for GAP housing. However, this is not being supplied and hence there are many people living in informal settlements such as Smash Block and Jabulani.

Market

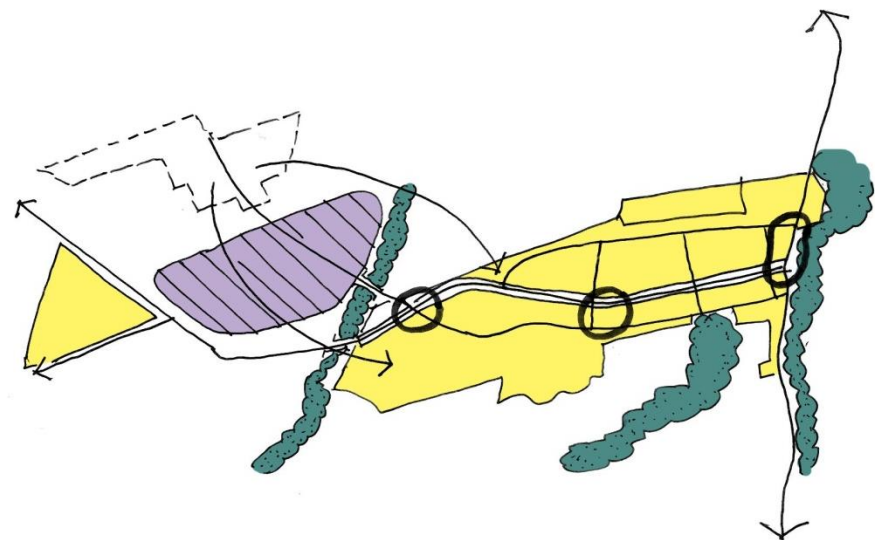
Table 2.4 suggests there may be a market housing need of approximately 1131 units until 2021. This potentially bodes well for municipal finances as these property owners can pay realistic rates but care must be taken to ensure the town remains attractive in terms of management of crime, grime and service delivery to ensure that this market invests in the town.

4.1.4 Lephale Proposals

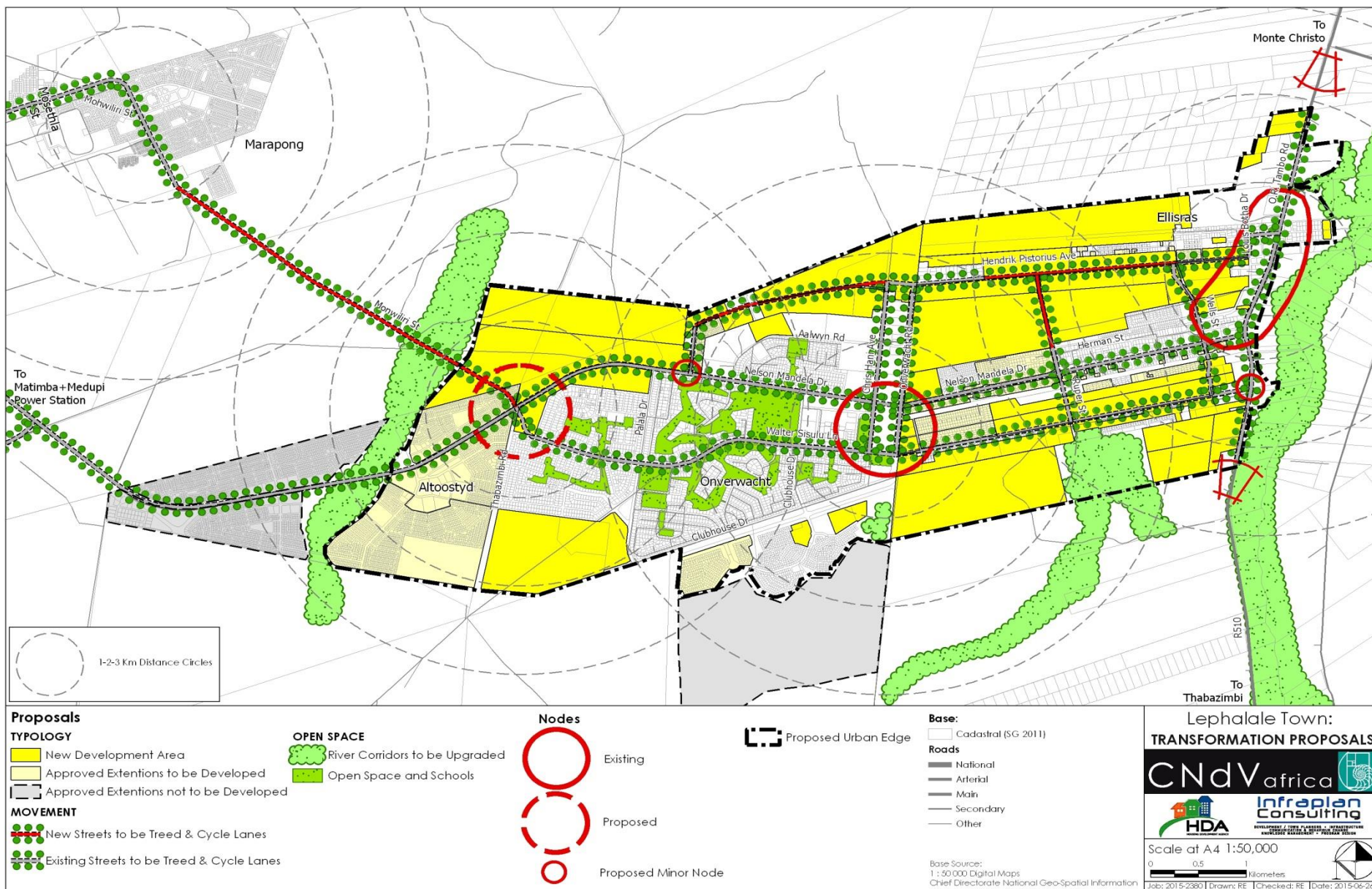
- 4. Transformation Strategy
 - 4.1 Broad Transformation Strategy
 - 4.2 Transport and Movement Network
 - 4.3 Services
 - 4.4 Blue Green Network
 - 4.5 Social Facilities
 - 4.6 Urban Nodes and Business Opportunities



BUSINESS AS USUAL
Maintaining current settlement pattern with some improvements



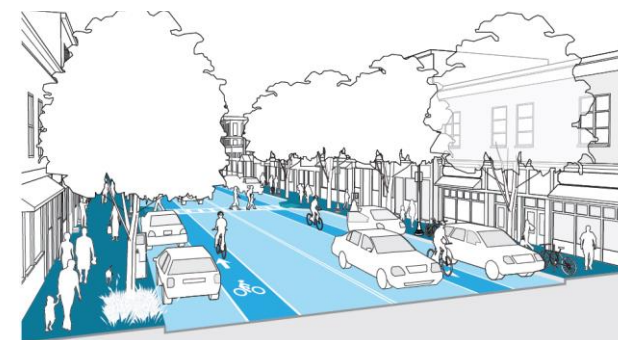
TRANSFORMATION COMPACT TOWN
Moving away from apartheid patterns and pollution sources



- Lephalale town is loosely structured around its main road network comprising the north-south regional R510 to the extreme east of the town along the Mokolo river, and west-east Nelson Mandela drive intersecting with the R510 at the Ellisras node and giving access to Moropong, Matimba power station, Medupi power station (under construction) Grootgeluk coal mine and the Botswana border to the west.
- These roads play a dual role in that they are both regional connectors and the main internal high order access routes. Thus, retail and shopping facilities are found between the R510 (OR Tambo Road) and Louis Botha drive, Lephalale Mall at the intersection of Nelson Mandela drive and Chris Hani avenue and informal trading stalls at other intersections along Nelson Mandela drive.
- This raises the question of the appropriate access management regime to apply along these routes.
- Conventionally, regional routes even where they passed through the CBD were managed as limited access, high speed arterials.
- This created conflict and safety issues between businesses trying to access the larger markets passing along these routes, pedestrians and high speed traffic.
- One approach to solving these conflicts entailed designing development to turn its back on these roads. However, this often resulted in informal responses to access the higher road network which were more dangerous than if properly designed.
- Another approach was to build a bypass which often undermined the CBD activities, especially those linked to passing traffic.
- Consideration has been given to by-passes to the north and south of Lephalale town due to the congestion experienced in peak hours especially along Nelson Mandela drive.
- The reality of the road network is that the high volumes of traffic along the R510 and Nelson Mandela Drive attract higher order businesses, for instance, filling stations and shops. The shopping mall and street trading, clearly signalling the economic opportunities.
- Most of this traffic congestion is “tidal” with traffic jams in the AM and PM peaks;
- Consideration should be given to a “Complete Streets”, mixing of land uses, and modal shift solution before constructing bypasses.
- The main street network should be constructed with parallel cycle and pedestrian lanes.



Image taken along Nelson Mandela Drive before bending and heading towards Medupi and Mathimba Power Stations



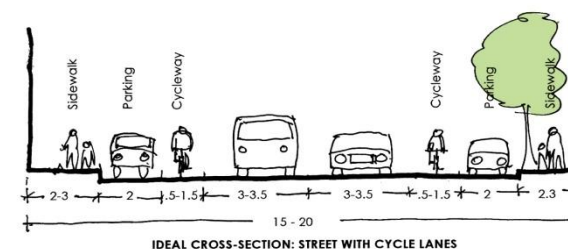
Complete Street: Neighbourhood Main Street – residential area, convenience shopping, business, flats over shops

- The road network of a settlement is important for the following:
 - **Offering convenient access between various activities** and connecting to the hinterland and other towns;
 - **Providing access to economic opportunities** as particularly the higher order road network carries the largest volumes of traffic and therefore potential of traffic and therefore potential market. It is for this reason that retailers, from informal traders to shopping centres, always, seek the busiest roads or intersections on which to locate;
 - **Creating and improving urban quality.** Areas of a town served by well maintained tree-lined streets with sidewalk, and cycle lanes present a better impression to both residents and visitors;

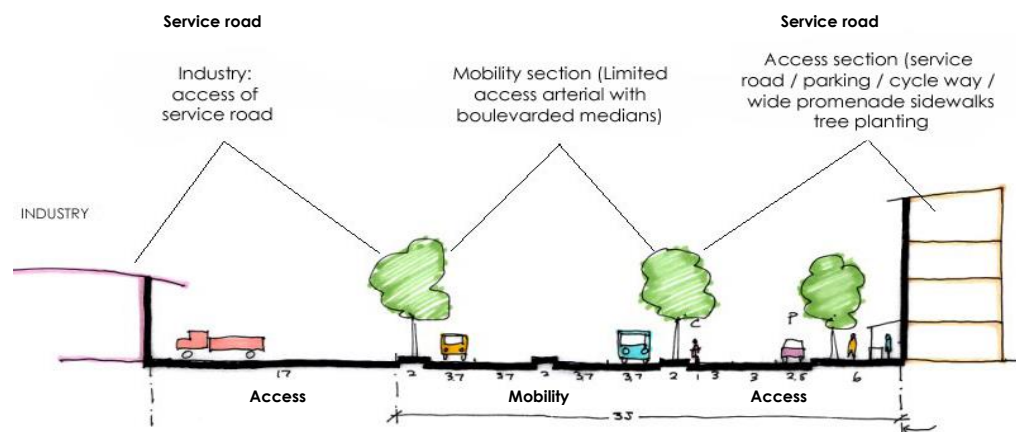
- Lephalale town as a whole has a widely differing quality in its road networks when comparing Moropong, Onverwacht and Ellisras nodes;

- Furthermore, the circuitous road route to Moropong, requires residents to travel almost 16kms by road to get to Lephalale Mall and 20kms to Ellisras. Moropong is only 7.5kms from the mall and 12kms from Ellisras as the crow flies – although these distances are still excessive and far longer than should be needed in a sustainable, smart settlement; and,

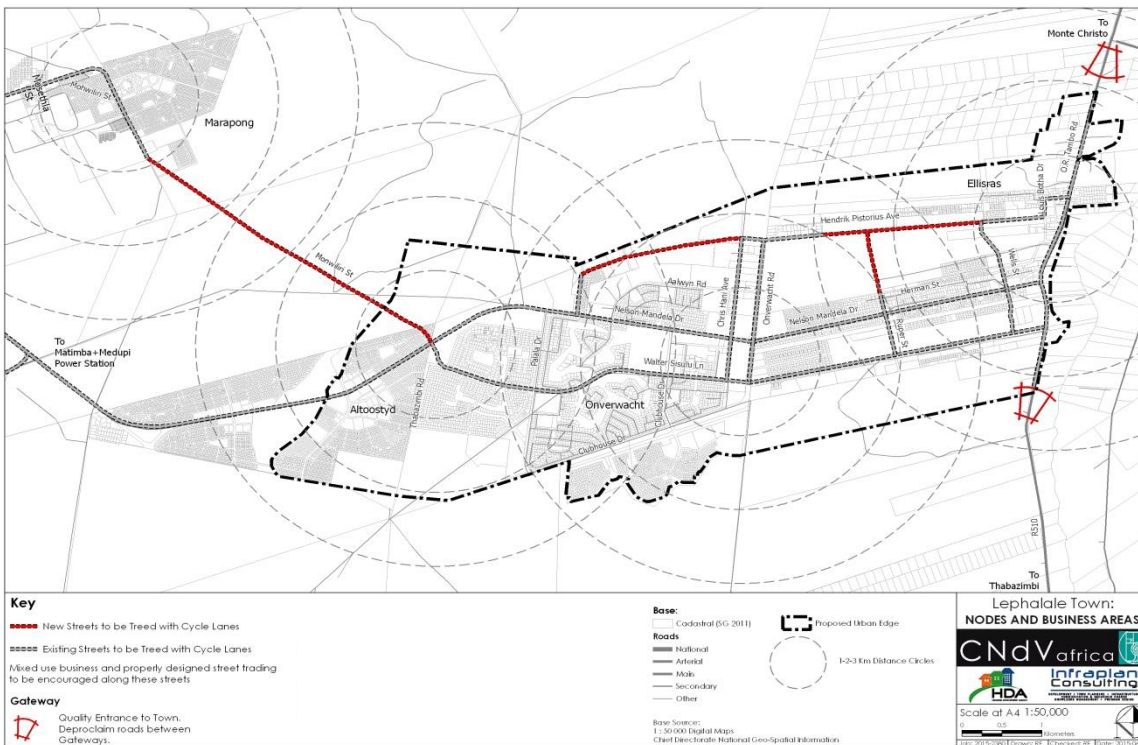
- Three major improvements are proposed to the transport network:
 - Together with no further development being proposed in Marapong, a direct route linking to the intersection of Nelson Mandela and Walter Sisulu is proposed which will reduce road travelling distances for Marapong residents by 8km;
 - A third continuous major route, Hendrik Pistorius ext, linking to Ellisras from Nelson Mandela Drive; and,
 - Integrate the settlement by providing a linked, continuous, high quality, landscaped main street network that provides for large and small businesses throughout Lephalale.



Cross-section for main streets



Cross-section to enable continuous access alongside mobility route



Transport Network

- Urban road access guidelines that maximise the number of intersections and access points should be applied on the major routes listed opposite from where they enter the town, inside the gateways.
- All the major routes, see diagram above should be boulevarded and provided with pedestrian sidewalks and cycle lanes so as to promote non-motorised transport.
- Roads to be upgraded and treated in this fashion include:
 - Monwiliri street through Marapong
 - Monwiliri street ext;
 - Nelson Mandela drive;
 - Walter Sisulu lane;
 - Hendrik Pistorius ext;
 - Chris Hani ave;
 - New north- south road ;
 - Wells street ext.;
 - OR Tambo section of R510; and,
 - Upgrading of roads in this manner is well-suited to EPWP program.



Willowmore: tree planting along main road



Willowmore: same standard of road upgrading in township



Street and sidewalk upgrading: Tarkastad, Tsoelwana

Water Supplies

- Lephalale town's water demand has grown in recent years due to the booming industrial and mining sectors.
- Bulk water supplies are sourced from Mokolo Dam which has a quota of 17 million Kl/a and is currently utilised at capacity.
- The two treatment plants, namely the Zeeland and Mathimba treatment plants capacities will both have to be increased to accommodate the envisaged development in the town.
- Future water projects in the pipeline include (Lephalale CBD Plan 2014):
- Plans to increase the Zeeland water storage capacity
- New pipeline construction and splitting the Onverwacht/Lephalale water supply line to increase capacity.
- Increase capacity of existing bulk distribution pipelines throughout the entire town.

Electricity

The following capacities have been recorded for Lephalale town (Lephalale CBD Plan 2014).

1. Waterberg substation (capacity 40mva/33kva);
2. Lephalale substation (capacity 35mva/11kva);
3. Marapong substation (2.5mva/11kva)

Electricity projects are underway to address the increasing demand.

Rainwater Harvesting: Practical example

Kenton-on-Sea (Umhlabhe Municipality) has for many years insisted that all market single dwelling housing provides a 30 000 litre underground rainwater tank.

These are as follows:

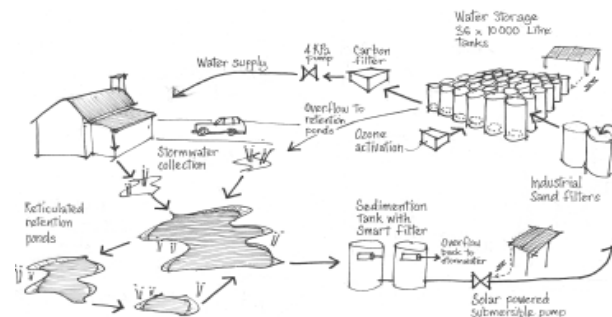
- A new 40mva/132kva substation is in the planning stage and is to supply electricity to the Altoostyd area;
- The Lephalale substation will be upgraded to 80mva; and,
- A new substation (Bone City) for Marapong.

Waste Water Treatment

- The whole town is serviced through the water-borne sanitation network.
- There are two WWTW in Lephalale, namely Paarl Waste Water Treatment Plant which services Lephalale CBD, Onverwacht and industrial areas and Marapong is serviced by Zongesien and Nelson's Kop Waste Water Treatment Plants.
- All sewer plants and sewer lines are operating close to capacity and need to be upgraded in order to support future developments.

Broadband and IT

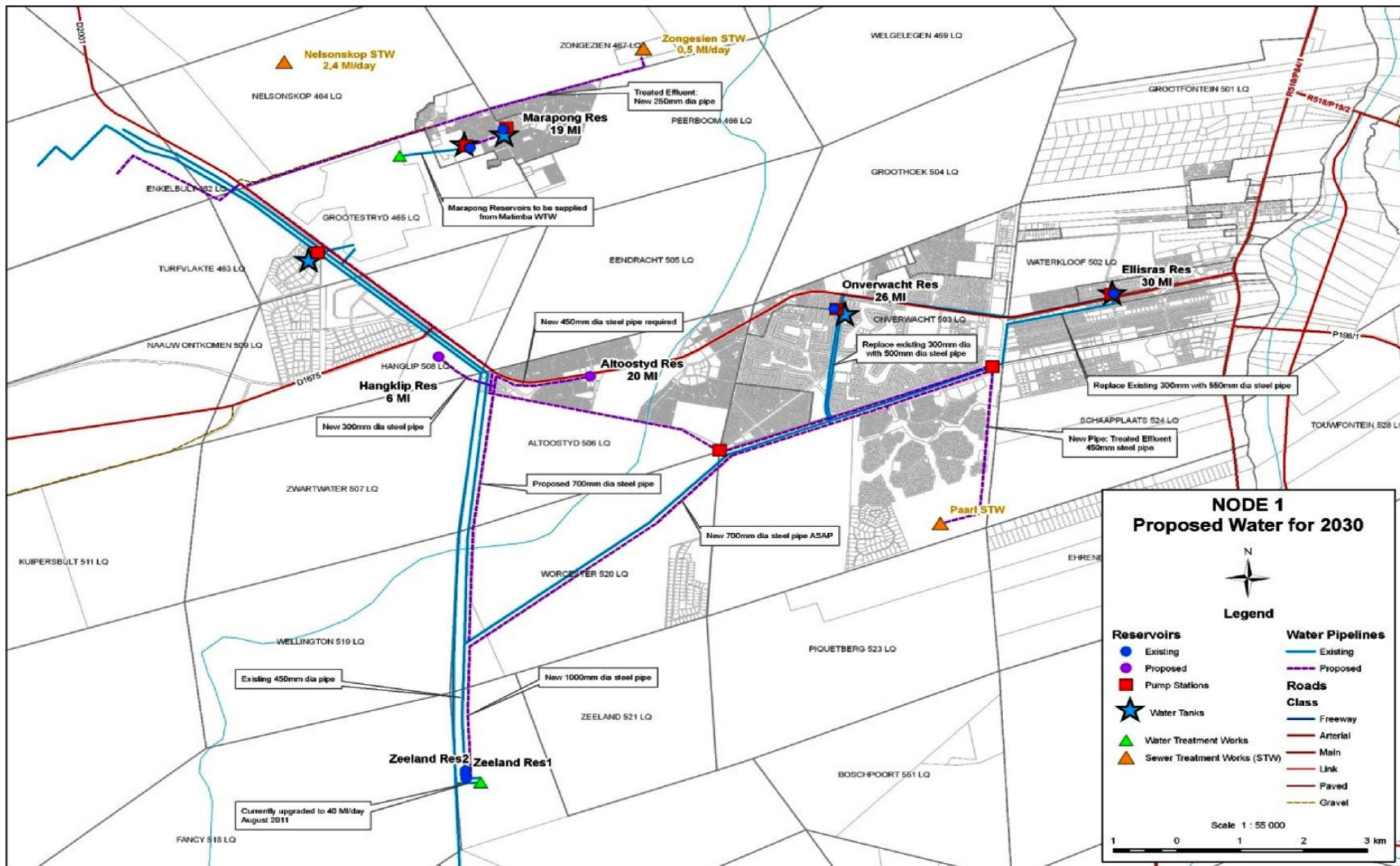
- To follow



Rainwater harvesting and grey water recycling



Kimberley Eco-village: solar HWC, enviro-loos, gas, grey-water recycling, PV generation



Lephale town, power stations, and mine water and waste water infrastructure

Source: Lephale IDP 2012/2013

Lephalale town depends on a number of eco-system services for its environmental sustainability and managing environmental hazards.

Eco-system services include:

- **Air quality** Lephalale LM has by far the worst air quality in the five Waterberg district LMs. Most of this is as a result of Matimba power station and Grootgeluk coal mine. Marapong abuts Matimba power station on its windward side, possibly the worst possible location for human settlement in this region. This is the main reason, in addition to its excessive distance from urban opportunities in Lephalale town, that no further urban development is proposed in this location;
- Ideally, in the long term all residents in Marapong should move to better located land close to Lephalale town;
- **Arable land:** gardening, food production occurs mainly along the Mokolo river. The sub-region has a relatively low rainfall and arable land is scarce, especially given the likely long term exploitation of the Waterberg Coal field. Urban development should not occur east of the R510;
- **River corridors; water supplies, wetlands and dams, aquifer replenishment and flood management;**

- Lephalale town receives 400mm - 600mm rainfall p.a. Water supplies are of concern given water demand of the power stations, even Medupi with its “dry” technology, and coal mining. Currently, the Mokolo river catchment is in deficit and Lephalale town’s bulk services are at capacity.

Accordingly:

- Strict measures are required to protect urban and agricultural water needs.
- Rainwater harvesting and grey water recycling should be promoted where ever possible.

The following should be formally protected:

- The Mokolo river corridor, see section above as well;
- The Sandloop river corridor as an aquifer replenishment resource and natural western boundary to the town;
- The wetland system to the south draining the area around the Paarl WWTW

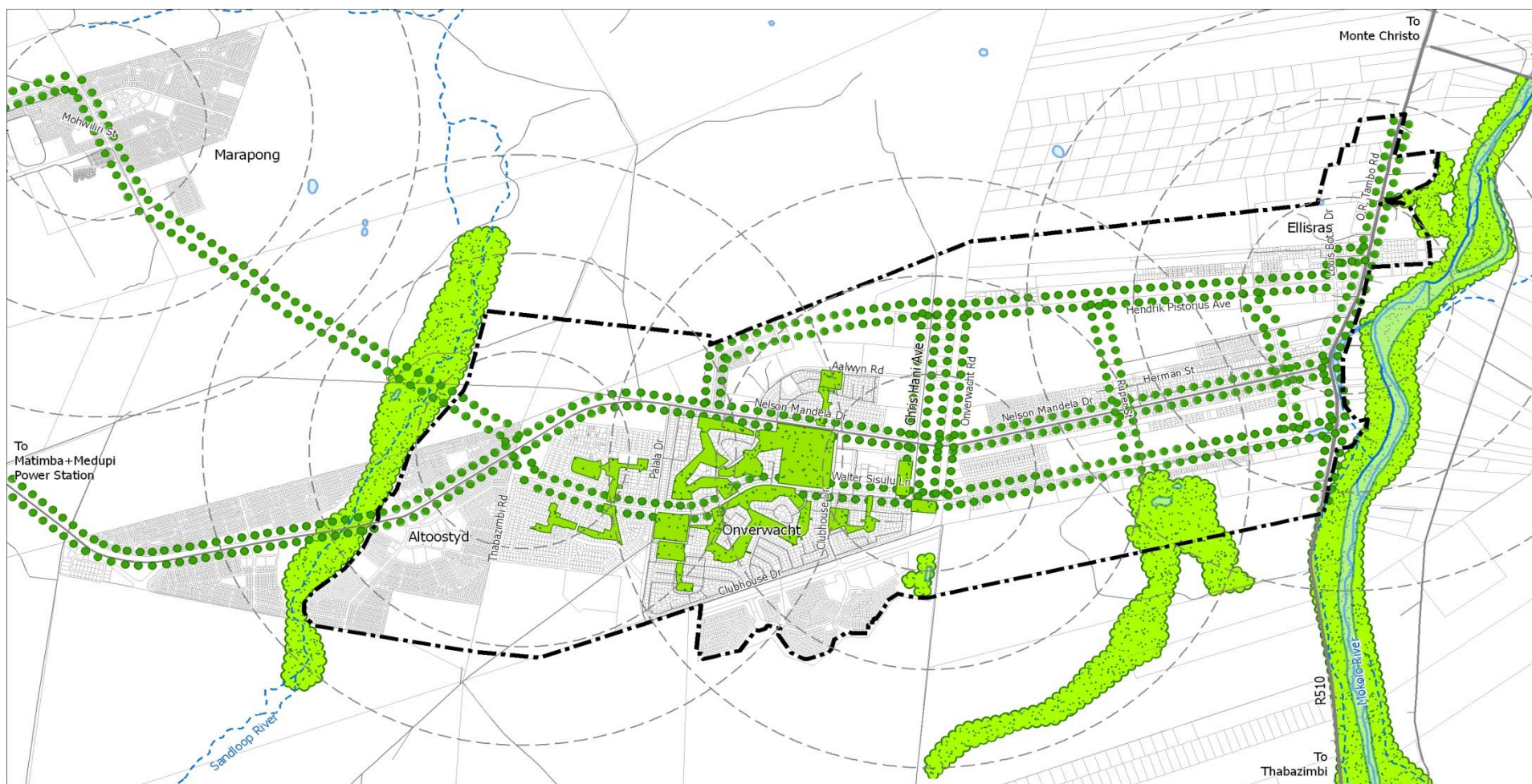
Environmental sinks:

- WWTW Paarl treatment works has 3MI spare capacity;
- Marapong’s Zongesien WWTW is at capacity. Depending on the agreed location of future growth, resources to upgrade this WWTW may be better spent at Paarl WWTW;

- Solid waste landfill: a new site is proposed south of Medupi P.S. Separation at source, and waste recycling should be encouraged;
- cemeteries; - information required.

Environmental Quality

Lephalale town’s urban quality, is most notable in Onverwacht with its boulevarded streets and verdant open spaces. This quality should become the benchmark for public street and space upgrading through the town.



Key

- Open Space and Schools
- River Corridors
- Treed Streets with Cycle Lanes and Sidewalks

Base:

- Cadastral (SG 2011)
- Rivers**
 - Perennial
 - Non-Perennial
 - Lakes & Dams
- Roads**
 - National
 - Arterial
 - Main
 - Secondary
 - Other
- Proposed Urban Edge
- 1-2.3 Km Distance Circles

Base Source:
1 : 50 000 Digital Maps
Chief Directorate National Geo-Spatial Information

Lephalale Town:
BLUE - GREEN NETWORK

CNdV africa

Infraplan Consulting
HDA
DEVELOPMENT / TYPE / PHASES / PERMANENT
REGISTERED BILL OF MATERIAL / PLOT PLAN DESIGN

Scale at A4 1:50,000

0 0.5 1 Kilometers

Job: 2015-2380 Drawn: RE Checked: RE Date: 2015-07-09

Education

Currently Lephalale town is short of 2 primary schools according to the CSIR 2011 standards.

If the population increases to the level forecasts in 2021 then the following will be required:

- High Schools – 16
- Secondary – 7
- FET
- Tertiary

Demand for new schools based on the projected population (2021) and existing schools						
Settlement	Pop. (2021)	Type of School	Requirements based on 2021 population			
			Overall Need	Existing	Need	Min. size (ha)
Lephalale Town	127 702	Primary	19	3	16	56
		Secondary	10	3	7	28

Education Facilities: requirements to 2021
(to be confirmed with Department of Education)



Ellisras Primary School

Health Facilities

- There are two hospitals and 6 clinics in Lephalale.
- These are more than adequate for the current population and should be sufficient if the estimated 2021 population occurs.

Demand for new health facilities based on the projected population (2021) and existing schools						
Settlement	Pop. (2021)	Type of health facility	Requirements based on the population in 2021			
			Overall Need	Existing	Need	Min. size (ha)
Lephalale Town	127 702	Small – medium	6	6	0	0
		Large	2	2	0	0

Health Facilities: requirements to 2021



Medupi Hospital

Sport and Recreation

- The open space network appears to be concentrated in and around Onverwacht courtesy of the Mogol Golf Club.
- There are a number of informal playing fields in Marapong.
- There appears to be no informal kick-about
- The river corridors should be upgraded to provide walking and running and picnic trails.



Informal sport facilities in Marapong Township



Key

Schools

Source: Dept. Education 2010

- Primary
- Secondary

Health Facilities

Source: Google 2015

- Hospitals
- Clinic

Base:

Cadastral (SG 2011)

Roads

- National
- Arterial
- Main
- Secondary
- Other



Proposed Urban Edge



1-2-3 Km Distance Circles

Base Source:
1 : 50 000 Digital Maps
Chief Directorate National Geo-Spatial Information

Lephalale Town:
SOCIAL FACILITIES

CNdV africa

Infraplan Consulting

Scale at A4 1:50,000
0 0.5 1 Kilometers
Job: 2015-2390 | Drawing: RE | Checked: RE | Date: 2015-06-26

- Traditionally business activity in SA settlements was meant to occur in strictly demarcated and rigidly planned business centres.
- Lephalale grew somewhat organically with a business trip between the R510 and Wells street, and later, at the gateway to Onverwacht another planned commercial node saw the location of Lephalale mall, other businesses and the civic centre.
- Marapong is extremely marginalised due to its hidden location with regard to business opportunities. A small informal sector serves a captive market of those for whom Onverwacht and Ellisras nodes are too far away.
- However, as noted in section 4.2 Transport, there is always significant pressure for businesses to access the highest areas of accessibility and passing trade in a town.
- This occurs along the R510 and around the Lephalale mall. There are also numerous informal traders located at key intersections along Nelson Mandela drive. This route, if properly designed in cross-section and plan, could offer considerable economic and employment creation opportunities due to its form as a linear corridor and large traffic volumes.
- The proposed Monwiliri ext./Nelson Mandela drive/Walter Sisulu lane could offer considerable potential in this regard due to the traffic it is likely to attract particularly because of the much more convenient access to Marapong that would result.
- Nodal potential also exists around the Hendrik Pistorius ext. intersection with Nelson Mandela drive which is also likely to attract large volumes of passing trade when this route is made continuous through to the Ellisras node on the R510.
- Similar intersection potential can be generated with the proposed cross link streets between Chris Hani Ave and the R510.
- Opportunities for continuous access along the boundaries of these major streets should also be proposed.
- This can occur off frontage (service) roads running parallel to the mobility lanes along major routes like Nelson Mandela boulevard.
- On smaller streets, e.g. Walter Sisulu and Hendrik Pistorius ext, access can be taken directly from the main road way.



Informal trade, transport interchange and the Spar complex form informal node in Marapong Township



Key

--- New Streets to be Treed with Cycle Lanes

--- Existing Streets to be Treed with Cycle Lanes

Mixed use business and property designed street trading to be encouraged along these streets

Gateway

Quality Entrance to Town.
Deproclaim roads between Gateways.

Nodes



Existing



Proposed Minor Node



Proposed

Base:

--- Cadastral (SG 2011)

Roads

--- National
--- Arterial
--- Main
--- Secondary
--- Other



Proposed Urban Edge



1-2-3 Km Distance Circles

Base Source:
1 : 50 000 Digital Maps
Chief Directorate National Geo-Spatial Information

Lephalale Town: NODES AND BUSINESS AREAS

CNdV africa

Infraplan Consulting
HDA
DEVELOPMENT / URBAN PLANNING / INFRASTRUCTURE
MANAGEMENT / PROJECT DESIGN

Scale at A4 1:50,000

0 0.5 1 Kilometers

Job: 2015-2380 Drawn: RE Checked: RE Date: 2015-07-09

Proposed Nodes and Street Network



LIMPOPO MINING TOWNS
TRANSFORMATION PLAN

Urban Nodes and Business Opportunities

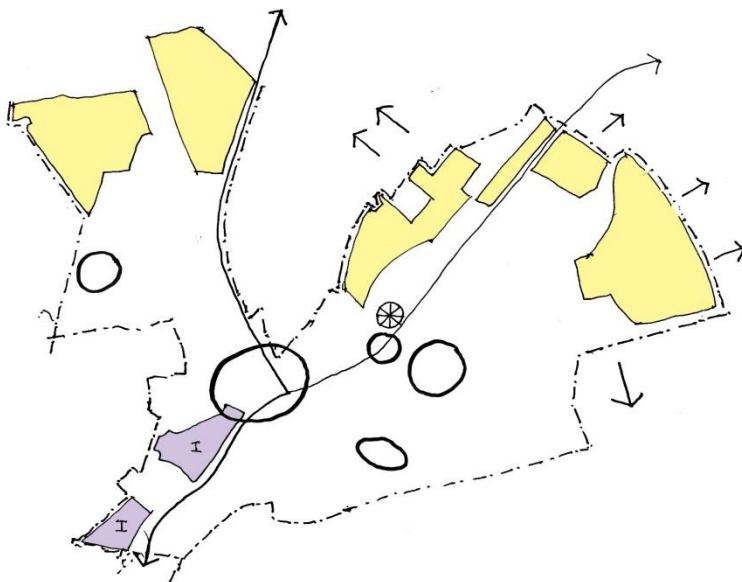
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4.1.5 Thabazimbi Proposals

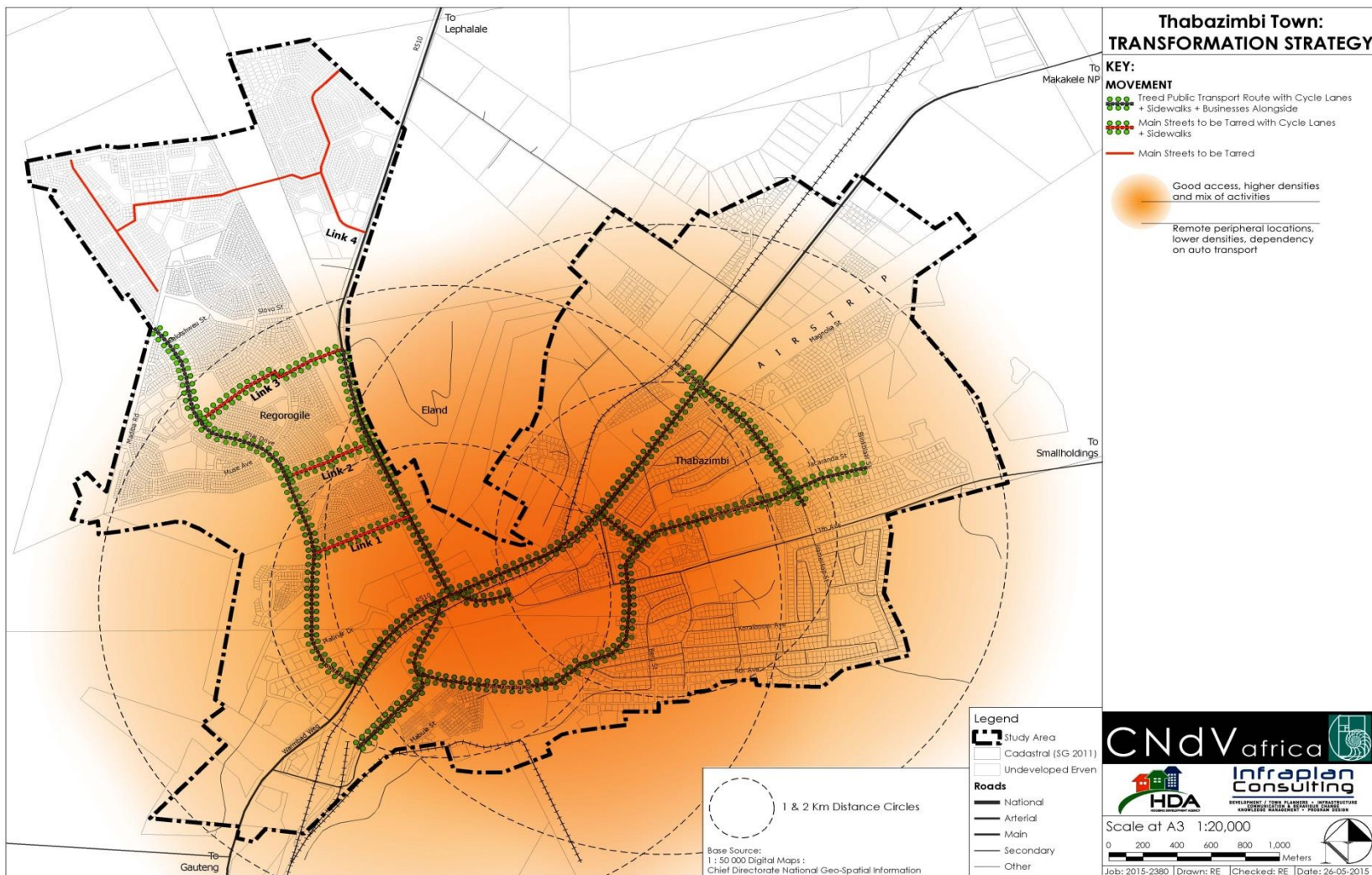
- 4. Transformation Strategy
 - 4.1 Broad Transformation Strategy
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 - 4.4 Blue Green Network
 - 4.5 Social Facilities
 - 4.6 Urban Nodes and Business Opportunities

OPTION A:
Business as Usual

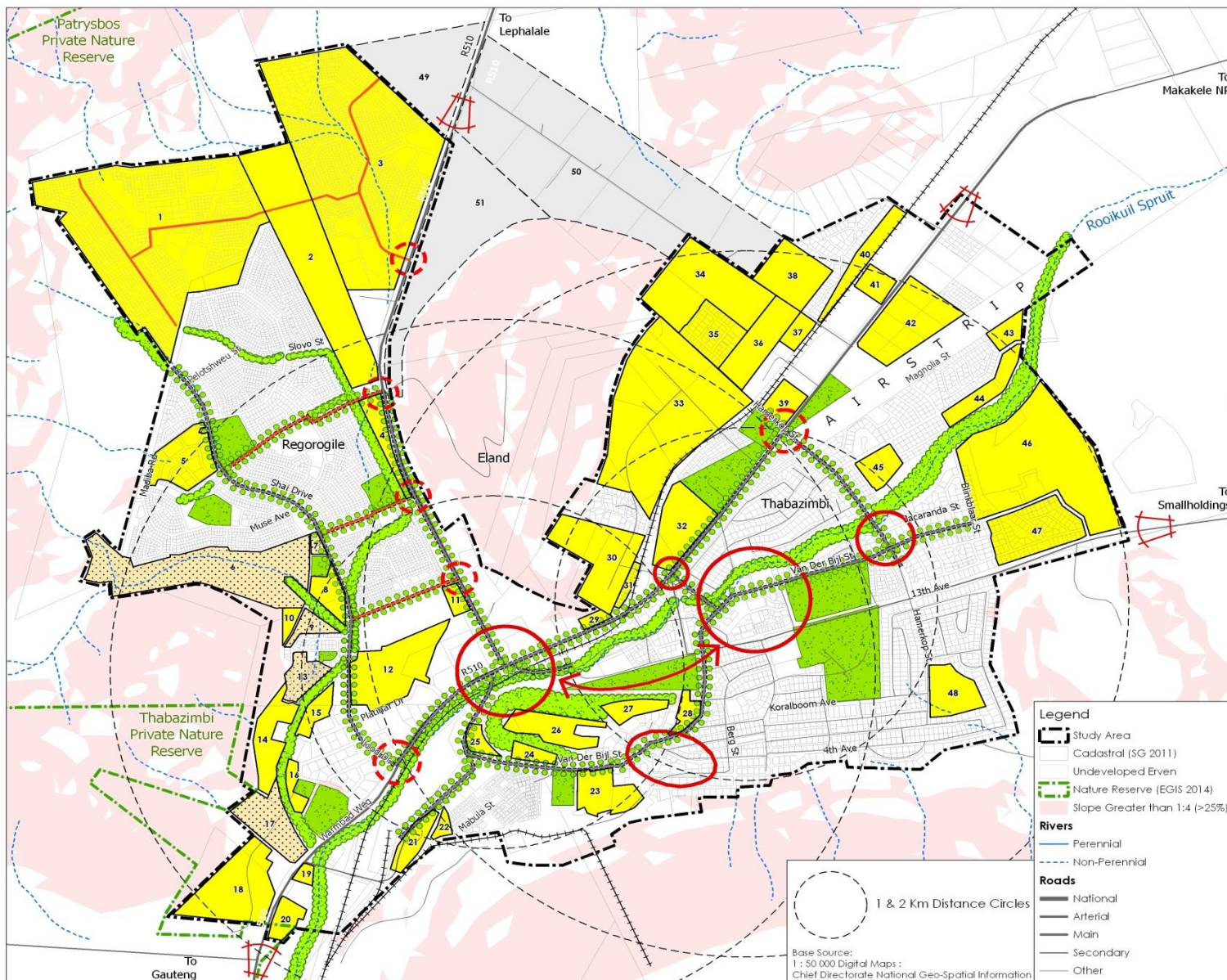


OPTION B:
Settlement Transformation





- Focus higher order social and economic activities and higher density residential typologies in the most accessible areas of the town.
- Create integrated lattice of multi-modal (complete streets) links in township and town of same quality throughout network.



Thabazimbi Town: TRANSFORMATION PROPOSALS

KEY:

NEW DEVELOPMENT

- In-Situ Upgrade
- New Development Areas
- Long Term New Development Areas

OPEN SPACE

- Open Space and School Fields
- River Corridors

MOVEMENT

- Treed Public Transport Route with Cycle Lanes + Sidewalks + Businesses Alongside
- Main Streets to be Tared with Cycle Lanes + Sidewalks
- Main Streets to be Tared

NODES

- Existing
- Proposed

- Relationship between Existing and Potential New Node

GATEWAYS

- Quality Entrance to Town, Deproclaim roads between Gateways.

CNdV africa

Infraplan Consulting
DEVELOPMENT / TOWN PLANNING / INFRASTRUCTURE
GEOSPATIAL & REMOTE SENSING
KNOWLEDGE MANAGEMENT / PROGRAM DESIGN

Scale at A3 1:20,000

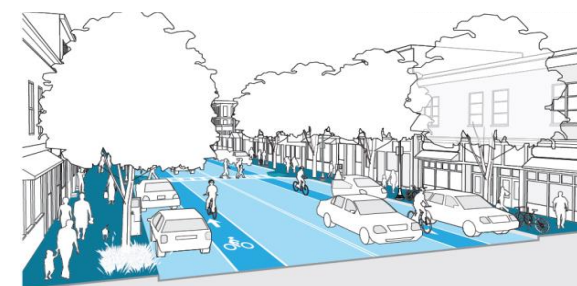
0 200 400 600 800 1,000 Meters

Job: 2015-2380 | Drawn: RE | Checked: RE | Date: 26-05-2015

- The transport network is key to Thabazimbi town's long term success. It connects the town to its regional hinterland; Gauteng, the Northam platinum mines and intensive agriculture to the Waterberg coal fields to the north and Marakele national Park and the Waterberg Biosphere Reserve to the east.
- The town is currently bisected by the R510 and D1485 regional routes. These roads play a dual role in that they are both regional connectors and the main internal high order access routes connecting Regorogile to Thabazimbi CBD.
- This raises the question of the appropriate access management regime to apply along these routes.
- Conventionally, regional routes even were they passed through the CBD were managed as limited access, high speed arterials.
- This created conflict and safety issues between businesses trying to access the larger markets along these routes, pedestrians and high speed traffic.
- One approach to solving these conflicts included designing development to turn its back on these roads. However, tis often resulted in informal responses to
- access the higher road network which were more dangerous than if properly designed.
- Another approach was to build a bypass which often undermined the CBD activities, especially those linked to passing traffic.
- Thabazimbi town, are to its typography and the single "poort" in the mountains through which rail, river and road networks has to pass is not vulnerable to a local bypass.
- The reality of the road network is that the high volumes of traffic through the R510 / D1485 intersection have attracted higher order businesses including filling stations and a shopping mall clearly signalling the economic opportunities.
- It is proposed that the opportunity should be extended to Regorogile with the creation of minor commercial nodes at the intersections of the main cross streets between ... road and the R510. this can also happen along the D1485.
- The change from the rural to urban access management require should occur at the proposed gateway.
- The main street network should be constructed with parallel cycle and pedestrian lanes.



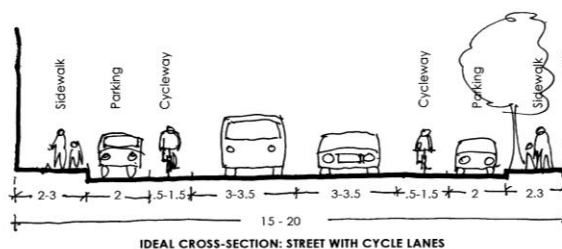
R10 past Regorogile showing pedestrian traffic



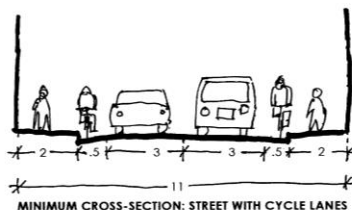
Neighbourhood Main Street – residential area, convenience shopping, business, flats over shops

- The road network of a settlement is important for the following:
 - **Offering convenient access between various activities** and connecting to the hinterland and other towns;
 - **Providing access to economic opportunities** as particularly the higher order road network carries the largest volumes of traffic and therefore potential of traffic and therefore potential market. It is for this reason that retailers, from informal traders to shopping centres, always, seek the busiest roads or intersections on which to locate;
 - **Creating and improving urban quality.** Areas of a town served by well maintained tree-lined streets with sidewalk, and cycle lanes present a better impression to both residents and visitors.
- Thabazimbi town as a whole has a widely differing quality in its road networks when comparing Regorogile to Thabazimbi south. The former's roads, even the main ones, have gravel sections and there is very little tree planting, particularly when compared to the more established parts of town.

- The main roads through the town display a tension between their role as routes for regional through traffic and the opportunities they present for small businesses.
- Road design and access guidelines are only focussed on the first quality noted above, i.e. vehicle mobility and take little account of the economic potential and urban quality.
- An important device to integrate the settlement is to provide a linked and continuous, high order network of similar quality throughout.



0 1 2 3 4 5 1:100



Cross-section for main streets



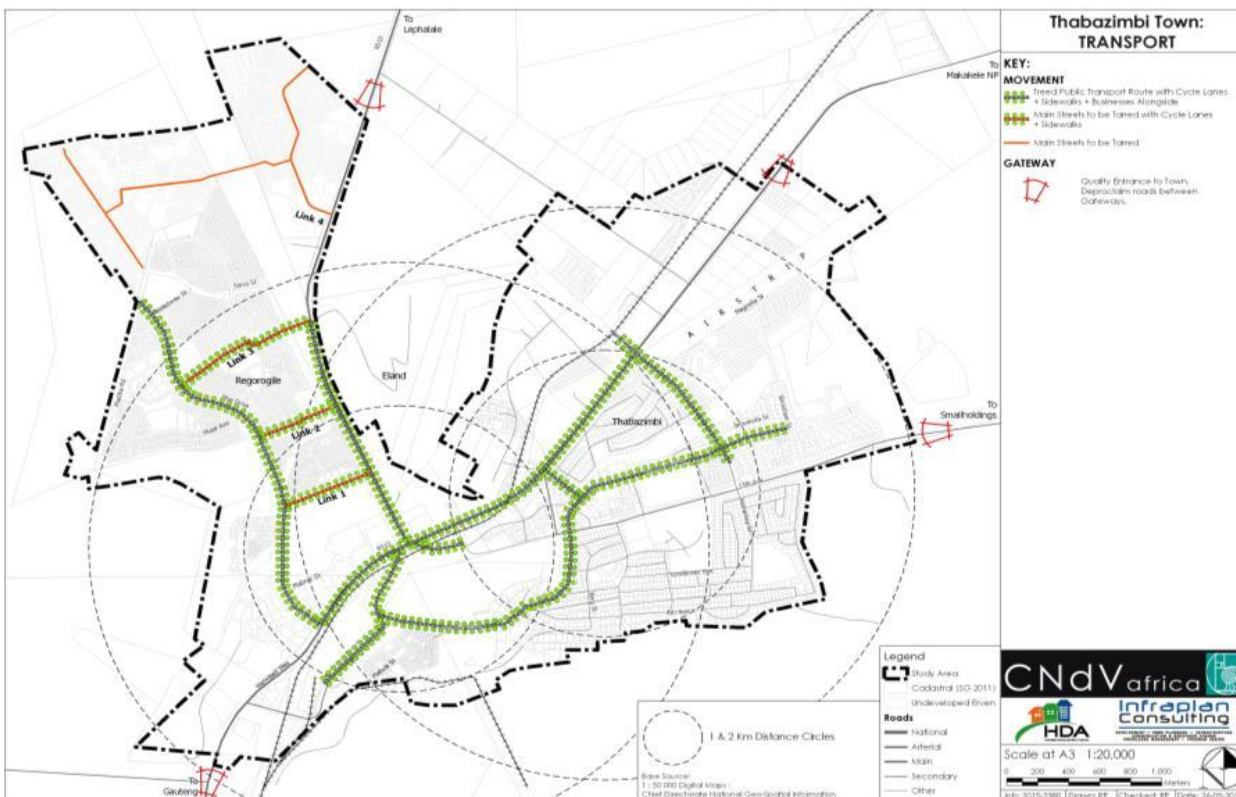
Shai Street: R510 intersection potential minor node location



Eland Street: CBD



D1485 to Marakele NP: informal trading: tourism crafts



Willowmore: tree planting along main road



Willowmore: same standard of road upgrading in township

- Urban road access guidelines that maximise the number of intersections and access points should be applied on the R510 and D1485 from where they enter the town, inside the gateways.
- All the major routes, see diagram above should be boulevarded and provided with pedestrian sidewalks and cycle lanes so as to promote non-motorised transport.
- Roads to be upgraded and treated in this fashion include:
 - R510 to gateway symbols;
 - D1485 to gateway symbols;
 - Shai Street;
 - Link road 1;
 - Link road 2;
 - Link road 3;
 - Link road 4;
 - Circular drive;
 - Upgrading of roads in this manner and well-suited to EPWP programs.



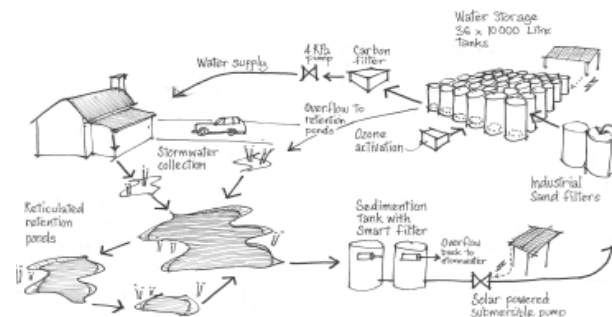
Street and sidewalk upgrading: Tarkastad, Tsoelwana

Water Supplies

- **The current demand for water** (daily flow 60l/sec) **considerably exceeds capacity** (daily flows 28l/sec) and there is no capacity for further development using conventional services.
- Average annual rainfall is 350 mm – 400mm and there should be potential for rain water harvesting as well as grey water recycling as a supplementary supply. This is currently not policy.

Rainwater Harvesting: Practical example

Kenton-on-Sea (Umhlabhe Municipality) has for many years insisted that all market single dwelling housing provides a 30 000 litre underground rainwater tank.



Rainwater harvesting and grey water recycling

Waste Water Treatment

- Most dwelling units are connected to the sewerage system.
- Approximately 2500 units (2011 Census) were not connected, mainly in the informal settlements.
- The WWTW is located in the river corridor.
- **Demand exceeds capacity by 3.16 megalitres per day** (IDP 2013/2014) and there is no more capacity for development.

Electricity

- 96% of residents are connected to the grid with only 750, mainly in informal settlements using candles (2011 Census).
- **There is sufficient capacity for another 500 BNG units.** (2013/14 IDP p 117)
- Only about 96 out of 27 000 residents are using solar power and there is no policy encouraging the use of renewable energy.

Broadband and IT

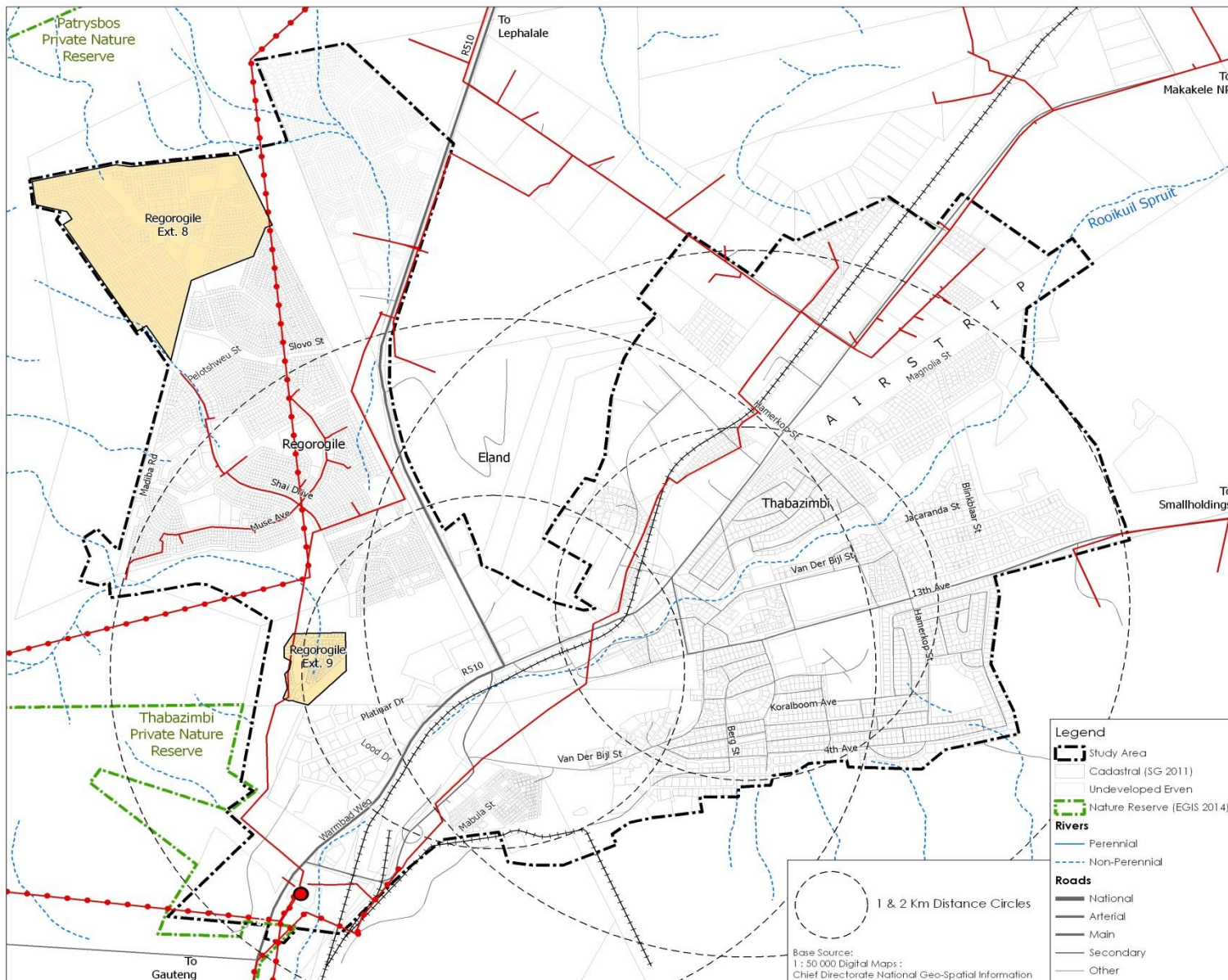
- High speed internet connections in both towns and townships are excellent facilitators for learning and business.
- The current state of broadband and IT is (to be established).
- High speed internet should be implemented firstly in schools and business nodes in Regorogile and then extended to the western part of the town.

General

- Except for electricity, the town has already exceeded service capacity for water and waste water services before future growth is considered.
- A multi-pronged approach is required where the use of off-grid and renewable services is encouraged as supplementary supplies with lower operating costs.
- However, funding will still be required to augment bulk supplies and networks.



Kimberley Eco-village: solar HWC, enviro-loos, gas, grey-water recycling, PV generation



Thabazimbi Town: SERVICES

Key:

Electricity Network

- Sub-Stations (Eskom 2001)
- HV Lines (Eskom 2006)
- Distribution Lines (Eskom 2007)
- Proposal Areas

Proposal Priority:

Priority 1 projects: Acquisition complete, township establishment complete and bulk services are available, installed and connected, i.e. Regorogile Township 100.

Priority 2 projects: Acquisition complete, township establishment complete and bulk services are available, installed but not connected, i.e. Regorogile Ext 8 (960).

Priority 3 projects: Acquisition complete, township establishment complete and bulk services are available but not installed, i.e. Regorogile Ext 9 and 10.

Legend

- Study Area
- Cadastral (SG 2011)
- Undeveloped Even
- Nature Reserve (EGIS 2014)
- Rivers**
 - Perennial
 - Non-Perennial
- Roads**
 - National
 - Arterial
 - Main
 - Secondary
 - Other

1 & 2 Km Distance Circles
Base Source:
1 : 50 000 Digital Maps :
Chief Directorate National Geo-Spatial Information

CNdV africa

Infraplan Consulting

HDA

Scale at A3 1:20,000

0 200 400 600 800 1,000 Meters

Job: 2015-2380 | Drawn: RE | Checked: RE | Date: 26-05-2015

- Thabazimbi town depends on a number of eco-system services for its environmental sustainability and managing environmental hazards.
- Eco-system services include:
 - **Arable land:** gardening, food production;
 - **River corridors:** water supplies, wetlands and dams, aquifer replenishment and flood management;
 - **Environmental sinks:** including **waste water treatment** and **solid waste landfills, cemeteries;** and,
 - **Biodiversity and scenic views:** carbon sequestration, game viewing, eco-tourism and hunting.
- Thabazimbi town, in contrast to many mining towns, is well endowed with eco-system services. Not only do these resources provide the necessary water supplies and arable land for food production (although increasingly this land is being sterilised in anticipation of township development), but they have provided an alternative tourism economy in the surrounding area. This sees the town's tourism accommodation virtually booked out from May to September through the usually difficult winter months.
- Thabazimbi town's urban quality, in the form of the boulevarded streets found

in the eastern part of the town, contribute to a high quality environment to which people are attracted rather than want to leave. This needs to be extended into Regorogile network quality.



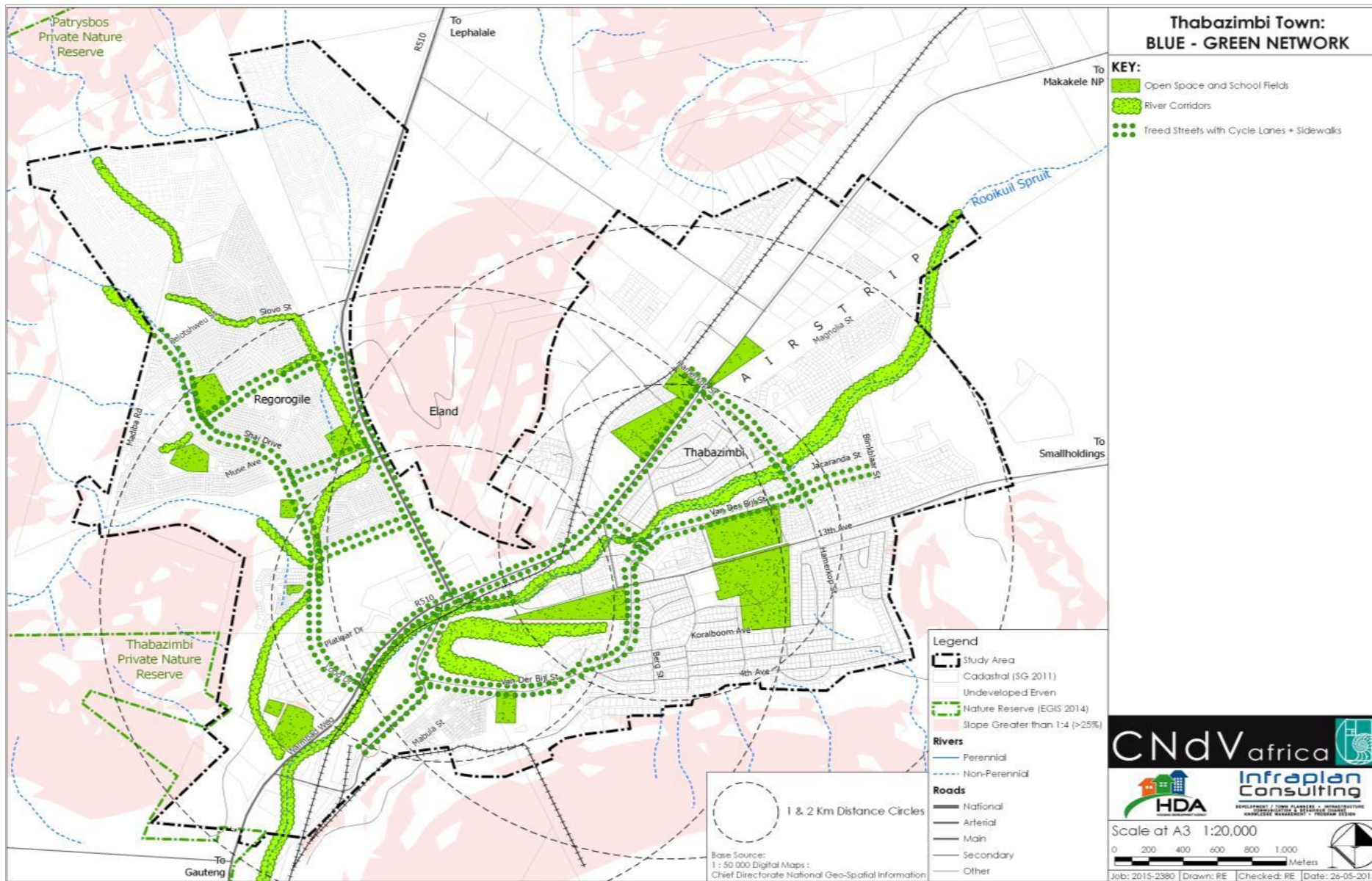
View of the mountains in Thabazimbi



River crossing along the R510



Eland Street



Education

- Currently Thabazimbi town is short of two primary schools according to CSIR 2011 standards.
- If the population increases to level forecasts in 2021 then the following will be required:
 - High schools - 3
 - Junior schools - 6
 - FET ? Etc.
 - Tertiary

Demand for new schools based on the projected population (2021) and existing schools						
Settlement	Pop. (2021)	Type of School	Requirements based on the population in 2021			
			Overall Need	Existing	Need	Min. size (ha)
Thabazimbi Town	62444	Primary	9	3	6	21
		Secondary	5	2	3	12

Education Facilities: requirements to 2021

Schools - to follow

Health Facilities

- There is a district hospital and three clinics.
- These are more than adequate for the current population and should be sufficient if the estimated 2021 population occurs.

Demand for new health facilities based on the projected population (2021) and existing schools						
Settlement	Pop. (2021)	Type of health facility	Requirements based on the population in 2021			
			Overall Need	Existing	Need	Min. size (ha)
Thabazimbi Town	62444	Small - medium	3	3	0	0
		Large	1	1	0	0

Health Facilities: requirements to 2021



View of the hospital in Regorogile

Sport and Recreation

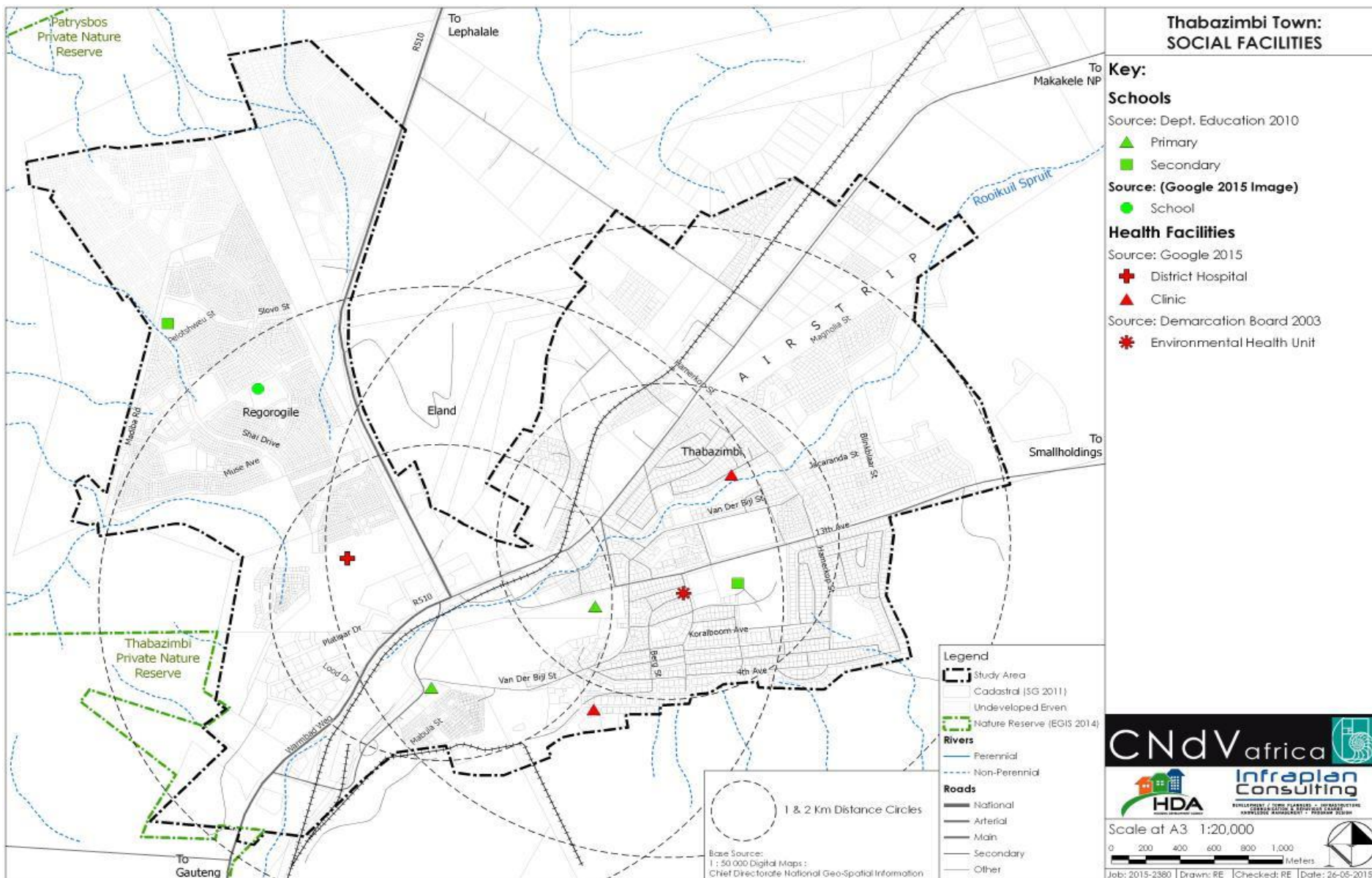
- The town appears well-endowed with sports fields, especially in the east.
- There are a number of informal large playing fields in Regorogile.
- Informal kick-bouts appear non-existent.
- The river corridors should be upgraded so that they also provide walking and running trails and picnic areas.



Regorogile Daycare Centre



Informal sport facilities



- Traditionally business activity in SA settlements was meant to occur in strictly demarcated and rigidly planned business centres.
- Thabazimbi town was planned with these nodes in the eastern section:
 - Van der Bijl / 4th avenue (original)
 - Van der Bijl / Eland (main CBD)
 - Van der Bijl / Hannekop

A poorly located business centre was also planned in the extreme west of Regorogile; Shai Drive / Madiba road.

- This has never developed, as is the case in many other similarly planned business centres due to lack of viability and rigid commercial only zoning. Single use zoning worsening the other constraints because lower barriers to entry, such as subsidising the cost of a site with a residential dwelling, is not possible.
- However, as noted in section 4.2 Transport, there is always significant pressure for businesses to access the highest areas of accessibility and passing trade in a town.
- This has happened in Thabazimbi town with larger businesses including national restaurants, shopping centres and large filling stations locating along the R510 in particular.

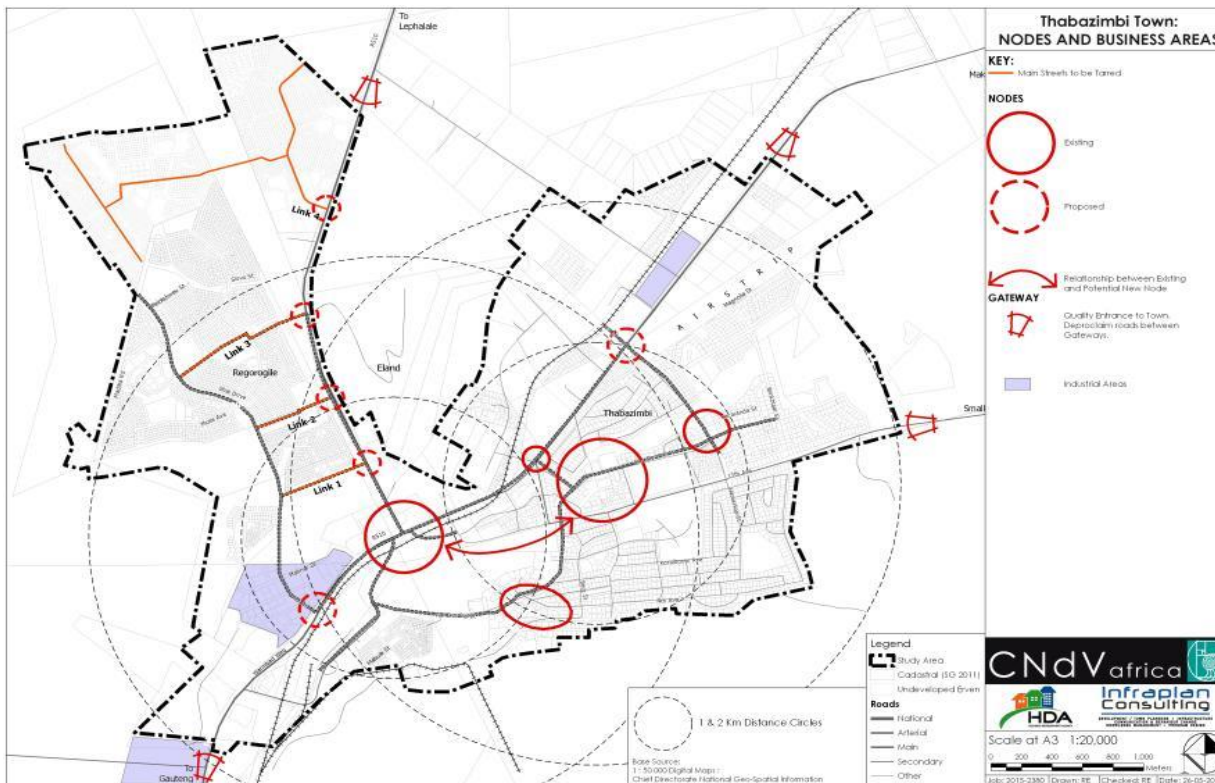
- Thus, there has been a gradual move of the economic centre of gravity of the town to this location, most clearly shown by the site of the new mall.
- This process has overlooked Regorogile which is largely hidden and set back from the R510.
- Shai Drive, formerly Lood Drive, the main route through Regorogile, only connects directly with the R510 in the extreme south west and has only informal minor direct links onto the north-south section of the R510.
- Though Regorogile has been designed to turn its back on the main thoroughfare, the R510, into town and the opportunities it presents there are some informal traders along the west/east section of the R510.



Proposed minor node site: linked to Regorogile R510



Cradock Informal Street Market on R510



Artists impression of the new Thaba Mall, Thabazimbi



Street trading along the D1485

Proposals:

- Regorogile should be anchored onto the high order road network at several key intersections around which, drainage lines and topography permitted, small scale nodes should be permitted to develop.
- Mirror nodes along R510 could include:
 - Shai Drive;
 - New cemetery road link (link 2);
 - New school road link (link 3); and,
 - New hospital road link (link 4).
- In the long term, if and when Ext 48 is developed a 4th minor node could be built along the R510.
- A minor node could also develop at the Hammerskop /D1485 intersection.
- Appropriate home industries and business should be encouraged throughout the town.
- Facilities for informal trading should be provided in all of the existing and proposed nodes.
- Linear markets, served by service or frontage roads along the R510 and D1485 should also be promoted.
- The original proposed business centre in the extreme west of Regorogile should be used for medium density residential.

4.1.6 Northam Proposals

4. TRANSFORMATION STRATEGY

There are seven components to the spatial transformation plan:

- 4.1 Broad Transformation Strategy
- 4.2 Transport and Movement Network
- 4.3 Services
- 4.4 Blue Green Network
- 4.5 Social Facilities
- 4.6 Urban Nodes and Business Opportunities
- 4.7 Housing Typologies (these are elaborated in more detail in Section 5)



Figure 1.1 Business as Usual Scenario

Business as usual

This scenario sees the typical South African settlement growth pattern of large township extensions, generally on the urban periphery, being developed at low densities continuing in Northam town. The town has already experienced that this pattern of development is difficult to sustain because:

- The new extensions are far from opportunities. Travelling becomes a burden, especially for the poor, for whom most of these development are intended;
- They are expensive to service and tax public resources to the limit;
- Evidence of this can be seen in the approved, undeveloped townships on Northam town's periphery, some of which also fall into the "leapfrog" category, widely recognised as the least efficient and convenient of all.



Figure 1.2 Transformation Scenario

Transformation

In keeping with the Mining Towns Transformation Program's brief this scenario promotes a settlement pattern that seeks to:

- Maximise local economic development and jobs by increasing thresholds by compacting rather than dispersing urban development;
- Reinforce and consolidate business areas and nodes rather than trying to minimise traffic flows and take away access near them;
- Promote walking and cycling (NMT) as cheap, energy efficient and healthy modes of transport, important in times of economic hardship when the opportunity cost of transport is especially high – treed, high quality street network throughout the settlement, not just the CBD will facilitate NMT;
- Enable more, rather than less, people to live closer to areas of opportunity by promoting higher density residential and mixed use housing typologies.

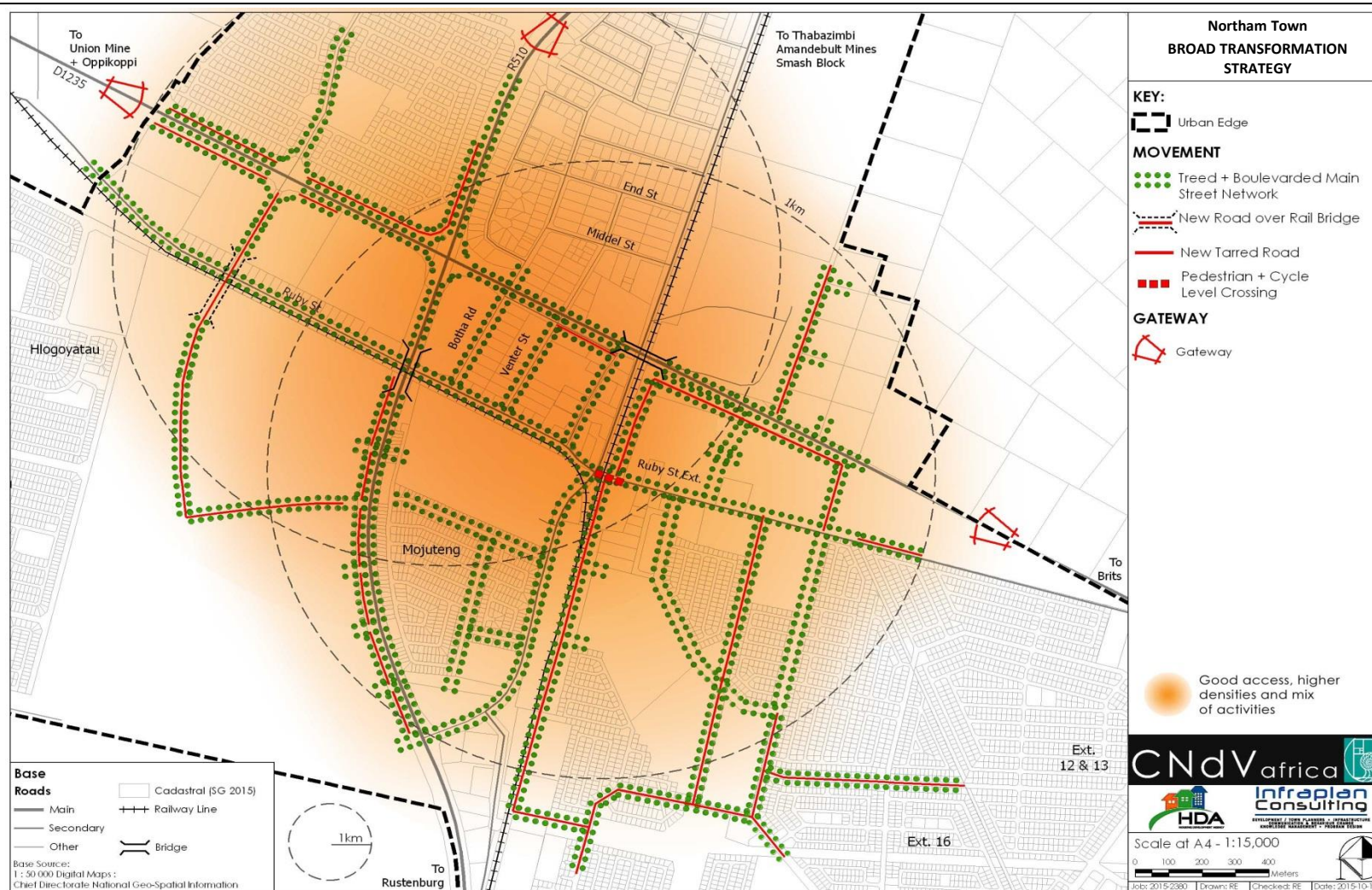


Figure 4.1 Broad Transformation Concept

- Focus higher order social and economic activities and higher density residential typologies in the most accessible areas of the town.
- Create integrated lattice of multi-modal (complete streets) links in township and town of same quality throughout network.

- Northern town is relatively compact and there is much vacant land with 1 km walking distance of the central node at the Ruby Street/railway line intersection and the new node at the R5 10 (Brits Road)/ Rustenburg road intersection;
- Therefore, the transformation proposals for northern town focus on a more concentrated area around these nodes, see Figure 4.1. Outlying extensions such as Extension 17 and Hlogoyatau are not given attention as there is so much more better located land that should be developed.

The transformation proposals take a structural approach as follows:

Create movement system that integrates town and township

- First; create an integrated movement system comprising a continuous network of treed pedestrian and cycle routes and, where possible, vehicle routes;
- The railway line cutting the town into three is a severe barrier for the integrated movement of particularly vehicles. It is good practice for railway lines to cross roads using road over rail bridges;
- There is one level crossing where Ruby Street turns to connect with the Rustenburg road. Due to its central role in keeping the western part of the town connected this level crossing should remain but be upgraded to the highest standards.^t

Maximise economic activities and jobs.

- Secondly, the transformation plan must ensure spatially, that as many economic activity and employment creation opportunities as possible are created ;
- The least barrier to entry with the best exposure to passing trade and new business is found along the major streets of a town. These opportunities are often constrained by strictly applied road access management guidelines that seek to optimise vehicle travel, generally at the expense of all else except safety. The transformation plan proposes a new approach to road access management guidelines that optimises safety, economic opportunities and urban quality. The main device to achieve this is the treed and landscaped service/ frontage road, see Figure 4.2. In many instances, this will comprise formalising already functioning informal situations.

Housing projects and typologies as “urban medicine”

- The third major component of the transformation plan is arranging housing typologies according to density and the pattern of housing market demand so that the implementation of housing projects by the state, the private sector, or a combination can serve as "urban medicine" to integrate the town's current fractured state.

Close attention has been paid to the optimal location of projects so as to crowd in private and community sector investment. It is common cause that this won't happen if housing projects are poorly located. Due to resource constraints faced by the public and private sector it is essential that “white elephants” are not created nor plans made that will never be implemented.

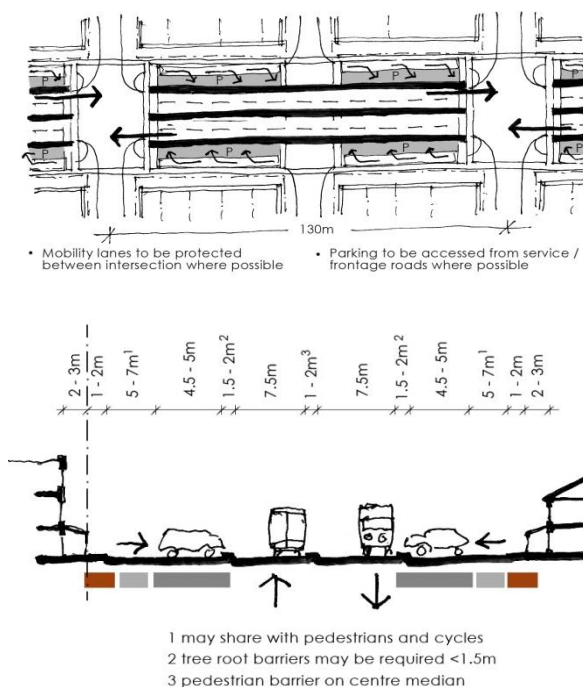


Figure 4.2 Service / frontage road along limited access arterial road

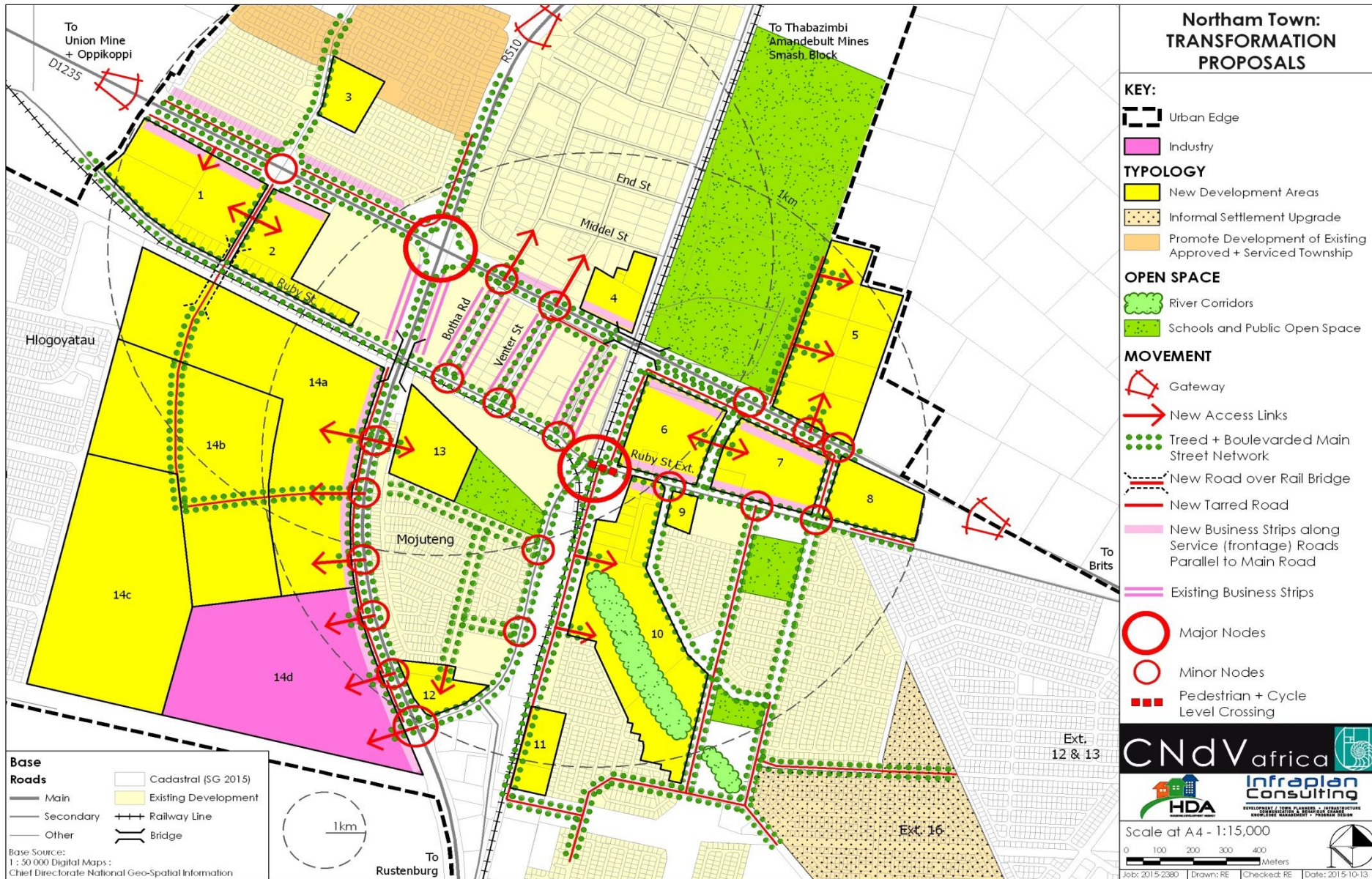


Figure 4.3 Spatial Transformation Plan

Figure 4.3 shows the detailed Transformation Plan.

- The transport network is key to Northam town's long term success. It connects the town to its regional hinterland; Gauteng, Brits and Rustenburg to the south, the surrounding platinum mines and intensive agriculture and Thabazimbi town and Marakele national park to the north;
- The town is currently bisected by the R510 and D1235 (Brits Road) regional routes. These roads play a dual role in that they are both regional connectors and the main internal high order access routes through Northam town;
- This raises the question of the appropriate access management regime to apply along these routes;
- Conventionally, regional routes, even where they passed through the CBD, are managed as limited access, high speed arterials;
- This creates conflict and safety issues between businesses trying to access the through traffic passing along these routes, pedestrians and high speed traffic;
- One approach to solving these conflicts was designing development to turn its back on these roads.

- However, this often resulted in informal responses to access the higher road network which could be more dangerous than if properly designed;
- Another approach was to build a bypass which often undermined the CBD activities, especially those linked to passing traffic. However, Northam town is not considered vulnerable to a bypass;
- The reality of the road network is that the high volumes of traffic through the R510 / D1235 intersection have attracted higher order businesses including filling stations, informal trading, shopping malls, shopping complexes and a taxi and bus interchange. These activities clearly signal the economic opportunities from the traffic along these routes;
- It is proposed that wherever possible along the Brits and Rustenburg roads service or frontage roads are created onto which abutting properties, particularly if used for business can take direct access. Figure 4.7 overleaf, shows a typical cross-section for such a facility. Figure 4.4 indicates that these roads have space for frontage roads in certain sections. These roads should be well treed and landscaped so as to present the best possible image to passing traffic;

- The change from the rural to urban access management guidelines should occur at the proposed gateway at the proposed gateways at the entrances to the town along the Main Roads; and,
- The main street network should be constructed with parallel cycle and pedestrian lanes, see Figure 4.5.



Figure 4.4 R510 Brits road – Northam town high street - wide vacant verges with potential for service / frontage roads to create formal and informal well managed business strip

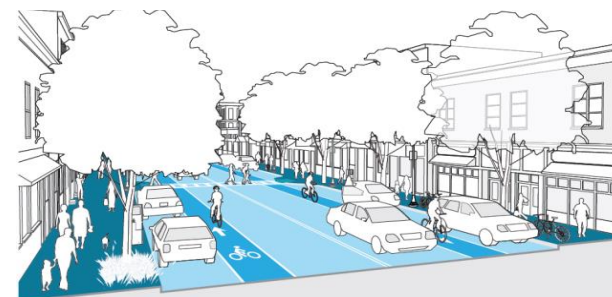


Figure 4.5 Neighbourhood Main Street – residential area, convenience shopping, business, flats over shops

- The road network of a settlement is important for the following:
 - Offering convenient access between various activities** and connecting to the hinterland and other towns;
 - Providing access to economic opportunities** as particularly the higher order road network carries the largest volumes of traffic and therefore potential of traffic and therefore potential market. It is for this reason that retailers, from informal traders to shopping centres, always, seek the busiest roads or intersections on which to locate;
 - Creating and improving urban quality.** Areas of a town served by well maintained tree-lined streets with sidewalk, and cycle lanes present a better impression to both residents and visitors.
- Northam town as a whole has a widely differing quality in its road networks when comparing Mojuteng and Extensions 5 and 7 to the northern suburb around Middle and End streets. The former's roads, even the main ones, have gravel sections and there is very little tree planting, particularly when compared to the more established parts of town.

- The main roads through the town display a tension between their role as routes for regional through traffic and the opportunities they present for small businesses.
- Road design and access guidelines are only focussed on the first requirement noted above, i.e. vehicle mobility, and take little account of the economic potential and urban quality.
- An important device to integrate the settlement is to provide a linked and continuous, high order network of similar quality throughout, see Figure 4.8.



Figure 4.6 View of the R510 and D1235 intersection from Brits Road – good business opportunity but traffic must also be able to pass.

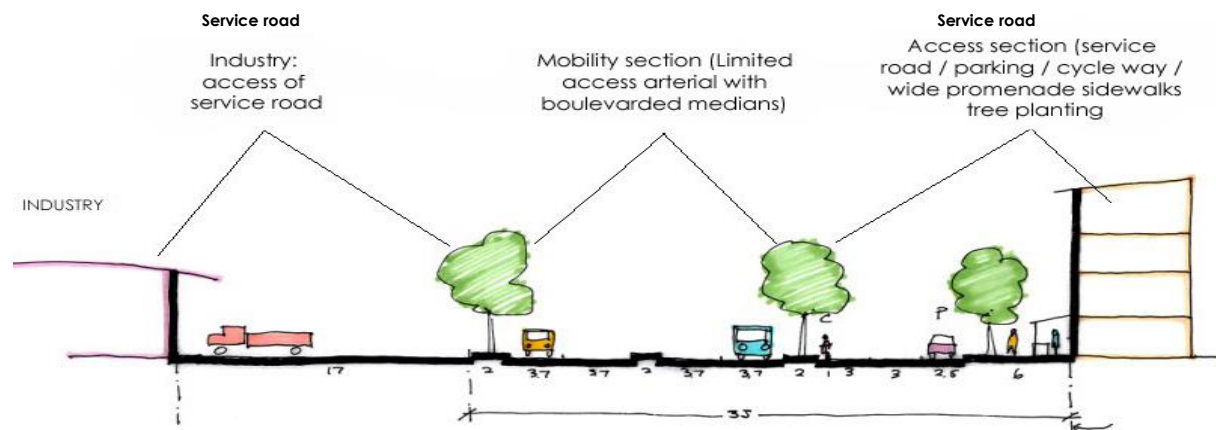


Figure 4.7 Cross-section to enable continuous access alongside mobility route, e.g. R510 through Northam town along the Brits and Rustenburg roads.

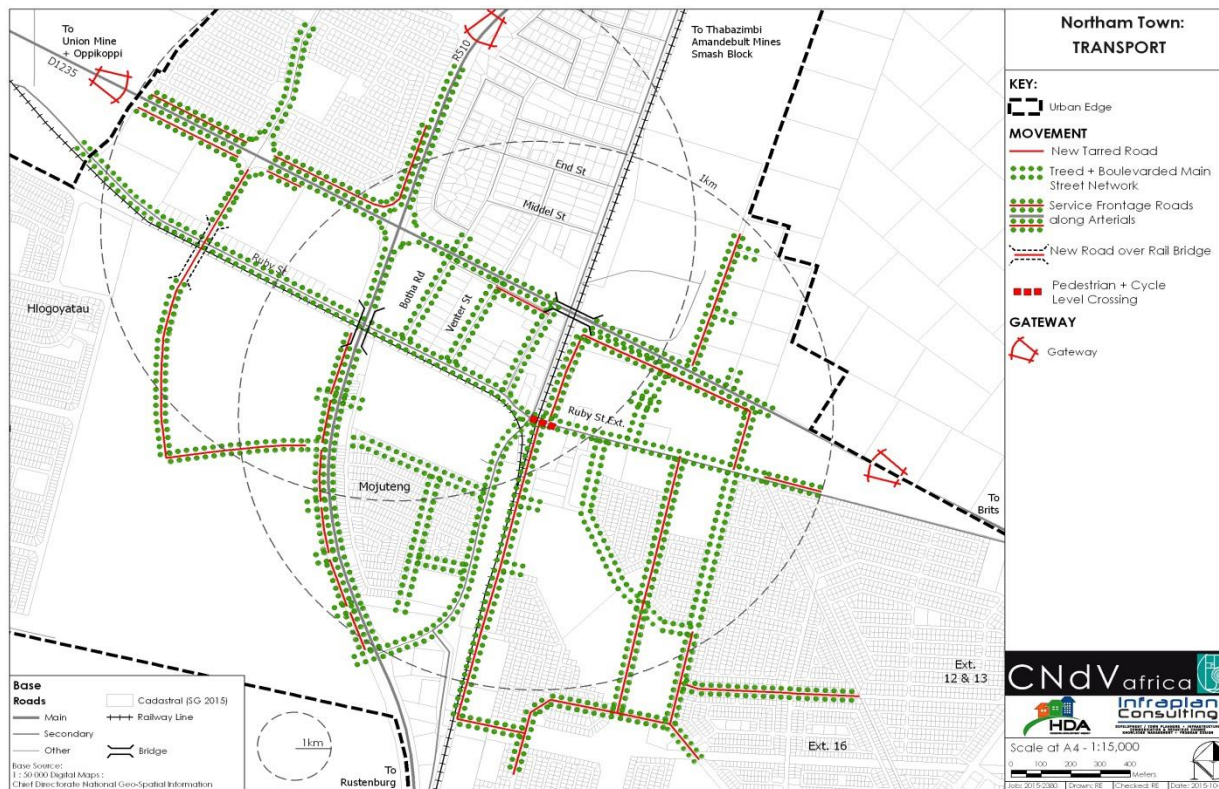


Figure 4.8 Linked, continuous, treed street network

- Urban road access guidelines that maximise the number of intersections and access points should be applied on the R510 and D1235 from where they enter the town, inside the gateways.
- All the major routes, see figure 4.8 above should be boulevarded and provided with pedestrian sidewalks and cycle lanes so as to promote non-motorised transport.
- Roads to be upgraded and treated in this fashion include:
 - Brits road to gateway symbols;
 - Rustenberg Road to gateway symbols;
 Upgrading of roads in this manner are well-suited to EPWP programs, see Figures 4.9, 4.10 and 4.11.



Figure 4.9 Willowmore: tree planting along main road



Figure 4.10 Willowmore: same standard of road upgrading in township



Figure 4.11 Street and sidewalk upgrading: Tarkastad, Tsohwana

Water Supplies

- The current demand for water (daily flow 8,1mg/day) considerably exceeds capacity as Northam town shares a quote of 9mg/day with Thabazimbi and there is no capacity for further development using conventional services.
- Average annual rainfall is 350 mm – 400mm and there should be potential for rain water harvesting as well as grey water recycling as a supplementary supply. This is currently not policy.

Waste Water Treatment

- Most dwelling units are connected to the sewerage system (91%).
- Approximately 1 047 units (2011 Census) were not connected, mainly in the informal settlements.
- The oxidation dam (WWTW) is located at the entrance of town adjacent to the D1235. This area often has an odour due to the lack of capacity.
- Demand exceeds capacity and there is no more capacity for development.

Electricity

- 97,4% of residents are connected to the grid with only 129, mainly in informal settlements using candles (2011 Census).
- Only about 42 out of 12 447 residents are using solar power and there is no policy encouraging the use of renewable energy.

Rainwater Harvesting: Practical example

Kenton-on-Sea (Ndlambe Municipality) has for many years insisted that all market single dwelling housing provides a 30 000 litre underground rainwater tank.

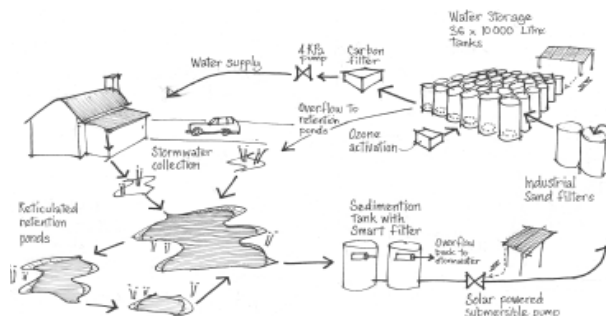


Figure 4.12 Rainwater harvesting and grey water recycling

Broadband and IT

- High speed internet connections in both towns and townships are excellent facilitators for learning and business.
- The current state of broadband and IT is (to be established).
- High speed internet should be implemented firstly in schools and business nodes in Northam town.

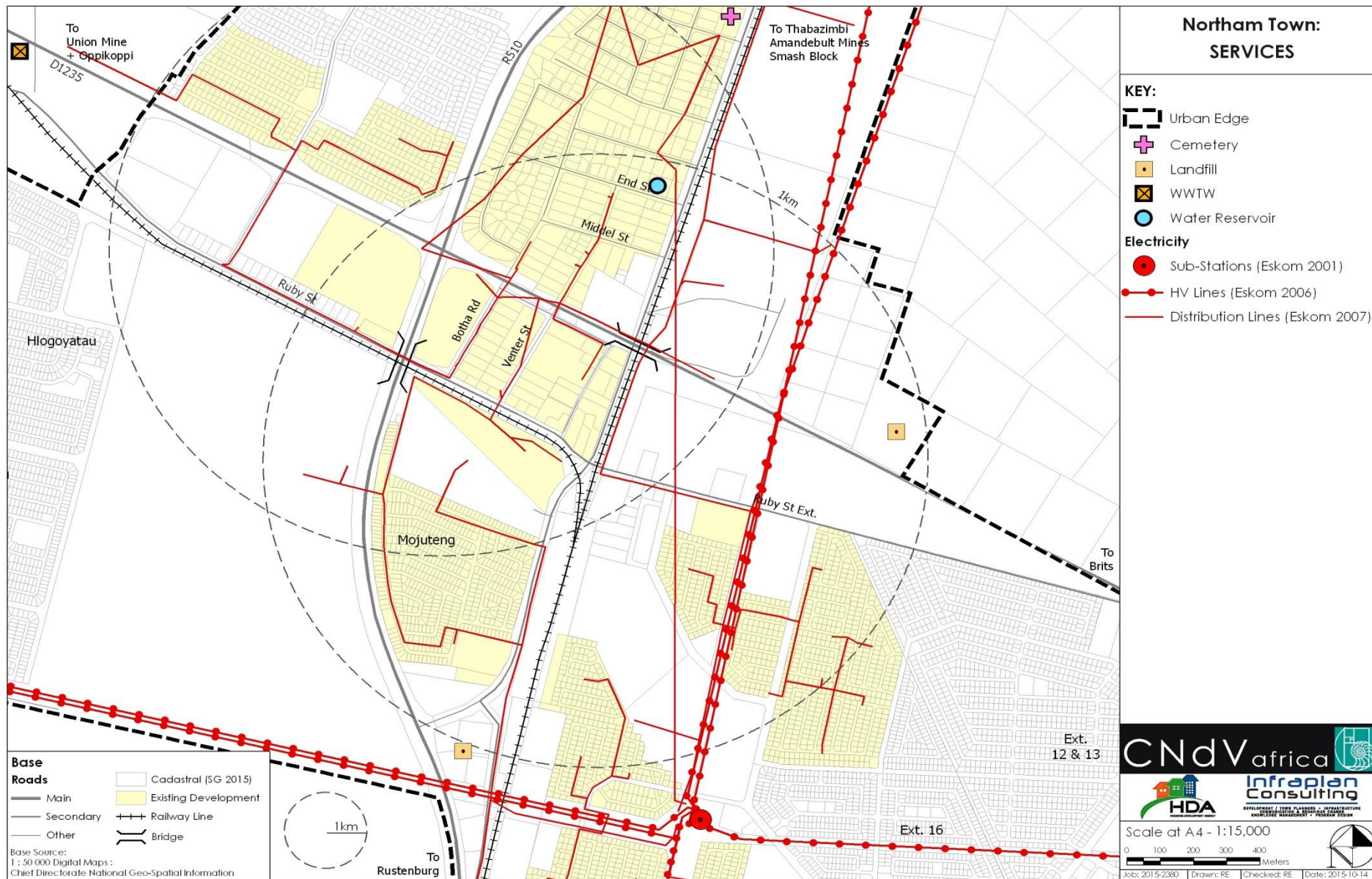
General

- Except for electricity, the town has already exceeded service capacity for water and waste water services before future growth is considered.
- A multi-pronged approach is required where the use of off-grid and renewable services is encouraged as supplementary supplies with lower operating costs.
- However, funding will still be required to augment bulk supplies and networks.



Figure 4.13 Kimberley Eco-village: solar HWC, enviro-loos, grey-water recycling, PV generation

gas,



CNdV africa

HDA

Infraplan Consulting

Scale at A4 - 1:15,000

0 100 200 300 400 Meters

Job: 2015-2380 | Drawn: RE | Checked: RE | Date: 2015-10-14

Figure 4.14 Services Networks

- Northam town depends on a number of eco-system services for its environmental sustainability and managing environmental hazards.
- Eco-system services include:
 - **Arable land:** gardening, food production;
 - **River corridors:** water supplies, wetlands and dams, aquifer replenishment and flood management;
 - **Environmental sinks:** including **waste water treatment** and **solid waste landfills, cemeteries;** and,
 - **Biodiversity and scenic views:** carbon sequestration, game viewing, eco-tourism and hunting.
- Northam town is not well endowed with eco-system services like Thabazimbi town. Not only do these resources provide the necessary water supplies and arable land for food production (although increasingly this land is being sterilised in anticipation of township development), but they have provided an alternative tourism economy in the surrounding area. This sees the town's tourism accommodation virtually booked out from May to September through the usually difficult winter months.

- There are no rivers or even significant water courses passing through Northam town. The Rhupane River Passes some two km to the south. The town is generally on a flat plain and the only discernible watercourse cuts through NDA 10. It is proposed that this NDA be partially developed with residential units facing on to a central open space corridor containing the watercourse. This should also be integrated into the stormwater management network.
- Northam town's urban quality, in the form of the boulevarded streets found in the northern part of the town, see Figure 4.15, contribute to a high quality environment to which people are attracted rather than want to leave. This needs to be extended into the southern parts of the town, see Figure 4.16.
- The interventions for upgrading for upgrading the open space network and planting along the major streets are described in Section 4.2, see Figures 4.9, 4.10 and 4.11.



Figure 4.15 Botha Road : Northam town



Figure 4.16 Open space in Ext 1 Northam



Figure 4.17 Railway line built adjacent to the river course

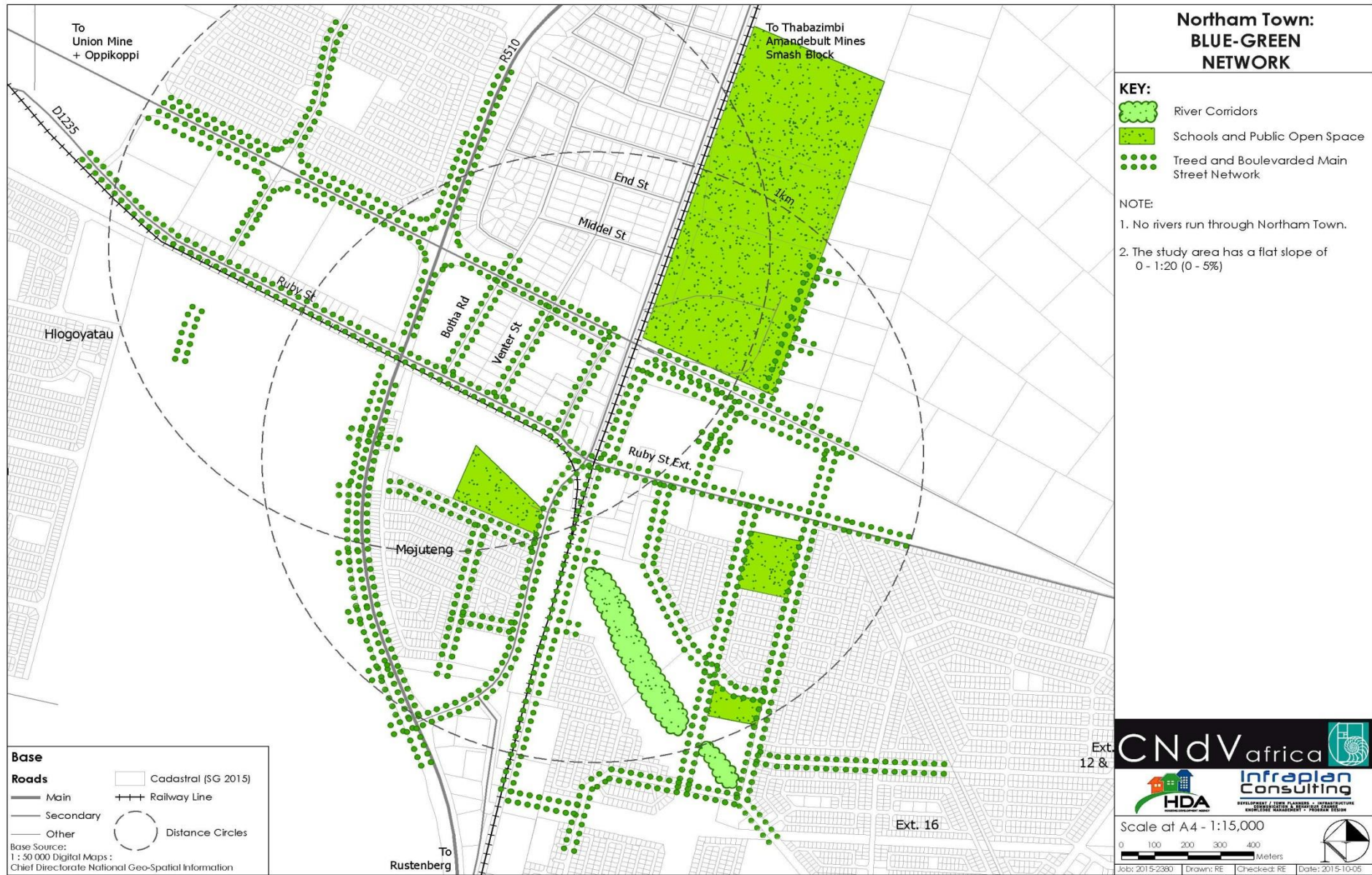


Figure 4.18 Blue Green Networks

Education

- Currently Northam town has 2 primary schools and 1 high school, see Figure 4.22.
- The schools are well located and within walking distance of the eastern part of the town.
- There is currently no need for additional education facilities.
- If the population growth continues at the same rate as it did between 2001 and 2011, Northam town will require 2 primary schools and 1 secondary school by 2021.

Demand for new schools based on the projected population (2021) and existing schools						
Settlement	Pop. (2021)	Type of School	Requirements based on the population in 2021			
			Overall Need	Existing	Need	Min. size (ha)
Northam	25 449	Primary	4	2	2	0
		Secondary	2	1	1	0

Table 4.1 Education Facilities: requirements to 2021



Figure 4.19 Children walking home after school at about 2pm in Northam

Health Facilities

- There is one clinic.
- This is more than adequate for the current population.
- If the population growth continues at the same rate as it did between 2001 and 2011, Northam town will require an additional clinic.

Demand for new health facilities based on the projected population (2021) and existing schools						
Settlement	Pop. (2021)	Type of health facility	Requirements based on the population in 2021			
			Overall Need	Existing	Need	Min. size (ha)
Northam	25 449	Small - medium	2	1	1	0
		Large	0	0	0	0

Table 4.2 Health Facilities: requirements to 2021



Figure 4.20 Northam primary school

Sport and Recreation

- There are a number of informal playing fields on large undeveloped plots, see Figure 4.21, especially in the east part of town.
- Informal kick-bouts appear non-existent.
- The river corridors should be upgraded so that they also provide walking and running trails and picnic areas.



Figure 4.21 Sportsfields: Ext 7

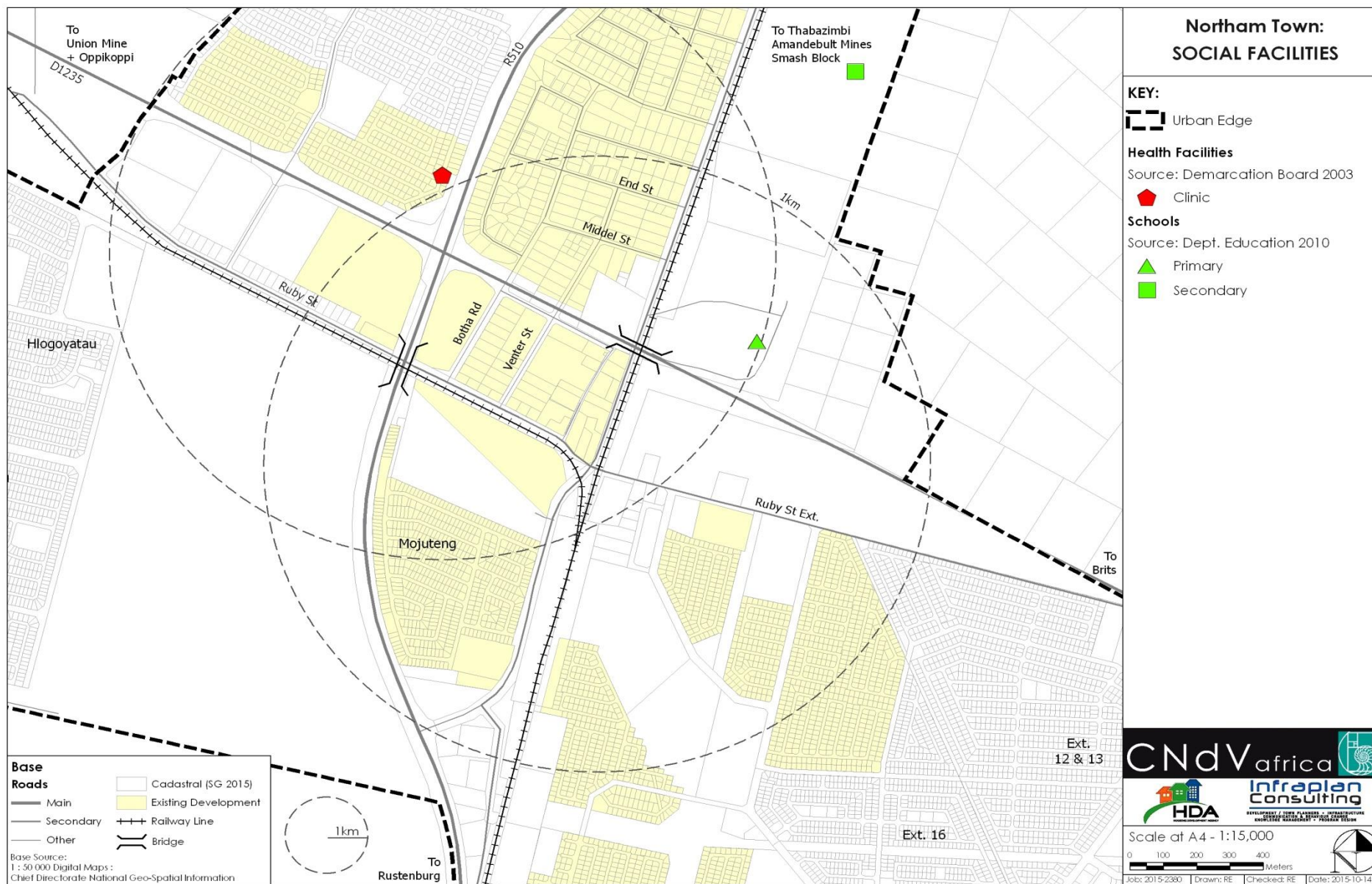


Figure 4.22 Location of Social Facilities

- Traditionally business activity in South African settlements was meant to occur in strictly demarcated and rigidly planned business centres.

Major Nodes:

- A major node is proposed at the intersection of Ruby Street and Ruby Street Extension. This builds on a high level of foot traffic already passing through. This node crosses the rail line and can only be for pedestrians and cycles. However, it is the most central connection point between Northam town west and east is already a major crossing point with a cluster of informal traders and shops nearby.
- From the east the grain silos act as a beacon visually linking Northam town west and east, see Figure 4.23.
- The R510 (Brits Road) and Rustenburg intersection is a major regional crossing point with traffic between Thabazimbi and Lephalale to the north, Rustenburg to the south west and Brits and Gauteng to the south east intersecting here.
- This opportunity has already been recognised by major shopping centre developers, local business people and informal traders.
- The challenge is to design service/frontage roads in a way that enables traffic to pass freely but also enable the potential to create jobs and economic activity to optimised.

- Detailed urban design, landscaping and geometric road design plans are required.

Minor nodes

To further increase economic opportunities and job creation a series of minor nodes are proposed at all the minor intersections throughout the town where they intersect with the major through routes:

- Entrance to Ext 11/D1235 west of mall linking to a proposed road over rail bridge to give access to the proposed megaproject on NDA 14;
- Intersection of link road between Ruby road extension and R510 Brits Road opposite primary school;
- Intersection of Ext 16 access road and Ruby road extension;
- Botha and Venter street intersection with R510 to the north and Ruby Road to the south;
- A new intersection either directly onto the Rustenburg road where it passes the grain silos or onto a service/frontage road if this is not permitted; and,
- A series of new minor intersections along the Rustenburg road giving access to the proposed mega project on NDA 14 with as close spacing as possible, at maximum every 200 metres. If access is not permitted directly onto the Rustenburg road at this spacing distance then a landscaped and treed service/frontage road should be constructed



Figure 4.23 Proposed major pedestrian node site across level crossing



Figure 4.24 Well located land, ideal for business strip, across R510 from Northam Mall



Figure 4.25 Cradock: E Cape; Informal Street Market on regional route

4.1.7 Thembaletu Analysis & Proposals

This section, Urban Design Proposals, provides practical details on how to achieve the precinct plan policies and projects contained in Section 7 at six strategic sites using the tools and principles described in Section 8, see figure 9.1:

- Nodes 1, 2 and 3 along Nelson Mandela Boulevard;
- Ntaka street precinct, abutting the N2;
- Msobomvu estate, abutting the N2 intersection; and,
- N2 bridge entrance.

It is common cause that access to economic opportunities and employment creation are the two biggest challenges facing South Africa whose 25% unemployment rate is considered unsustainable. Long term reliance on social grants as a stop gap is also not considered sustainable. The burden of unemployment is highest among 18 to 24 years olds, the millennials. It is particularly bad in former black group areas whose locality, mix of land uses, layout and design is seldom conducive to business development and employment creation.

Thembaletu is no exception. It was originally designed as a residential dormitory suburb of George with only social facilities and a few convenience retail shops.

Urban quality, in the form of tree planting, high quality street scapes and public buildings also tend to be lacking although George Municipality has invested heavily in aspects of this, especially sidewalk upgrading and implementing Go George public transport service.

Therefore, the urban design proposals must address the need for both economic opportunity and spatial quality.

First, attention has be given to making the most of Thembaletu's inherent and unique spatial economic opportunities where these exist.

Spatial economic opportunities are fixed, They cannot be transferred, taken advantage of elsewhere, and, if developed for non-economic purposes, will be destroyed at considerable opportunity cost.

Thembaletu's spatial opportunities and advantages include:

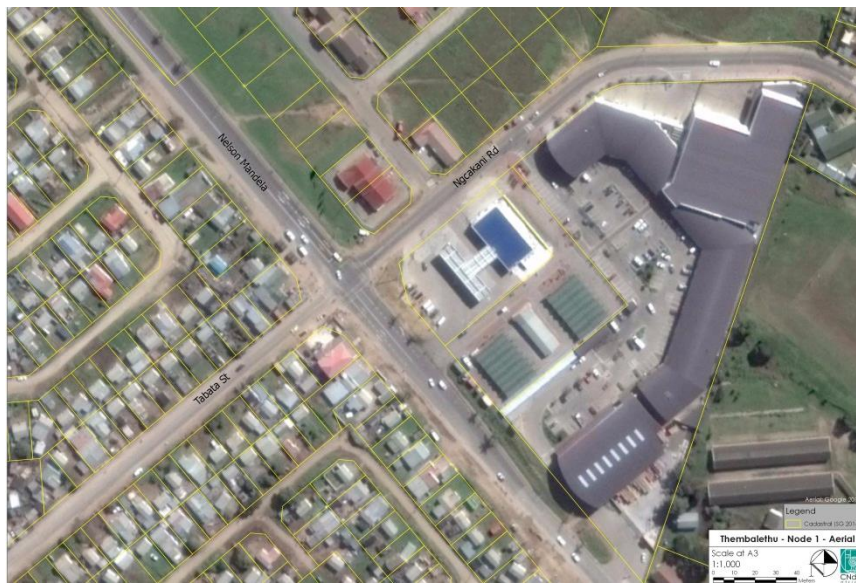
- Direct access to the N2 national route, the main transport arterial along South Africa's coast connecting the coastal cities of Cape Town, Port Elizabeth, East London and Durban;
- Its frontage along the N2, which gives it some of the best exposure in the George area to high volumes of passing traffic. Such locations are highly sought after by property developers due to the excellent business opportunities they create, These opportunities should be made available to local Thembaletu business people to the greatest extent possible;
- The main transport spine of Nelson Mandela Boulevard (NMB), which connects directly to the N2 and on into George CBD in the north along Albert road. Eventually, NMB could link to the coast to the south with the tourism opportunities this offers. Its strategic importance has recently been enhanced by implementing the Go George phase 4 public transport service along this route.

Not using these opportunities and advantages to their highest and best use will create a significant opportunity cost to the Thembaletu community.

Secondly, attention has to be paid to upgrading the overall urban quality of Thembaletu and making it desirable as a place to visit, invest and live, especially along its main streets which are experienced by the majority of residents and visitors.



Figure 9.1 **Thembaletu Strategic Site**



9.1.1 Node 1: Nelson Mandela Boulevard/ Ngcakani street

- First major commercial node and taxi terminus on entering Tembalethu from N2;
- Generally only large corporate tenants are able to afford rentals in the commercial centre;
- It occupies only one quadrant of highly accessible intersection – the other three quadrants are “wasted”. The northern quadrant has extensive vacant land;
- Access to the spatial economic opportunities of this intersection should be broadened to benefit local SMMEs and create jobs;
- This requires small scale affordable access in the other three quadrants;
- Informal traders are best placed to take advantage of these opportunities but more should be done to improve affordable access to local SMMEs through spatial and transport policy which addresses safety and urban quality;
- Plots around the node turn their back on the main streets as a result of strict road access guidelines aimed at eliminating side friction. This has the consequence of removing access to high volumes of passing traffic;
- Access and land use management solutions that not only address safety issues but also increase affordable access to economic opportunities are required.



Figure 9.1.3a Nelson Mandela and Ngcakani Road Intersection



Figure 9.1.3b Vacant Plots along Nelson Mandela zoned Business II

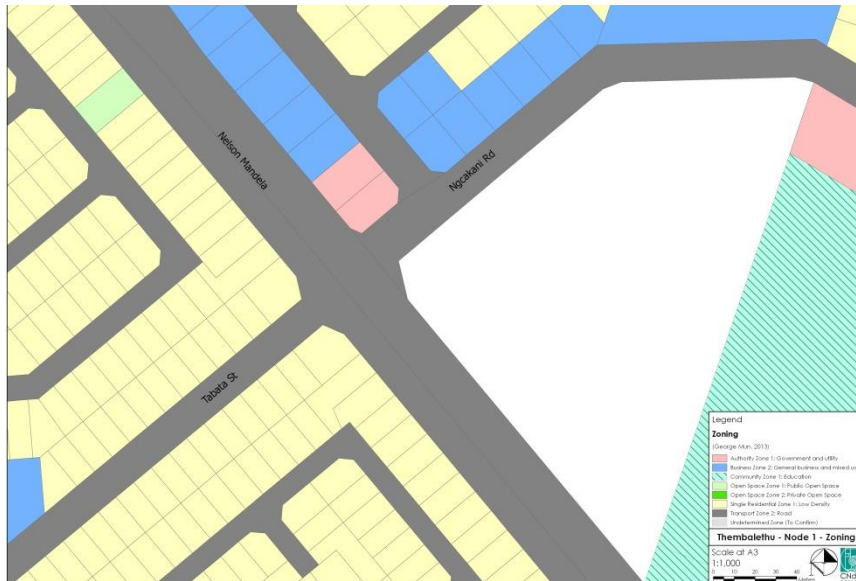


Figure 9.1.3c Vacant Plots along Ngcakani Road zoned Business II



Figure 9.1.4 Node 1: Block perspective looking east over Node 1



Figure 9.1.5 Node 1: Block Perspective looking east over Node 1

9.1.2 Urban Design Proposals (PP1) see Section 7.2.1

- Maximise economic opportunities by encouraging mixed-use activities at street level with dwellings above on properties abutting these major routes, see Figure 9.1.6a;
- Encourage rezonings to mixed use residential on properties abutting major routes, NMB, Tabata, Ngcakani to access high volumes of private and public transport along NMB create strongest thresholds in Thembaletu for informal and small business, see mixed use area, Figure 9.1.7;
- Where necessary and appropriate impose a 3 m front set back line to extend sidewalks and encourage colonnades and stoeps to facilitate sidewalk business and activity, see Figure 9.1.8;
- Promote 2 – 4 storey GAP/ mixed use development on vacant land in this vicinity: proclaim as Restructuring Zone and co-develop with social housing institution, see Figure 9.1.7;
- Facilitate SMME development with frontage / service roads where road reserve width and intersection spacing permits, according to RAG requirement, see Figures 9.1.7, 9.1.8 and 9.1.9;
- Plant trees along entire length of NMB, see Figures 9.1.7 and 9.1.8;
- Upgrade sidewalks, see Figure 9.1.6c;
- Install cycle lanes;
- Co-ordinate with George Mobility bus service (Phase A recently implemented along NMB).



Figure 9.1.6a

Makhumalele: 2-4 storey housing

along main street to settlement



Figure 9.1.6b

Circular informal trading environment

on main road



Figure 9.1.6c

Street and sidewalk upgrading: Tarkastad, Tsohlwana (EPWP)

2 to 4 story social/Housing with small-scale retail below. Front elevations of buildings should create positive interface onto Nelson Mandela Boulevard with colonnades and tree planting along pedestrian edge. Parking and vehicle access be from the rear. Can be developed by social housing institution in partnership with municipality

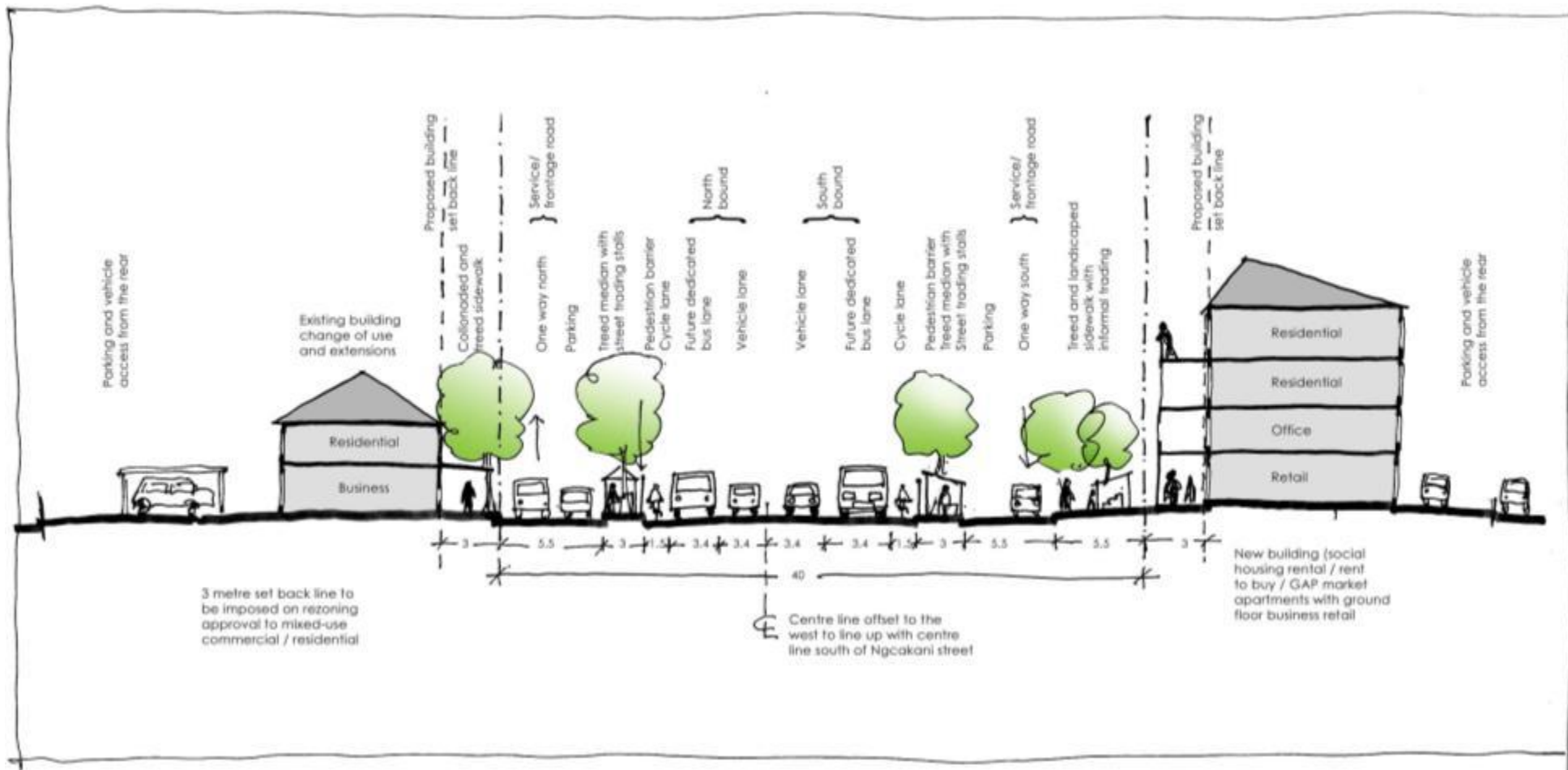
Properties abutting Nelson Mandela Boulevard, Tabata and Ngcakani roads to be encouraged to rezone to mixed-use commercial. Buildings, particularly frontages, should be upgraded plus tree planting to create a positive, pedestrian friendly, street elevation conducive to small business development.



Main intersection to be landscaped and paved as either raised or depressed speed table (depending on stormwater management requirements) with minimum of raised barrier kerbs. Vehicle roadways should be traced out with flat pavers in pavement surface but their design should not dominate over pedestrian and cycle ways.

Where road reserve width permits one way frontage/service roads providing access to treed informal trading median fenced off from main road should be provided, see Cradock, E Cape precedent, see Figure 9.1.6b.

Figure 9.1.7 Node 1: Urban Design Concept



PROPOSED NELSON MANDELA BOULEVARD: ECONOMIC AND TRANSPORT ARTERY" 40m CROSS-SECTION

Figure 9.1.8 Node 1: Activity Spine cross-section adapted from George Mobility Strategy typical 40m cross section (separate cycle lanes)
(Figure **, Ninham Shand George Mobility Strategy, Sandkraal Road Corridor Upgrade Draft 2 Nov 2005)

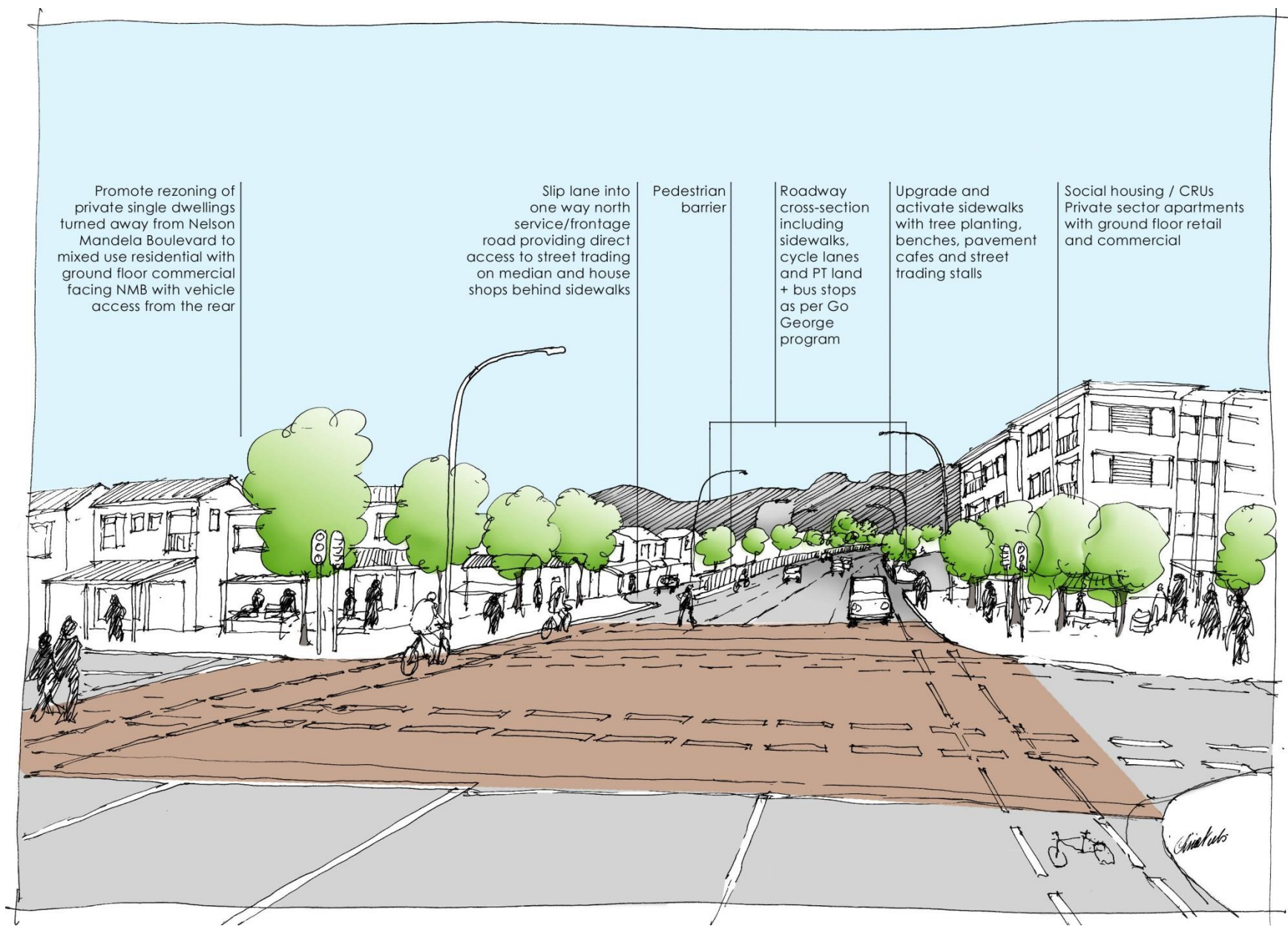


Figure 9.1.9 Node 1: NMB/Ngcakani street intersection sketch perspective





Figure 9.2.1 Node 2: Aerial Photograph (Source: Google Earth, 2015)



Figure 9.2.2 Node 2: Existing Zoning: note medium density zoning between Ncamanza and 6th Streets (source: George Municipality, 2013)

9.2.1 Node 2: Nelson Mandela Boulevard (NMB) between and including Ncamanza and 26th Street intersections

This potential node is located midway along NMB between Nodes 1 and 3 where Ncamanza and 26th Street link to Ngcakani and Tabata streets forming an almost direct link between the two, with a “dog leg” along NMB. Together with NMB these two streets form a trinary route network spine that functions as Thembaletu’s transport spine, see Section 7.2 (PP9).

Node 2 has been identified as having higher order potential in several planning and transport policy plans.

Holorha Primary School, as a higher order activity, contributes to this potential.

As usual street traders always the first and most flexible to identify and take advantage of economic opportunities, are well established, see Figure 9.2.3 a and b, but some detailed planning and land use management interventions are required for this potential to be realised for SMMes and adjacent residents and homeowners.



Figure 9.2.2a Informal and street business activities facing NMB and distribution according to signage



Figure 9.2.3b Informal activities facing NMB at rear of properties street facing access internal rear access



Figure 9.2.3c NMB approaching Ncamanza intersection showing sidewalks devoid of tree planting



Figure 9.2.4 Node 2: Typical Cross Section of Proposed Roads



Figure 9.2.5 Node 2: Typical View Down Proposed Roads

9.2.2 Urban Design Proposals, PP1, see Section 7.2.1

- NMB is 34m wide at this point requiring a different cross-section from the north section through Node 1, see section 9.1
- Separate cycle lanes can no longer be accommodated;
- Cycles should share the wide 4 m public transport lane;
- This should be demarcated as a “sharrow”, a road facility commonly used in US and Europe to denote where cars and cycles must share the road way. This maintains the very important cycle way continuity even where there is not enough room for standard cycle lanes;
- 5,5m one way frontage/service road with parallel parking with 3 metre sidewalk abutting the road reserve boundary;
- A 3m building line from NMB reserve boundary which may be encroached over with stoeps and collonades, to be imposed when zonings and building plans are approved for mixed use buildings “backing” onto NMB , see Figure 9.2.8.



Figure 9.3.6a Masiphumelele



Figure 9.3.6b Cradock Informal Street Market on R510

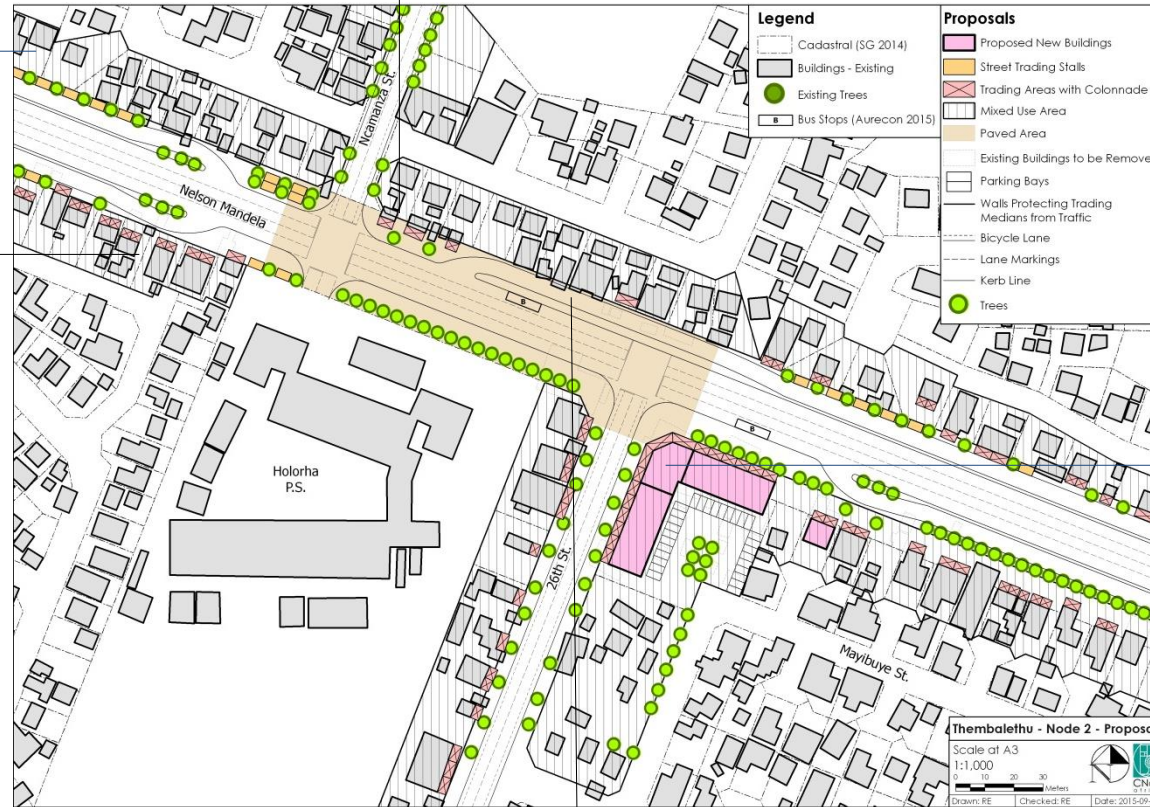


Figure 9.3.6c Street and sidewalk upgrading: Tarkastad, Tsolwana (EPWP)

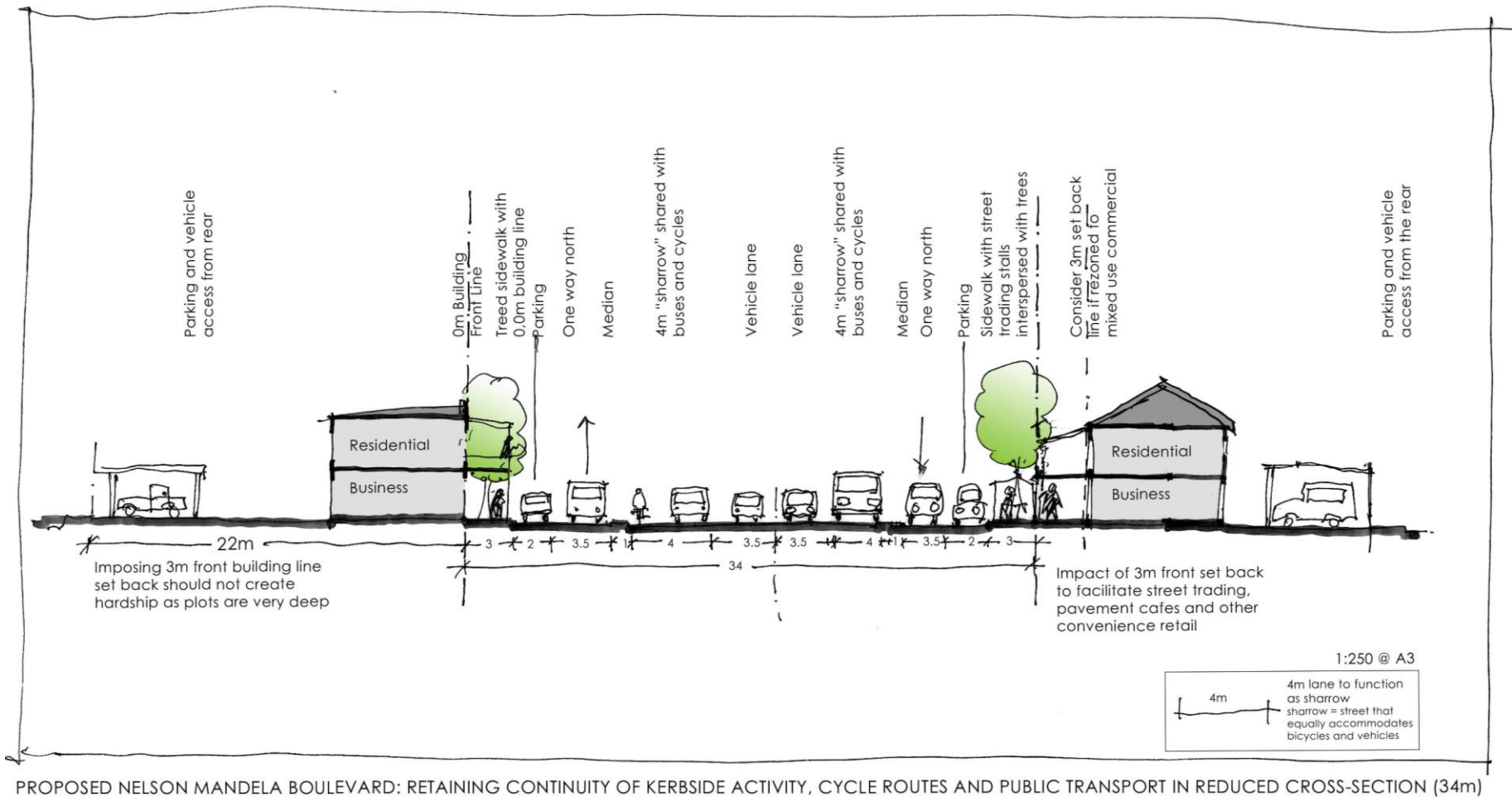
Nelson Mandela Boulevard between Ngcakana and 26th street intersections to be landscaped and paved as either raised or depressed speed table (depending on stormwater management requirements) with minimum of raised barrier kerbs. Vehicle roadways should be traced out with flat pavers in pavement surface but their design should not dominate over pedestrian and cycle ways paved with raised speed table to emphasis nodal quality of this vicinity

Properties abutting Nelson Mandela Boulevard, Ncamanza and 26th streets to be encouraged to rezone to mixed-use commercial. Buildings, particularly frontages, should be upgraded plus tree planting to create a positive pedestrian friendly street elevation conducive to small business development.

New 2 – 4 storey residential/mixed use building with ground floor commercial on vacant prominent corner - 26th/NMB, already zoned for Business
Vehicle access from rear



Where road reserve width permits one way frontage/service roads providing access to treed informal trading median fenced off from main road should be provided, see Cradock, E Cape precedent



PROPOSED NELSON MANDELA BOULEVARD: RETAINING CONTINUITY OF KERBSIDE ACTIVITY, CYCLE ROUTES AND PUBLIC TRANSPORT IN REDUCED CROSS-SECTION (34m)

Figure 9.2.8 Node 2: Activity Spine cross-section informed by George Mobility Strategy typical cross section
Figure **, Ninham Shand George Mobility Strategy, Sandkraal Road Corridor Upgrade Draft 2 Nov 2005)

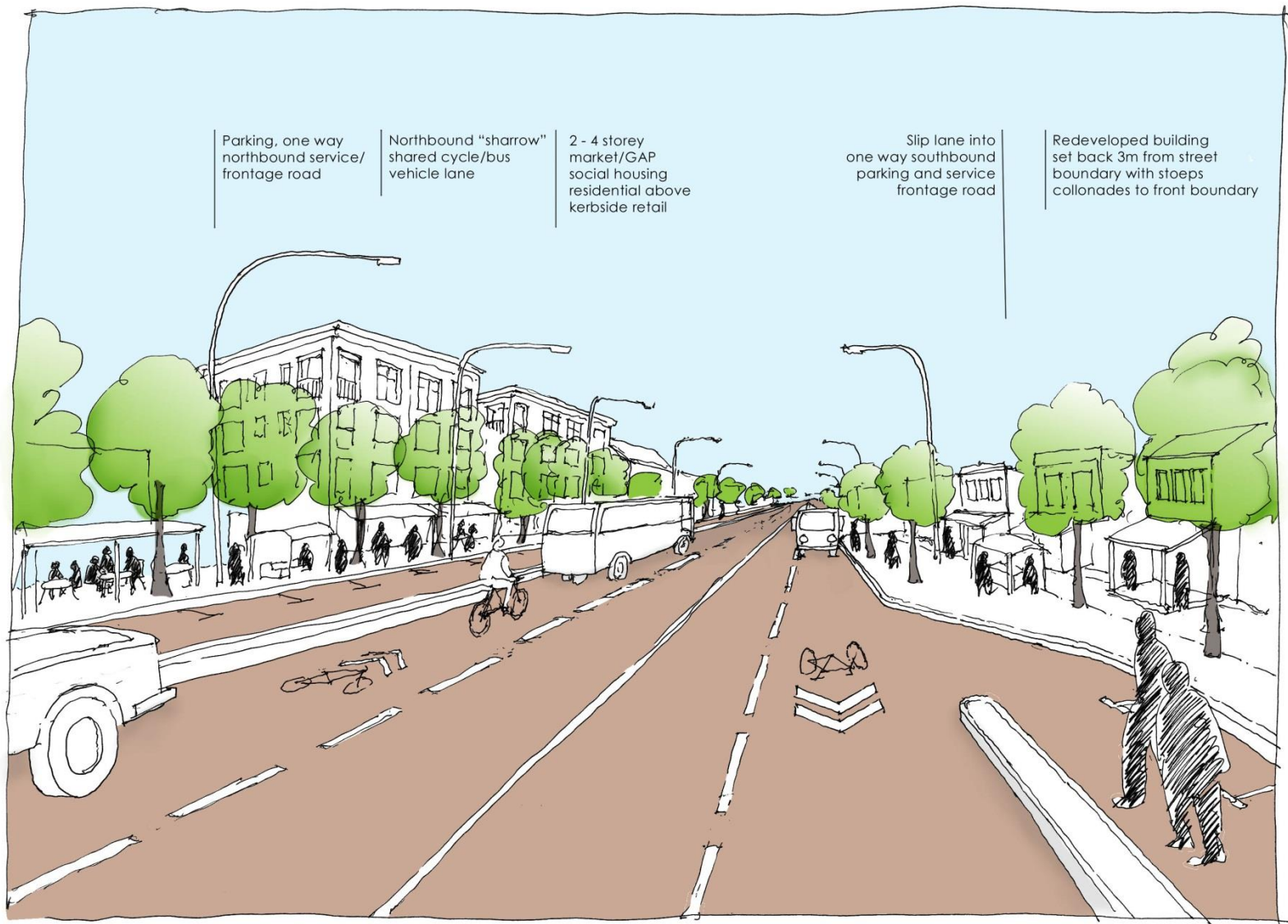


Figure 9.2.9 Node 2: 34m cross-section Perspective



9.3.1 Node 3: termination of NMB and Ngcakana street

- Ngcakana street and NMB terminate together at this traffic circle, see Figure 9.3.1;
- This node is currently mostly vacant being at the extreme rural end of Thembalethu's development;
- It is likely to develop in importance, particularly if the well located vacant land around this point is used for medium and high density development rather than the low intensity open space and educational facilities indicated by the SDF and zoning scheme, see Figure 9.3.2;
- The vacant land to the west of the node has potential to be part of a mega project fronting onto NMB;
- There are already signs of this node's future potential in the small businesses that are beginning to occur, see Figure 9.3.4
- The node is devoid of street trees and now would be a good time to get them established, either on site or in a near by nursery;
- Although the roads were recently completed no allowance has been made for cycle lanes.



Figure 9.3.3 traffic circle with taxi lay-by



Figure 9.3.4 Approach to traffic circle

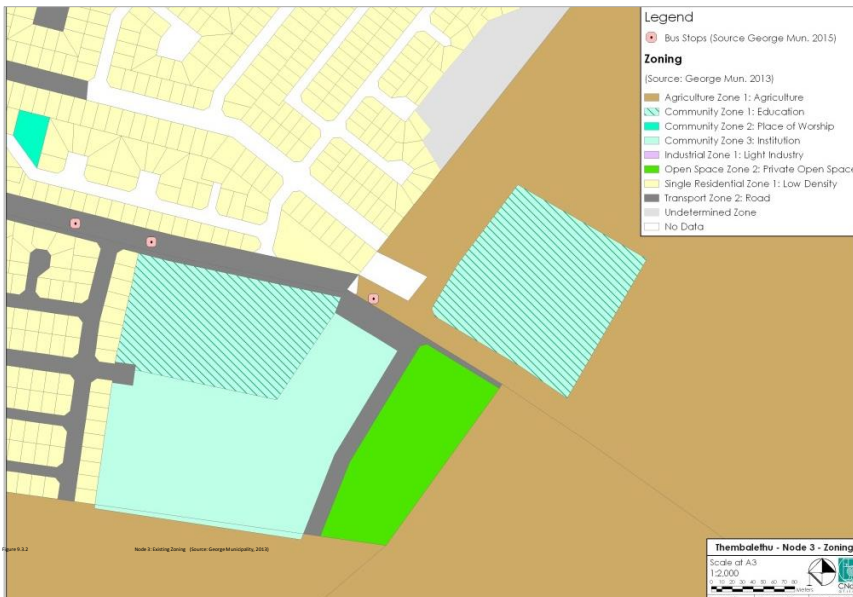


Figure 9.3.5 Vacant well located land abutting taxi lay-by

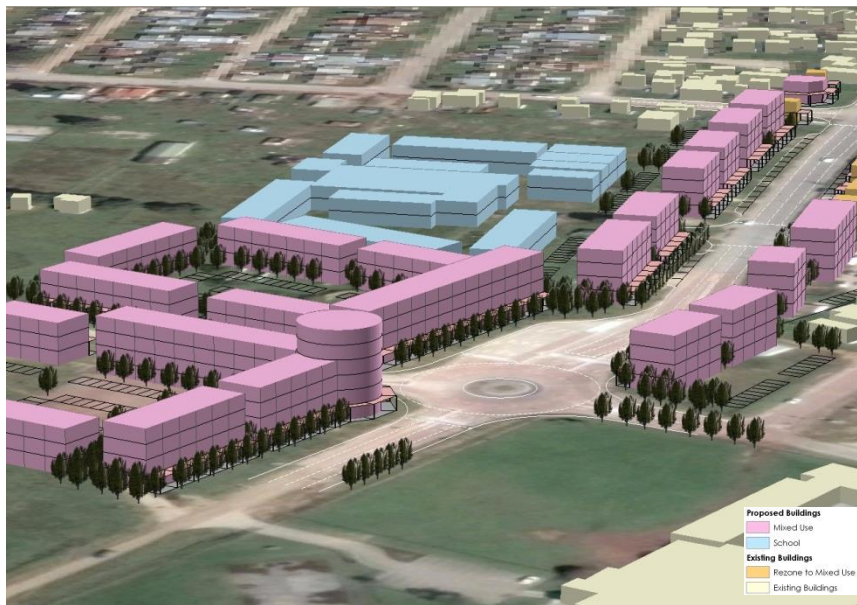


Figure 9.3.6 Node 3: 3D View: Proposals – View 1



Figure 9.3.7 Node 3: 3D View: Proposals – View 2

9.3.2 Urban Design Proposals (PP1, see Sec 7.2.1)

- Node 3 should be intensively developed to form a strong southern anchor to the NMB activity spine, see Figures 9.3.6 and 9.3.7;
- This will create a dynamic tension along NMB that will increase movement thereby improving utilisation of the Go George transport service and increase formal and informal business and community facility thresholds along the entire route making all of these activities and services more viable;
- Node 3 is ideal as core of a mega catalytic project, as per DHS drive, on the surrounding large tracts of land;
- Such a project will include a significant GAP / Social housing and market apartment component;
- Social/GAP 2 – 4 storey mixed use housing should be clustered around the node as shown, see figures 9.3.6 and 9.3.7, and should include a landmark building;
- WC DHS and Social Housing Regulatory Authority (SHRA) are currently declaring Restructuring Zones in 11 Western Cape municipalities for social housing. Node 3 will be an ideal candidate;
- The proposed school, see blue buildings, should be set back to enable a continuous edge of mixed use apartment buildings along NMB, see Figures 9.3.6 and 9.3.7.



Figure 9.3.8 Amalinda, East London



Figure 9.3.9 Umndeni Gardens, Fordsburg



Figure 9.3.10 Brickfields, Johannesburg

2 – 4 storey apartment buildings with ground floor business abutting main routes
Can be built as part of social housing initiative with study area between Tabata and Ngcakani streets declared as Restructuring Zone ito of SHRA guidelines

NMB cross-section narrowed to 24m.
Cycle lanes should be "sharrows" to share space with public transport and other road users

School set back from NMB with 2-4 storey apartment buildings as interface with NMB



Main square to be paved with raised or depressed speed table depending on requirements of municipality

Memorable main square enclosed by 3 to 4 storey apartments with land mark building as focal point.

Figure 9.3.11 Node 3: Urban Design Concept

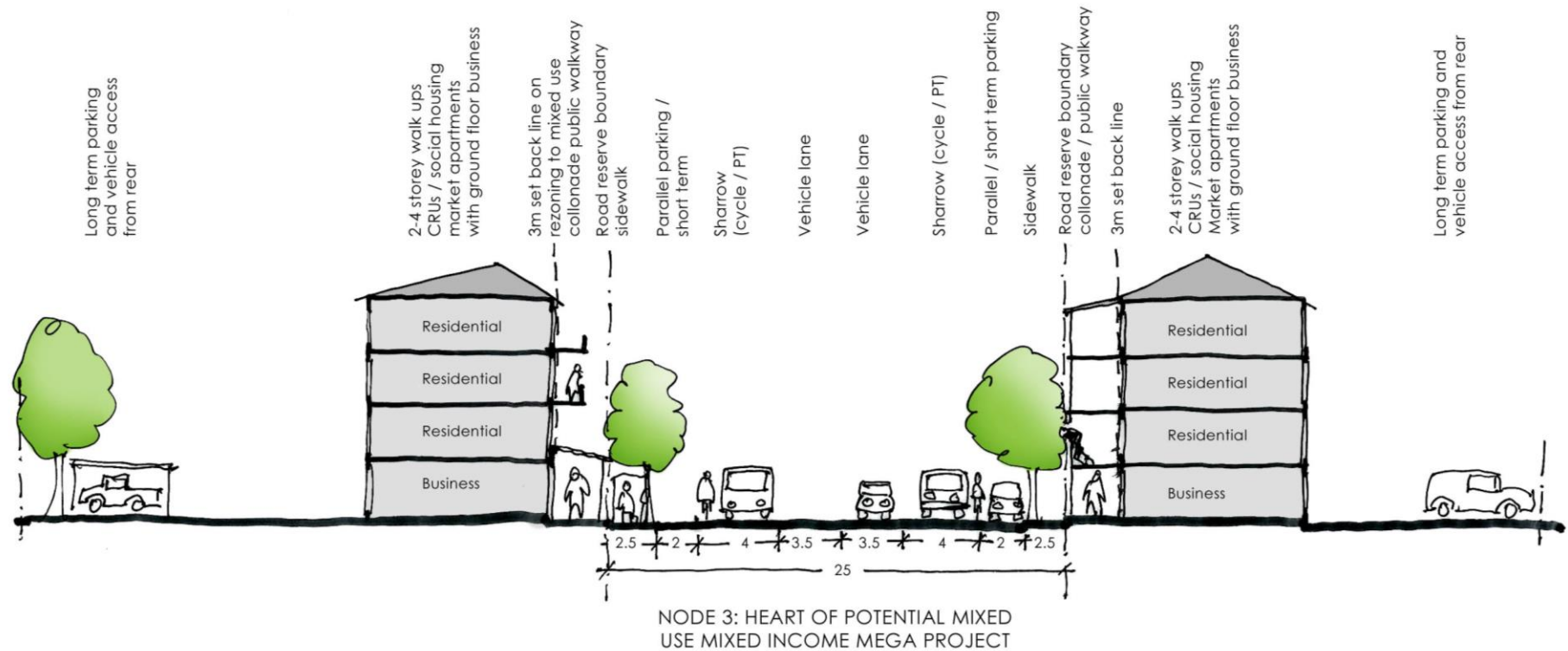


Figure 9.3.12 Node 3: Activity Spine 25m cross-section informed by George Mobility Strategy typical cross section
 (Figure **, Ninham Shand George Mobility Strategy, Sandkraal Road Corridor Upgrade Draft 2 Nov 2005)



Figure 9.3.13 Node 3 Perspective: view of square and taxi rank



9.4.1 Ntaka Street Precinct

- This precinct has one of the best locations in Thembaletu due to its position abutting the N2, see Figures 9.4.1 and 9.4.3. and is highly visible from the N2, see figure 9.4.6;
- Ntaka street, the precinct's main spine road, also has the opportunity to integrate Thembaletu laterally to the east to the Destiny Africa site if it is continued across a portion of Portion 538 (see Figure 9.4.7) with a new bridge, see Figure 9.4.4;
- The site is zoned for low density residential with some group housing to the east and undetermined zone abutting the N2, see figure 9.4.2;
- The site has recently received development approval for a low income residential scheme of 326 dwelling units at two net densities, 73 du/ha (80m² plots) and 125 du/ha (50m² plots), see Figure 9.4.7;
- This is considered as Option 1 for this precinct;
- Acknowledging the large demand for housing and the effort to achieve approvals to date, it is still considered necessary to see if the considerable and unique business potential of this site can also be developed, see PP7, section 7.2.1;
- A footbridge has been proposed across the N2 from the eastern end of Ntaka street.



Figure 9.4.3 View over N2



Figure 9.4.4 Potential link with bridge to Destiny Africa



Figure 9.4.5 Typical low density development: Ntaka Street

Ntaka st. precinct site



Figure 9.4.6 Shows highly prominent position of site to N2 traffic travelling westwards



Figure 9.4.7 Approved layout for new housing in Ntaka Street Precinct.

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PROJECT: Proposed development for George Municipality

PROJEK:

DESCRIPTION: Remainder of Portion of Erf 1821, Thembalethu, George

BESKRYWING:

TITLE: Draft layout plan

TITEL:

NOTES:

PROPOSED ZONINGS			
ZONING	ERYEN	AREA (m ²)	%
Residential Zone I	170	23,280.46	38.76
Residential Zone II	156	12,435.36	20.70
Public Street	1	16,896.38	28.13
Public Open Space	2	7,455.04	12.41
TOTAL	329	60,067.24	100.00

NOTAS:

A3 Scale:  1:2500

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www.delplan.co.za


 URBAN & REGIONAL PLANNERS

DESIGNED: DV 711GE014/tek/SKF/OSDP1

DRAWN: MV

DATE: MAY 2015

PLAN NO: ANNEXURE 4



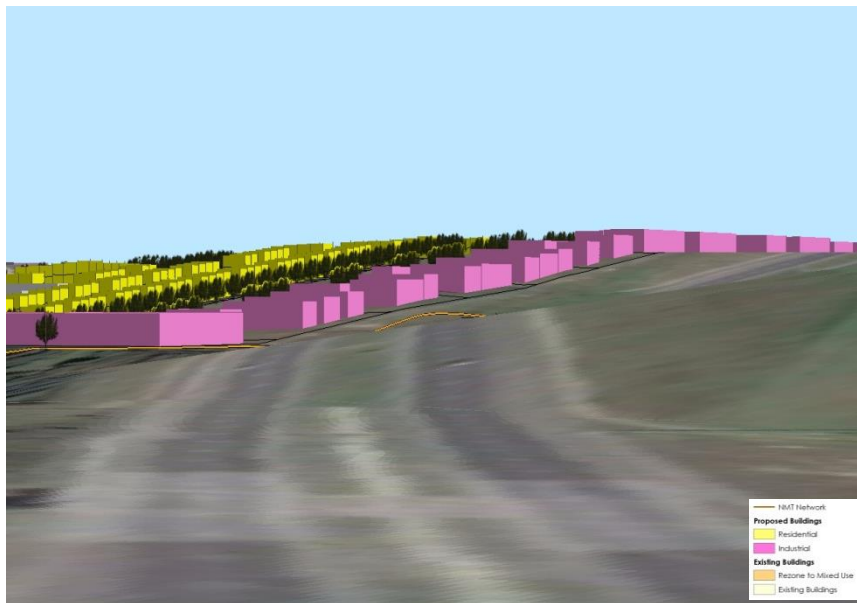


Figure 9.4.8 View from N2 showing possible commercial development with excellent visual exposure and residential behind.



Figure 9.4.9 View from above Thembaletu showing residential development behind commercial lining N2

9.4.2 Alternative development scenario for Ntaka street precinct: Option 2 mixed use development

- Clearly, there is a massive need for housing in Thembaletu that cannot be ignored. However, it is also recognised that in the near future, once residents' shelter needs are addressed, the need for business and employment generation will be paramount;
- Therefore Option 2 explores the possibility of locating business and light industrial uses along the N2, see Figure 9.4.8 and 9.4.9 and relocating the some of the residential to abutting vacant land.
- It maintains the current number of approved housing units (326) but now all of them are the higher density double storey units (Residential Zone II);
- A high level investigation reveals that there is flattish land on which further higher density units could be built, see Figures 9.4.10 and 9.4.11.
- Figure 9.4.12 shows a layout which could accommodate both uses.
- It is recommended that Option 2 be investigated before deciding to develop Option 1 so as to be very confident about not being able to use the land fronting the N2 for its highest and best use.
- Access to the commercial / light industrial properties will be taken along Ntaka and Ngcakani streets. These are Class IV roads of sufficient width to carry the main traffic flows in the area.



Figure 9.4.10 View across the valley of opportunity where development subject to go

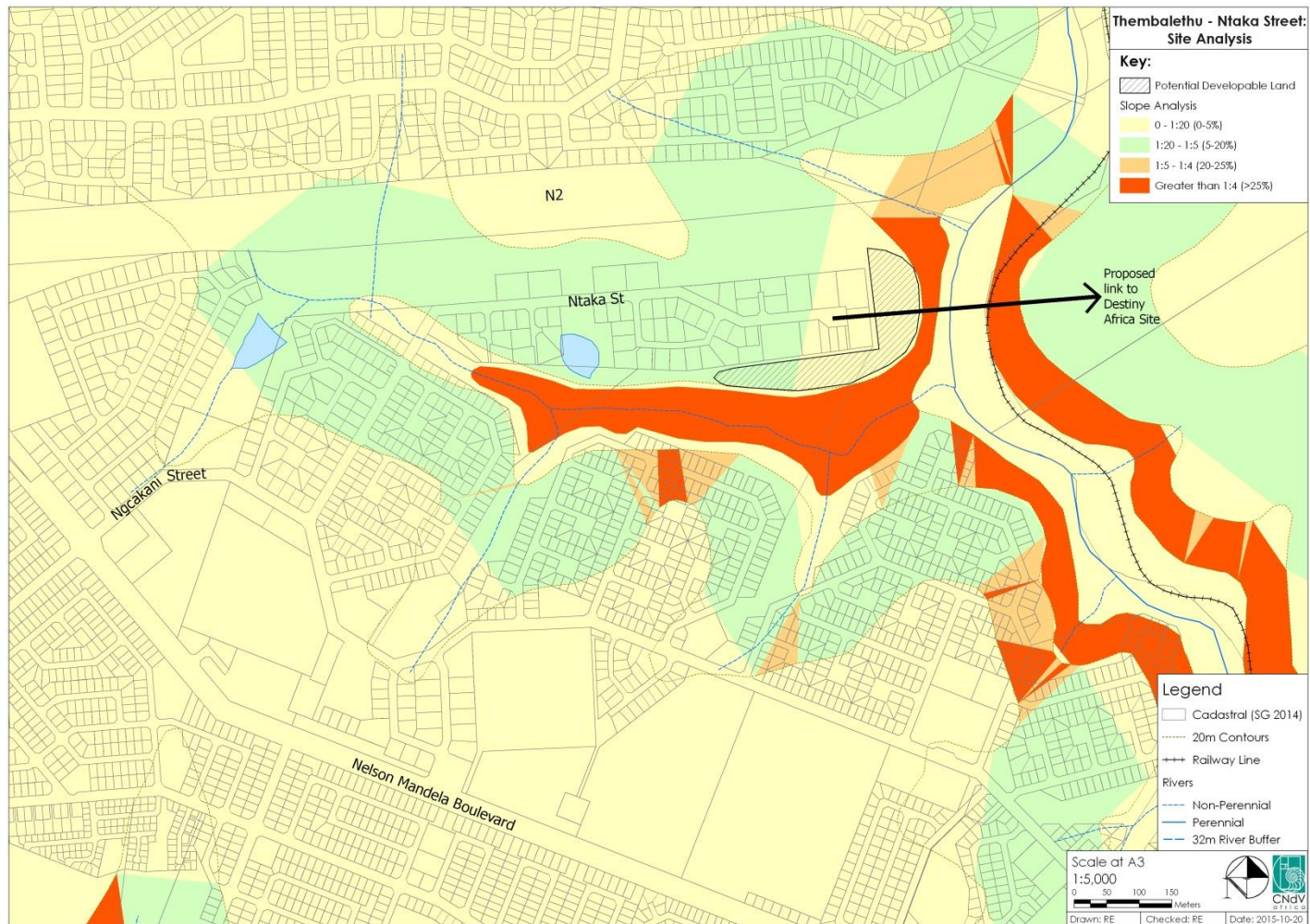


Figure 9.4.11 Site analysis showing suitable land for extending urban development



Figure 9.4.12 Urban Design Concept – same number of units as approved but all in the higher density configuration Residential Zone II located on flatter land around the site and on portions of vacant undeveloped land with the existing township.



Figure 9.5.1 Msobomvu Estate: Aerial photo



Figure 9.5.2 Msobomvu Estate: Current zoning

9.5.1 Msobomvu Estate

- Msobomvu estate enjoys an excellent location with high visibility from the into and Nelson Mandela Boulevard as it enters Thembalethu, ideal for business, retail, and light industrial development.
- It takes access off the Ngcakani intersection from Nelson Mandela Boulevard along Jeriko and Lwandle streets.
- However, these distances are not excessive at all. The estate was originally developed as a low-density middle income housing estate, notwithstanding its excellent location for business and retail.
- It is only partially developed. The few plots that have been developed are further away from extremely noisy N2, see Figures 9.5.1 and 9.5.5.
- The northern, undeveloped part of the site has excellent locational attributes for business with signage opportunities along the N2.
- Attracting passing trade are very different to the attributes required for pleasant residential living.
- PP7, see Section 7.2.1 identifies the need to investigate the possibility of using that portion of the township nearest the N2 for commercial activity.



Figure 9.5.3 View from NMB entering Thembalethu



Figure 9.5.4 Vacant land with N2 hidden in cutting beyond



Figure 9.5.5 Existing infrastructure and residential dwellings

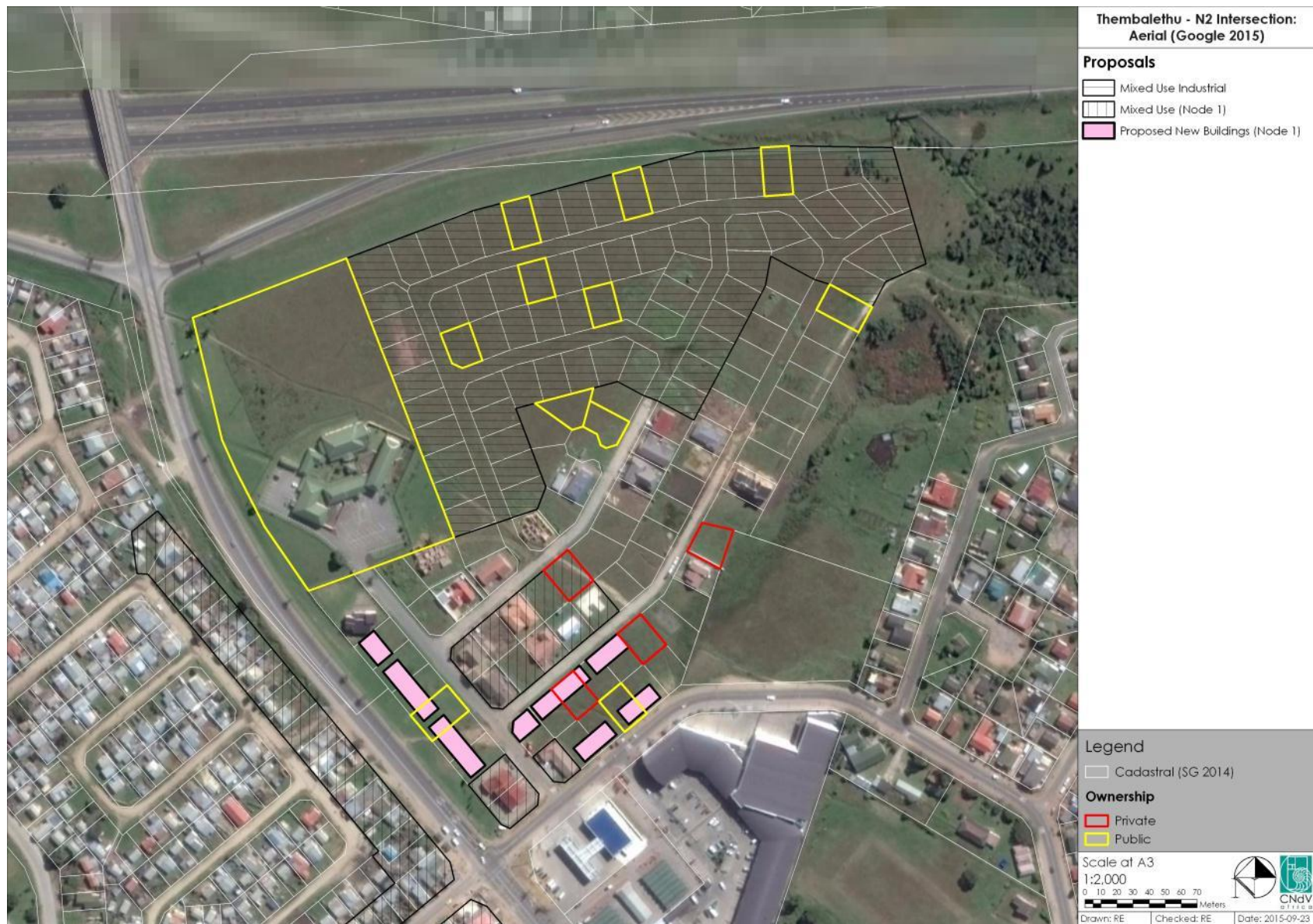


Figure 9.5.6 Land ownership of selected properties



Figure 9.5.7 3-D block view showing light industrial retail nearest the highway with residential in a more protected environment to the rear. (Note same pattern with Ntaka Street precinct in the background) The strategic potential of the vacant land behind the SASSA building in the N2/NW6 corner is also clear



Figure 9.5.8 3-D block view from north

9.5.2 Msobomvu Estate: Proposals

- The current development pattern, or lack thereof, suggests that sites closer to the freeway are not ideal for residential living. However, they are currently zoned for this purpose and official policy discourages business development on the site.
- A 10% audit of the land ownership reveals the undeveloped properties closest to the N2 are still publicly owned. This suggests an opportunity to revisit the use and development options for these erven.
- It is recommended that the estate be split into two with a light industrial / retail component closest to the N2 and a residential component on the balance away from the highway, see Figures 9.5.5, 9.5.6 and 9.5.10.
- This configuration is likely to be positive for both types of development in the long-term as follows:
 - business development will be able to take advantage of the opportunities of the site's excellent location in relation to the N2;

- this will screen the residential component from the noise pollution hazards of the highway, thereby creating a more conducive residential environment.

- Access to the business portion should be taken along Jeriko and a short section of Lwandle Street.
- If the northern-most road loop functions as a one-way system it will be able to accommodate large industrial vehicles.
- There are only two existing dwellings at the western end of Lwandle street affected by this access arrangement.
- Most of the residential properties along Jeriko street are undeveloped and it is proposed they are developed as 2-4 storey mixed use housing, see Section 9.1

Well located portion of SASSA site to be investigated for development potential. Access can be taken through one of the adjacent properties

Portion of township abutting N2 to be rezoned for mixed use/light industrial/retail



Due to the relatively narrow road reserves and to minimise nuisance to the residential portion the business/industry portion should function as a one way system off Lwandle, Jeriko and Ngcakanani roads

Main entrance to business estate along Jeriko road to minimise nuisance on residential portion

Figure 9.5.9 Msobomvu Estate: Urban Design Concept



Figure 9.6.1 Nelson Mandela Boulevard Bridge: View from N2 West



Figure 9.6.2 Nelson Mandela Boulevard Bridge: View from Thembalethu

9.6.1 N2 Bridge Analysis

- Thembalethu's only external road access is the 3 lane road-over-road bridge connecting it to the N2 national route and Albert road which links to York street and George CBD.
- The current bridge is a bland standard fly over with heavily caged pedestrian sidewalks to prevent objects being dropped on the high way.
- The width of the highway road reserve at this point and the austere nature of the bridge design do little to enhance Thembalethu as an attractive place to live and visit, see Figure 9.6.1.
- Thembalethu's gateway experience has the potential to be so much more, particularly given the dramatic views of the Outeniqua mountains when exiting Thembalethu along Nelson Mandela Boulevard, see figure 9.6.2.
- There are plans to widen this N2 bridge, see figures 9.6.3 to 9.6.7.

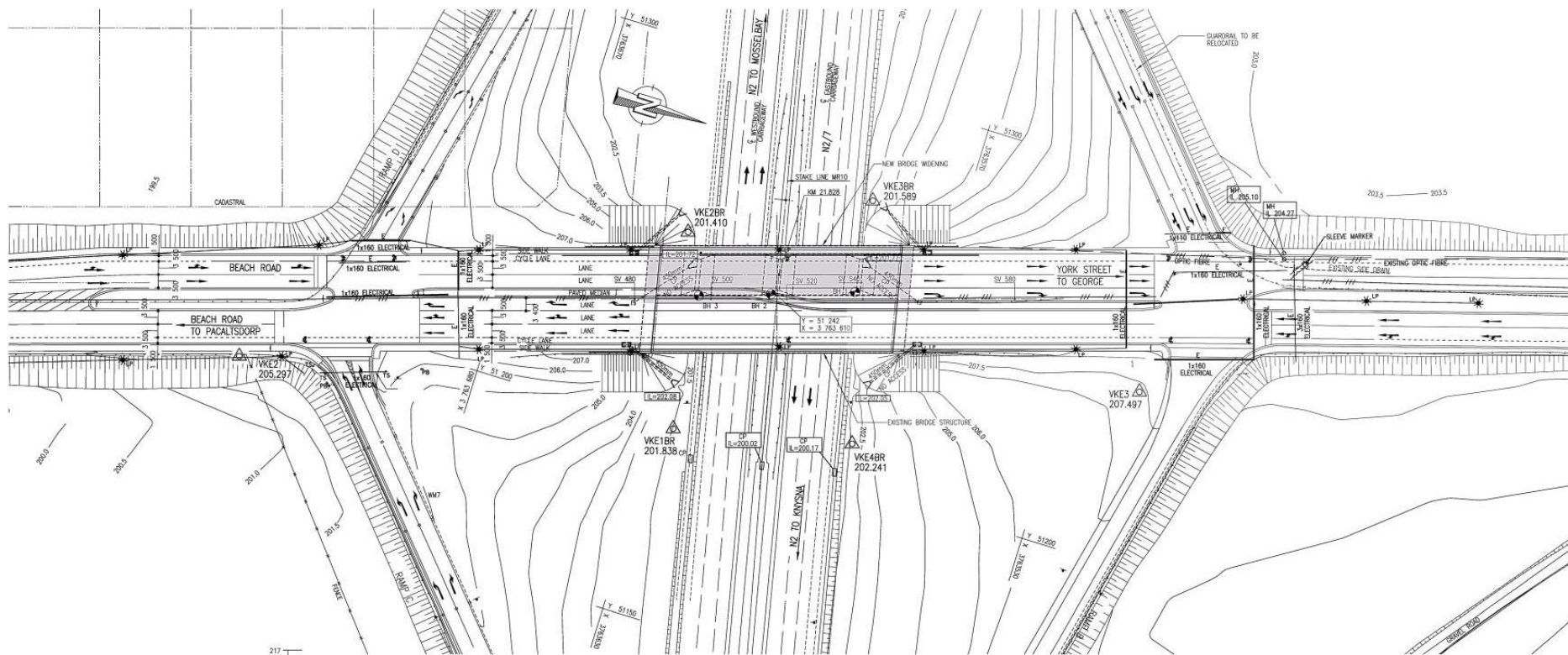


Figure 9.6.3 Pacaltsdorp N2 bridge widening – model proposed for Nelson Mandela Boulevard bridge over N2.

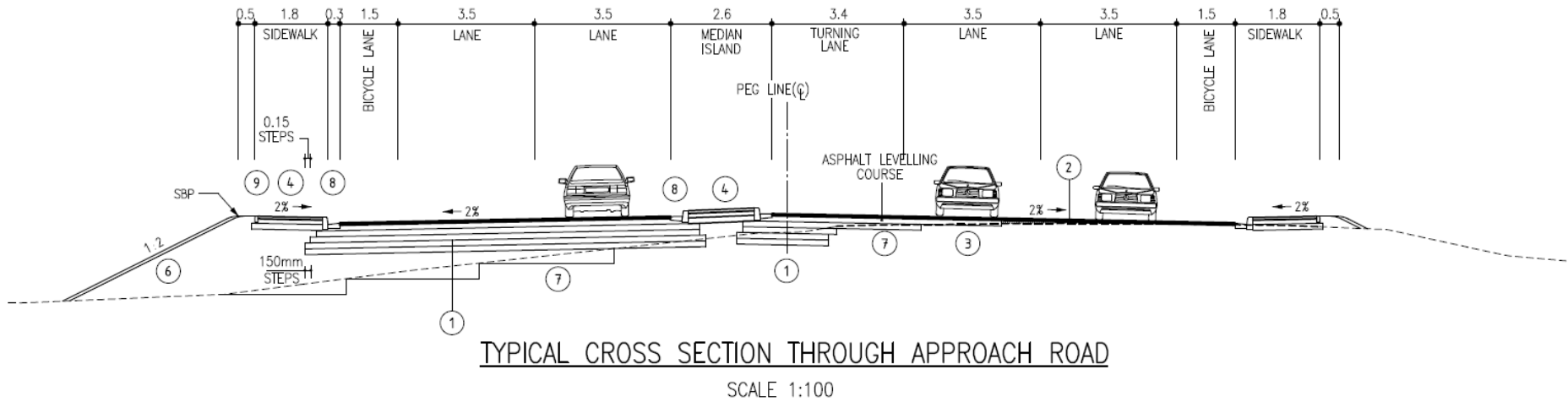


Figure 9.6.4 N2 bridge approach road cross-section

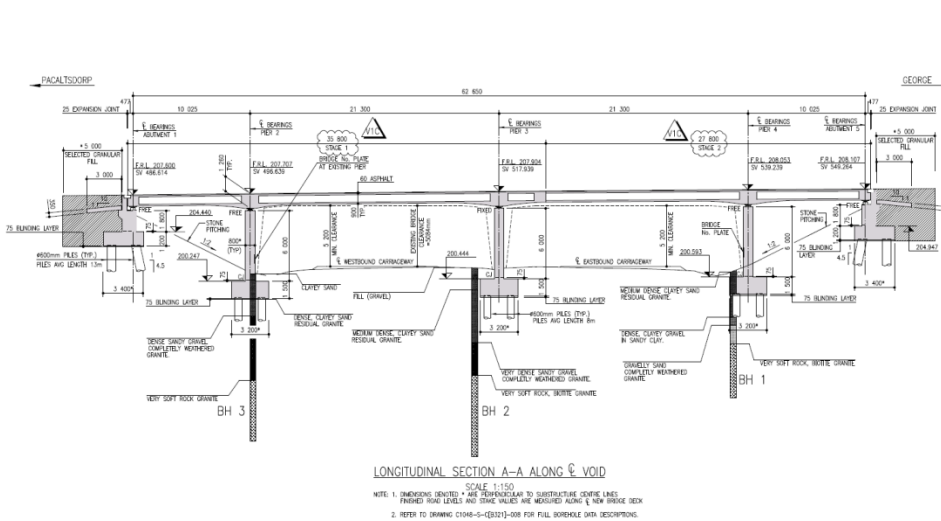


Figure 9.6.5 Bridge long section

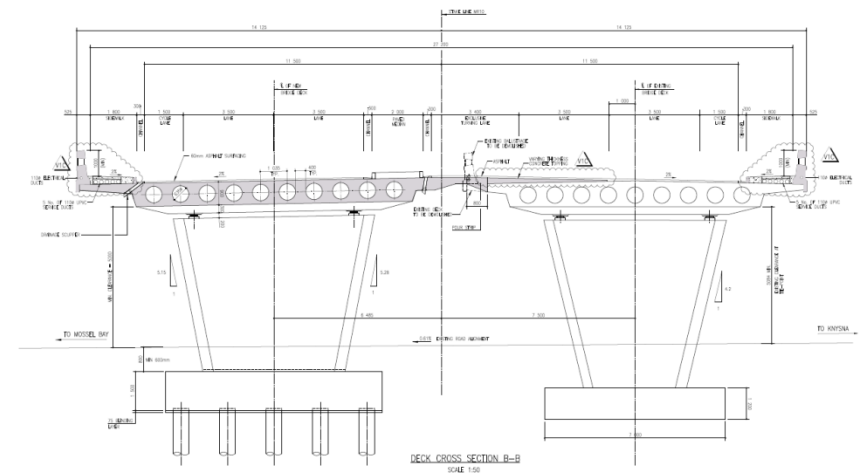


Figure 9.6.6 Bridge cross-section showing deck extension



Figure 9.6.7 N2 Bridge Proposed: Aerial Photograph (Source: George Municipality, 2013)

9.6.2 Proposal: A Striking Gateway for Thembalethu

- Due to safety, site lines and access ramp geometrics there is little development that can occur close to a major gateway such as a free way interchange. Developments immediately abutting or even spanning the freeway are at intersections that serve very few users not an entire community in on a through road location;
- The only exception to this may possibly be the land behind the SASSA Centre, see Figures 9.5.3 and 9.5.9.
- Therefore, the only way that Thembalethu's gateway experience can be enhanced is through innovative design of the bridge structure itself and landscaping within the constraints of site lines and clear spaces around the intersection ramps;
- Figures 9.6.8 – 9.6.10 show examples of bridge design that have a dramatic gateway effect, The pedestrian bridge over the N2 at Plettenberg Bay, see Figure 9.6.10, has become a well known land mark;
- It is proposed that the bridge design for NMB should incorporate signature elements that make the bridge distinctive from other bridges along the N2, see figure 9.6.11;
- These signature elements can preferably be incorporated in the structure as shown in Figures 9.6.8 – 9.6.10 or, if costs preclude such elements being structural, they can be decorative clip-on elements such as patterned balustrading;
- Gateway signage may also be clipped onto the bridge, see figure 9.6.11;
- Where conditions permit, i.e. away from the bridge decks, the approaches should be designed so that trees can be planted on the sidewalks so as to enhance the comfort of pedestrians and improve environmental quality, see Figure 9.6.12.



Figure 9.6.8 Isando bridge (<http://kempstonexpress.sites.canton.ca.us>)



Figure 9.6.9 Nelson Mandela Bridge (Johannesburg) (www.amsi.org)



Figure 9.6.10 Plettenberg Bay bridge (<https://sanral.ensight-cdn.com>)

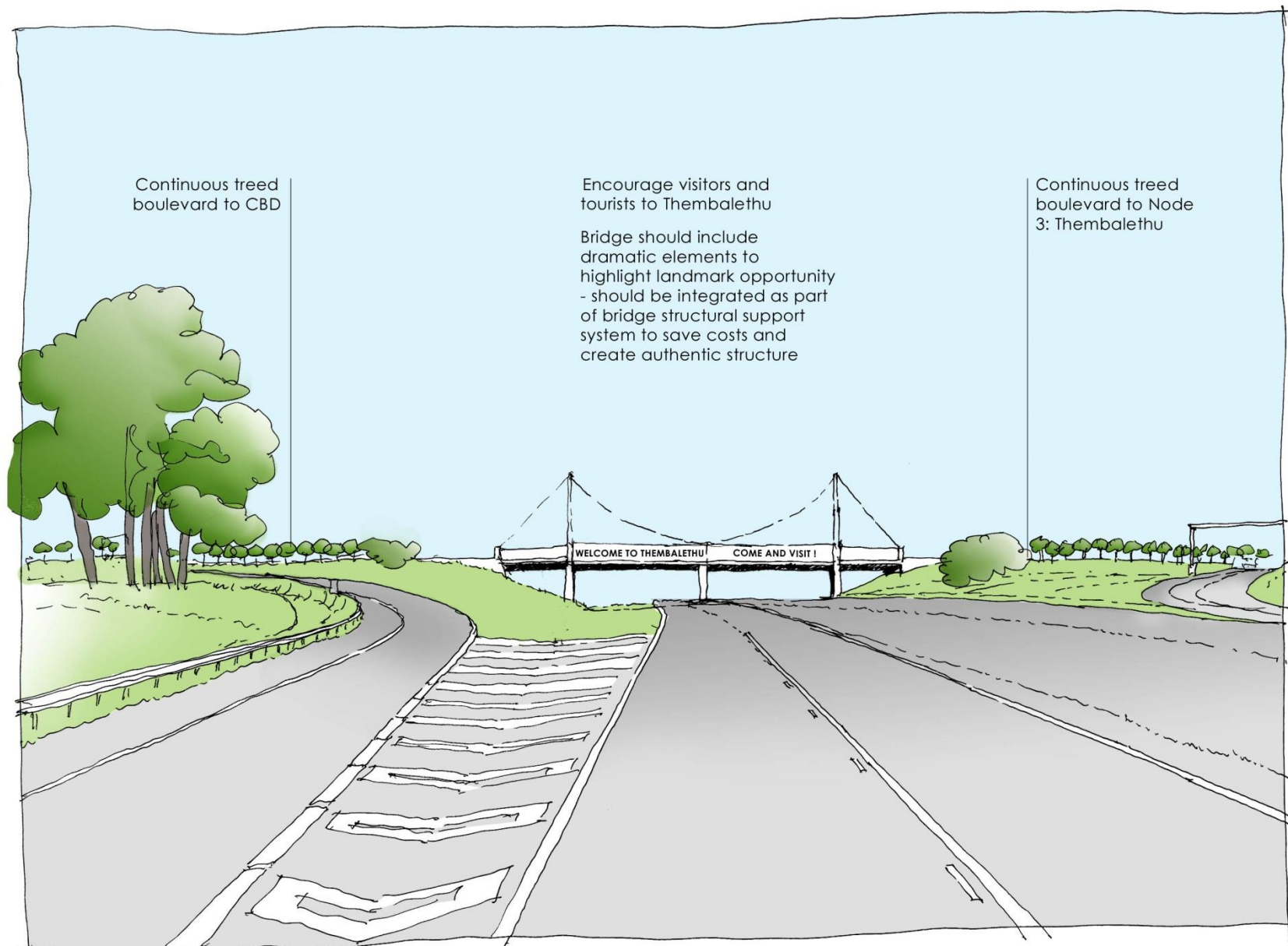


Figure 9.6.11 Urban Design Concept: Landmark long N2



Figure 9.6.12 Urban Design Concept: Dramatic exit with views of Outeniqua Mountains from Thembaletu linking to George CBD

10. CONCLUSION AND RECOMMENDATIONS

10.1 CONCLUSION

- The last two sections of this report contain a business and employment creation and urban quality driven set of urban design proposals to transform Thembaletu from a township into an exciting, vibrant and enabling urban environment with convenient and affordable access to transport, jobs, recreation, urban agriculture and shopping ;
- It should not only function as a dwelling environment for its residents but should also be capable of attracting visitors and tourists thereby growing the market thresholds to which its business people and job seekers can have access;
- The proposals have attempted to create as many economic opportunities and as much urban quality as possible within the constraints of current land use and transport policies;
- Thus, the innovative PT and NMT transport oriented cross-sections of the Go George mobility study have been adapted still further to achieve the following:
 - facilitate the informal and SMME businesses that are trying to gain a foothold along NMB and other major routes, through the use of frontage/setback roads where the road reserve width is wide enough;
 - as part of the zoning conditions, to provide 3m building set backs to extend pedestrian sidewalk widths to accommodate pavement cafes, street trading and comfortable pedestrian facilities when residential properties abutting the major routes are rezoned to mixed use and;
- This two pronged strategy, to promote economic development and improve urban quality, includes proposals to review the approved townships for the Ntaka Street Precinct and Msobomvu estate, both fronting the N2,
- Access and visual exposure onto a major national highway near a growing city is a major property development opportunity highly sought after throughout South Africa.
- Such land should always be put to its highest and best use unless there are extremely compelling reasons why it should not.

10.2 RECOMMENDATIONS

1. Draw up detailed urban design frameworks (UDFs) for each node to assist the land use managers with approving applications for properties abutting the main routes to achieve mixed-use and high densities;
2. Include street set back lines to require property owners to extend sidewalks provide covered stoeps and colonnades;
3. Serve notices on property owners along these routes advising them that applications for higher-order uses will be positively considered by council;
4. Request transport authorities to investigate the feasibility of frontage/service roads and parallel parking along Nelson Mandela Boulevard to permit direct access to properties abutting the road reserve.
5. Conduct an intensive tree planting and landscaping exercise along the whole length of Nelson Mandela Boulevard beginning with the three nodes. Coordinate this exercise with the transport planning exercise, see 4 above.
6. Proclaim Restructuring Zones to facilitate social housing programs along Nelson Mandela Boulevard between Tabata and Ngcakani streets either for its entire length or for a significant radius around nodes 1,2 and 3.
7. Investigate viability of revising the recently approved township layout in Ntaka Street precinct to accommodate business and light industrial activities fronting the N2 in terms of option 2, see section 9.4 above without losing any dwelling units. Possibly a first phase of this project can commence with those residential units whose position is unchanged while the investigation into the viability of amending the rest of the layout is completed.
8. Review the Msobomvu estate township with regards to the viability of changing the use of the northern part of the township to light industrial business and commercial activities. This will take advantage of the visual exposure to passing traffic on the N2 and shield the residential portion of the township from the noise and pollution of the highway. This will be facilitated if most of the land in this part of the township is still in public ownership.
9. Investigate enhancing the proposed N2 bridge design to create an attractive gateway to Thembaletu.