CAPE FLATS

DISTRICT PLAN

Integrated district spatial development framework
and environmental management framework

APPROVED - Vol. 1: Baseline & Analysis Report



JANUARY
2023

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

CAPE FLATS DISTRICT SDF REVIEW

BASELINE AND ANALYSIS REPORT

January 2023

CITY OF CAPE TOWN
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1 INTRODUCTION

1.1 Structure of the District SDF Suite of Documents

At this stage, the SDF suite of documents and the respective main subordinate categories are illustrated in the diagram below.



Figure 1: Structure of the DSDF

The current product is the status quo/ Baseline and analysis document.

1.2 Baseline and Analysis Report (current report for your comment)

1.1.1 Purpose of the Baseline and Analysis Report

The purpose of the Baseline and Analysis Report (Baseline Study) is to identify the development parameters that will inform the spatial plans intended to manage the future growth of the Districts in a manner that is sustainable, resilient, equitable and contextually appropriate.

The formulation of the baseline and analysis report uses a spatial layering approach to extract the **constraints** and **opportunities** for the respective structuring elements under investigation in each district. This is required to identify appropriate spatial interventions to **mitigate** against constraints and **enhance** opportunities in order to build integrated and resilient communities. The intent is to enable environments that support the natural, social, physical, and economic integration of

people into the existing urban fabric and establish quality living environments for all – refer to Figure 2 below.

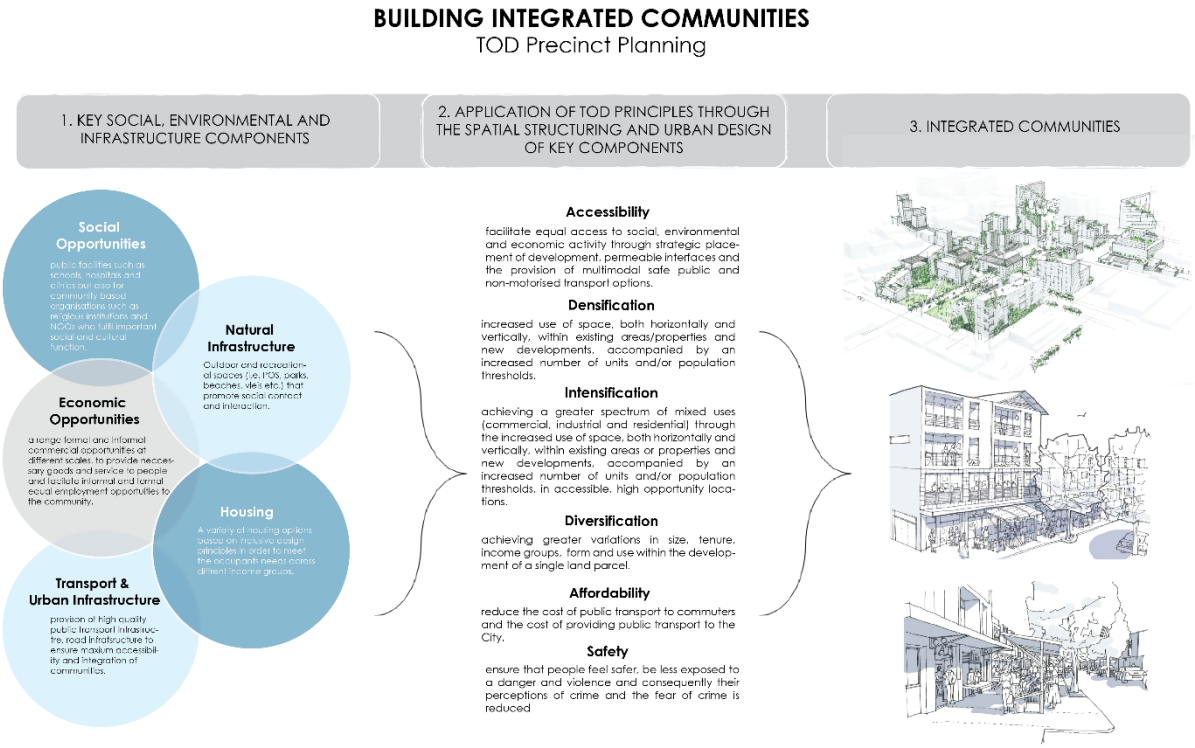


Figure 2: Building Integrated Communities

The narratives for the respective layers in the baseline and analysis report have been structured using the following approach, by answering the three main questions below:

1. **What is there and what are the trends?** This entails a brief description of the status quo, showing the trends since 2012, i.e. projects built, pressures, constraints and the opportunities;

2. **What does this mean and what are the implications?** This entails an indication of the implications of the above constraints or opportunities for spatial planning (District SDF), i.e. where are is available, physical space and where is more needed. Where are land use guidelines or policies, or interventions, e.g. physical projects, needed.;
   1.
3. **How is this linked to other elements/layers?** This is the synthesis, that has not been completed, but explores the interrelationship between the constraints and the opportunities as they relate to the various layers analysed as they all work together to form the basis for plan making, using an analysis informs plan making approach.

1.3 The Structure of the Baseline and Analysis Report

As explained above, under Paragraph 1.8, the Baseline and Analysis Report is divided into the following main sections that aim to respond to at least the following questions for the respective sections:

1.1.2 State of the Population:

a. What is the current socio-economic profile of the population?

b. What is current and forecasted growth of the population per district? This is required to identify the projected impact of future growth on the natural and urban environment, and how best to plan for said growth.

1.1.3 State of the Environment:

c. This will serve as the baseline for the EMF for the District;
d. Are there areas of ecological and environmental significance which must be conserved/protected from urban development, and where are they located?
e. Are there areas of cultural significance which must be conserved and protected from inappropriate development which negatively impacts the heritage qualities and value of the area, and where are they located (i.e. the HPOZ and proposed HPOZ)?
f. What are the bio-physical features of the district that may constrain any form of future development (i.e. rivers, wetland, topography etc.)?
g. Which areas require appropriate interface development guidelines to mitigate negative impact?
h. Which areas are appropriate for environmental and heritage exemptions or designations (in terms of NEMA and NHRA)?

1.1.4 State of the Built Environment:

i. What and where are the current development trends and pressures in the district?
j. What is the current state of supply and demand for transport and urban infrastructure, social and recreational facilities and housing to enable more integrated and resilient communities?
k. What areas currently have capacity for intensification of land use and which areas require upgrades to the current transport, social, recreational, urban infrastructure to enable further intensification of land use?
l. What is the current state of transport accessibility and mobility in each district of the city (internally and externally)? This will help identify areas appropriate for intensification (densification and diversification).
m. What is the extent of underutilised vacant land in the district?

1.1.5 State of the Economy:

n. What is the state of employment/unemployment?
o. What are the best-performing industries, that offer competitive advantages?
p. What are the best-performing property markets in the district and which areas offer the most property market potential?

1.1.6 Risk and Resilience:

q. What are the risks to the future sustainability of the City and its citizens. What and where are the setback or proximity parameters that may impact on future development?
r. How can spatial development promote social inclusion, physical connectivity and equitable travel to optimise carbon emission reductions?
s. What is the level of vulnerability and resilience of current areas in the district?

2. **Policy and Legislative Analysis**

Reflects (WILL REFLECT) existing and new strategies and policies which have been adopted by the City of Cape Town since 2012 including:

a. Cape Town Municipal Spatial Development Framework 2018;
b. Integrated Development Plan 2017-2022 (IDP);
c. City Development Strategy (CDS);
d. Transit-Oriented Development Strategic Framework (TODSF);
e. Integrated Public Transport Network (IPTN);
f. Bioregional Plan;
g. Environmental Strategy;
h. Economic Growth Strategy (EGS);
i. Social Development Strategy (SDS);
j. Integrated Human Settlements Framework (IHSF);
k. Cape Town Densification Policy;
l. Energy2040;
m. Climate Change Policy;
n. Climate Change Strategy;
o. Water Strategy; and
p. Resilience Strategy.

1.4 Key informants and limitations of the Baseline and Analysis Report

Whilst every attempt has been and will be made to ensure the information in the BaAR document is accurate it cannot be guaranteed that it is up to date at all times. This is because the information is subject to the availability of information, the time period for when it is available and valid and the credibility of the source (refer to Annexure C for a list of said sources). Given the aforementioned and the fact that the District SDF and its implementation period is only for ten years the approach has not been to ensure that every statistic is 100% accurate and undeniably the most recent. However, the authors have opted to rather use the general trends relating to the statistics and not the absolute numbers and will draw the main issues and opportunities for the formulation of proposals and guidelines.

2 DEMOGRAPHICS

2.1 Overview Key Statistics

POPULATION

2001: 509 162

2011: 583 380



2018: 662 120 of 4 400 240 in CoCT

AVERAGE HOUSEHOLD SIZE

2011: 3.99

2018: 3.77



AGE

0 - 14	15 - 64	65+
25.8%	68.5%	5.8%

ANNUAL HOUSEHOLD INCOME



	2001	2011
NO INCOME	11.6	13.7
R 1 – R 1 600	28.8	20.7
R 1 601 - R 3 200	19.6	18.2
R 3 201 - R 6 400	18.7	16.1
R 6 401 - R 12 800	13.4	12.7
R 12 801 - R 25 600	6.1	10.3
R 25 601 - R 51 200	1.3	6.21
R 51 201 - R 102 400	0.2	1.6
R 102 401 or more	0.3	0.5

UNEMPLOYMENT RATE



2011: 28.53%

2011 COCT Avg: 29.19%

GINI COEFFICIENT

2009: 0.57

2014: 0.58

2018: 0.59



2018 COCT Avg: 0.62

2.2 Population

2.2.1 **Growth**

By 2018, based on past growth trends, the population of the Cape Flats District was estimated at 662 120. In effect, it comprises 15.05% of the city's population of 4 400 240 making it the third largest district in the metropole (refer to Table 8 below). The first and second most populated districts are the Khayelitsha, Mitchells Plain & Greater Blue Downs and Tygerberg, respectively comprising 29.92% (1 316 494) and 18.06% (794 537) of the city's population.

The district had a low average growth rate of 1.46% between 2001 and 2011 which is significantly lower than the metropolitan average growth rate of 2.93%. Furthermore, the estimated annual average growth between 2011 and 2018 has decreased to 1.93% over this period.

Table 1: Average annual Population change- District vs Metro

	2001	Ave Ann Change 2001-2011	2011	Ave Ann Change 2011-2016	2018
Cape Flats District	509162	1.46%	583380	2.14%	662120
Cape Town Total	2893399	2.93%	3740023	2.52%	4400240

The district's population has increased by 78 740 people over the 15-year period (2001-2018). From the growth rate it can be seen that the areas which showed the highest growth includes Zondi(Nyanga), Philippi SP2, Pelican Park, portions of Gugulethu and Nyanga, Strandfontein and Costa Da Gama(Muizenberg). Philippi SP2 has had the largest increase with the population almost doubling from 6618 in 2011 to 12784 in 2018. The areas that have showed a negative growth i.e. decrease in the population include KTC informal, Lavender Hill, Nerissa and Parkwood.

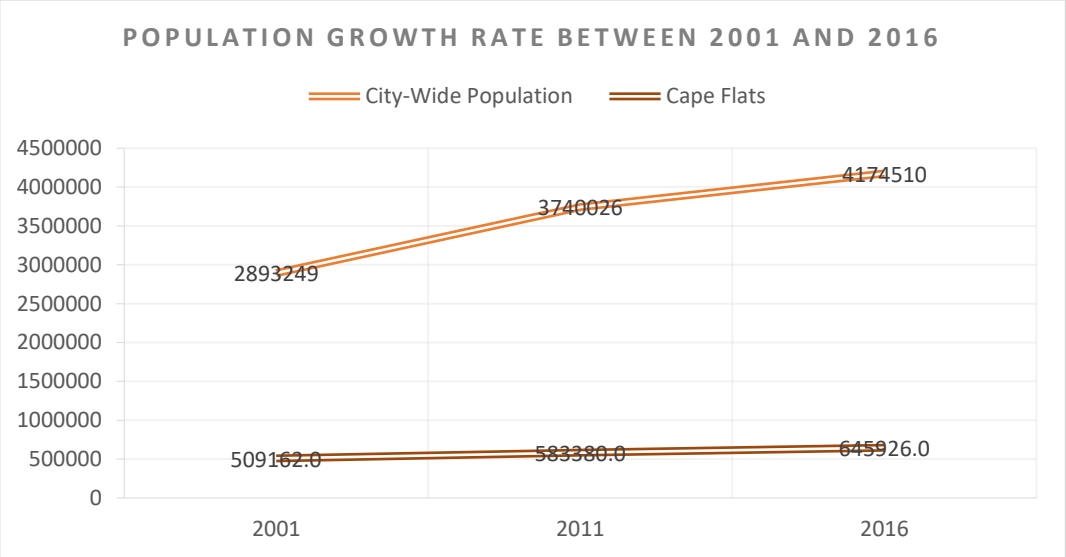


Figure 3: Population Growth Rates

2.2.2 **Spatial Distribution**

From the below map it can be seen that the population distribution across the district is relatively similar. It can however be seen that the north-eastern section of the district which includes the suburbs of Guglethu, Nyanga, Manenberg and Hanover Park seem to have a slightly higher population distribution than the rest of the district. There is also a higher concentration of people in Lavender Hill / Seawinds in the south. The False Bay coastal area including Pelikan Park, Philippi Horticulture Area and Wetton has the lowest population distribution.

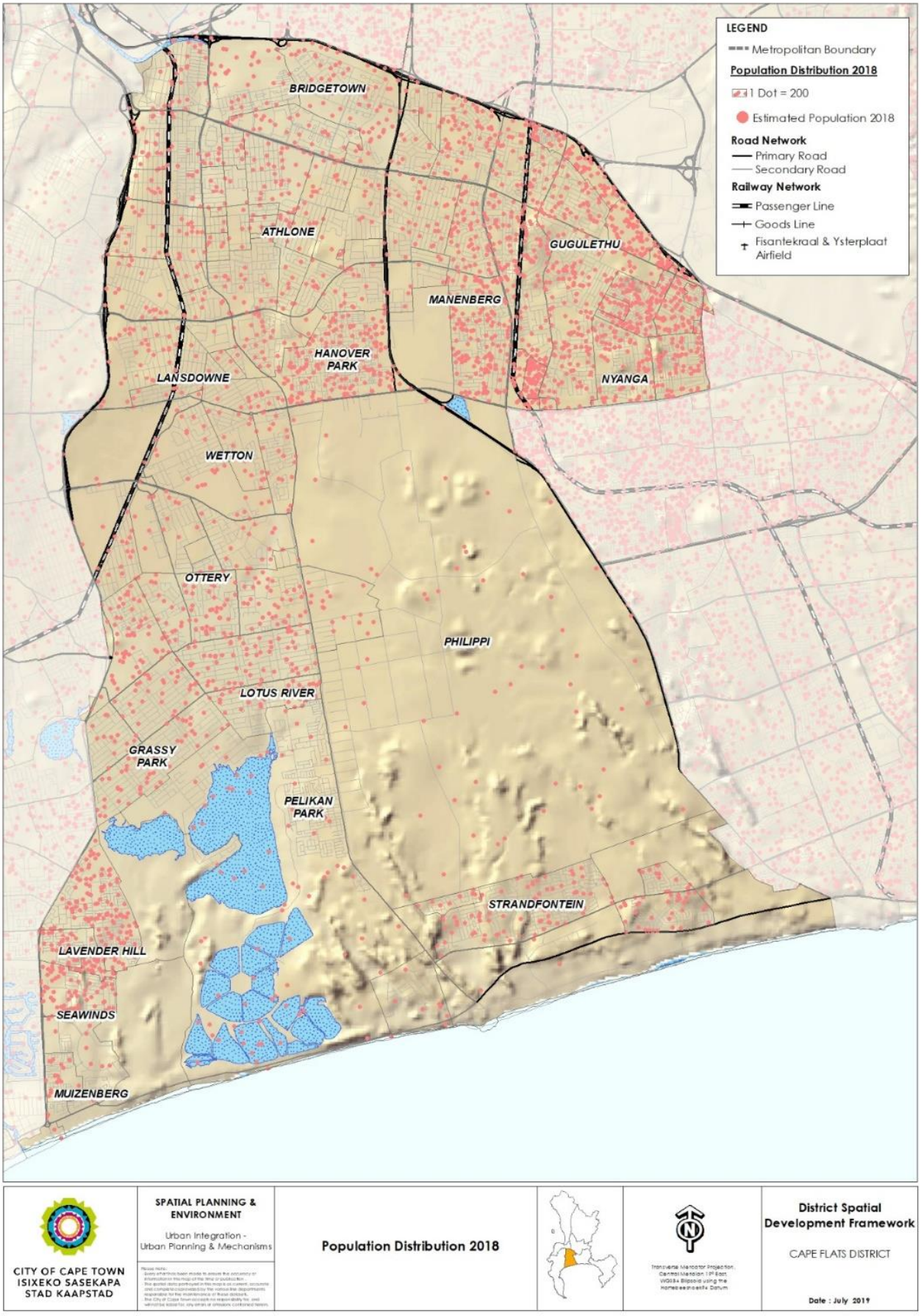


Figure 4: Population distribution

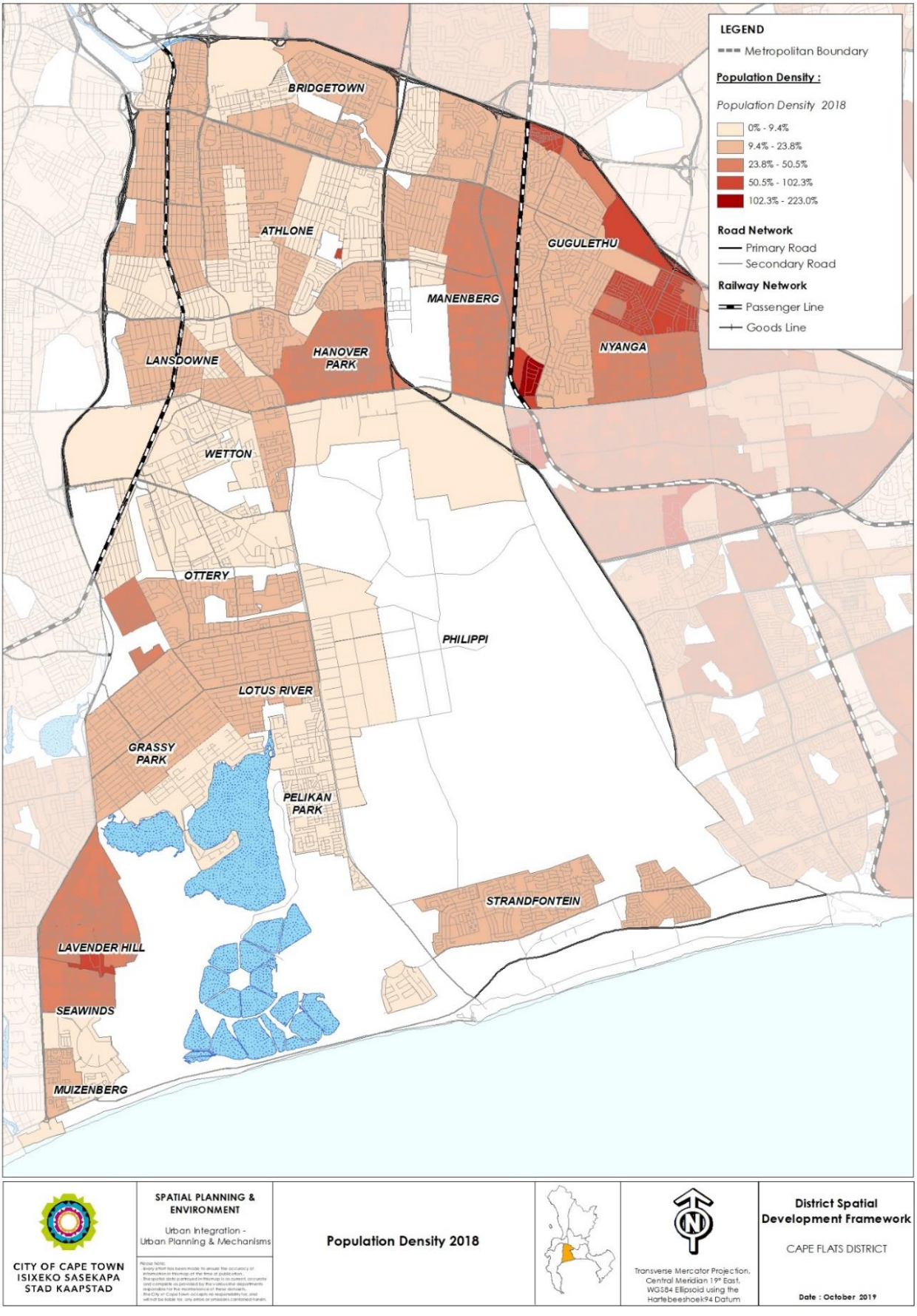


Figure 5: Population density

Furthermore, it can be seen that many of the suburbs with the highest population distribution also has a high population density indicating that the majority of the population are located in these concentrated areas per km^2. The highest population density is found in the informal settlements Waterfront, Barcelona, Europe, Kanana and Vrygrond. This is followed by Nyanga south, Manenberg, Hanover Park and Lavender Hill. It should be noted that Hanover Park consist of medium to higher density housing typologies including 3 storey walk-up flats and row houses. Lavender Hill also has a high population density which could be linked to the Village Heights informal settlement as well as similar housing typologies as Manenberg.

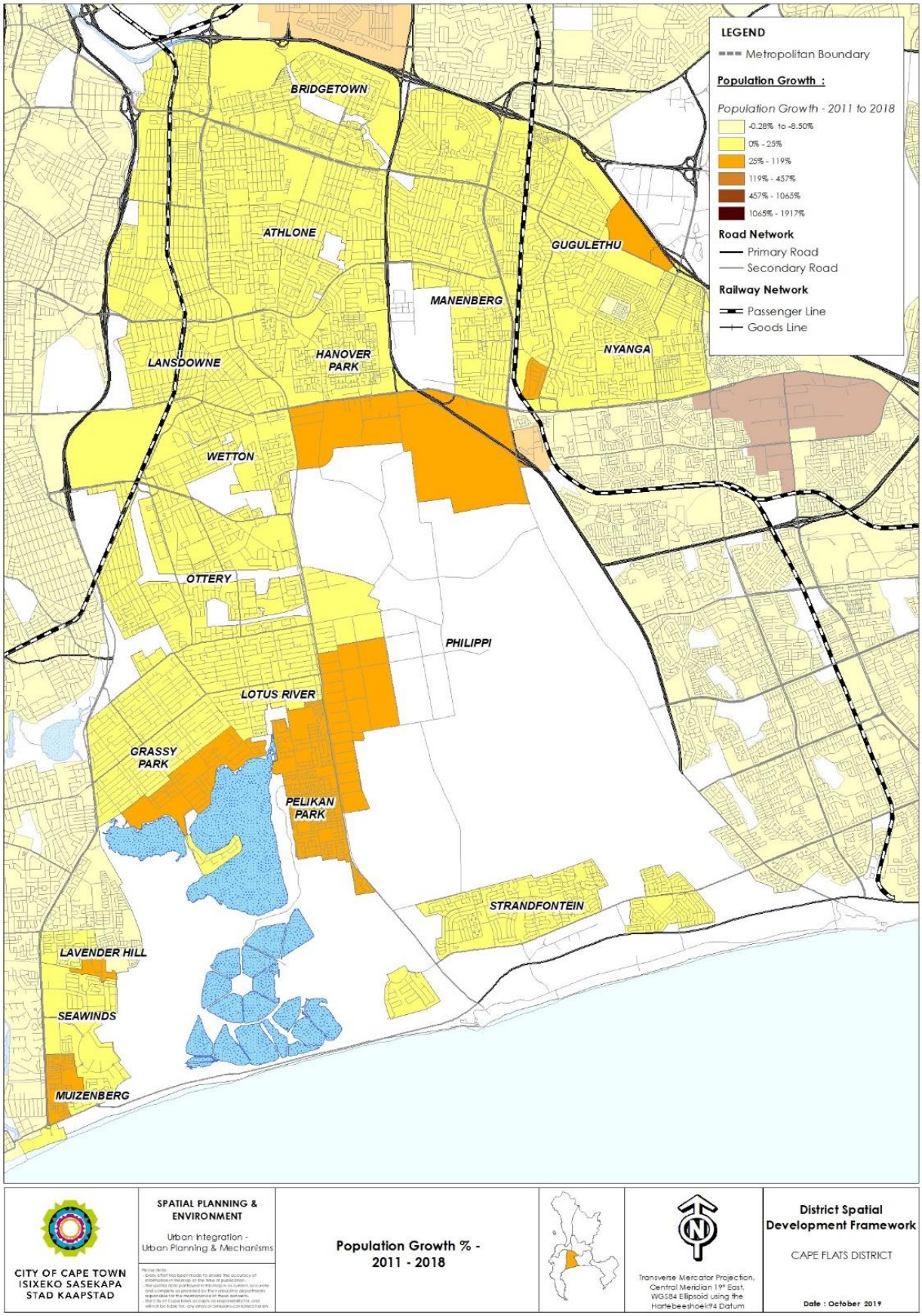


Figure 6: Population growth

The map above indicates where (by percentage growth) the population growth of the sub-districts between 2011 and 2018 has been greatest. The urban areas reflecting highest population growth are correlating with the lower income areas with significant informality (backyard shacks and informal settlement area) which has expanded. These include areas such as Barcelona/Europe, Waterfront, Nothern portion of PHA, Pelikan Park, Grassy Park, Vrygrond and Muizenberg(Costa Da Gama). The sub-places with the highest population densities include Zondi (77584.89) which is considerably higher than the rest, followed by Vrygrond informal settlement (49642.59) and Europe (47315.53). These figures are extremely high in relation to the rest of the sub-places. The sub-places with the lowest population densities in the district include Hatton (12.10), Muizenberg SP1(25.66) and Strandfontein (120.43).

2.2.3 **Population Structure**

An overview of the population structure of the Cape Flats District is in the table below. This section uses the 2011 Census data which is the only available data source and outdated to some degree.

Based on the data contained in the table below, the population structure for the district has seen slight variations between 2001 and 2011 in the various age categories. The biggest change was in the 0-14 age category which decreased by 1.8% from 27.6% to 25.8%. Majority of the population falls within the potential labour force category (15-65) which slightly increased by 1.3% from 67.2% to 68.5%. The 65+ age category has increased by 0.6%.

The dependency ratio (measure of the number of people in the potential labour force in relation to those in the "dependent groups", the youth and aged expressed per 100) has decreased since 2001 from 48.90% to 46.26%. This gives a rough estimate of the level of dependency in a society.

The Index of ageing increased between 2001 and 2011 by about 3 points from 18.99% in 2001 to 22.62% in 2011. This means that there are more people over the age of 65 in relation to those below 15 years. As the population growth between 2001 and 2011 is assumed to come largely from people moving into the area this simply reflects that more people over the age of 65 moved into the District, than did children below the age of 15.

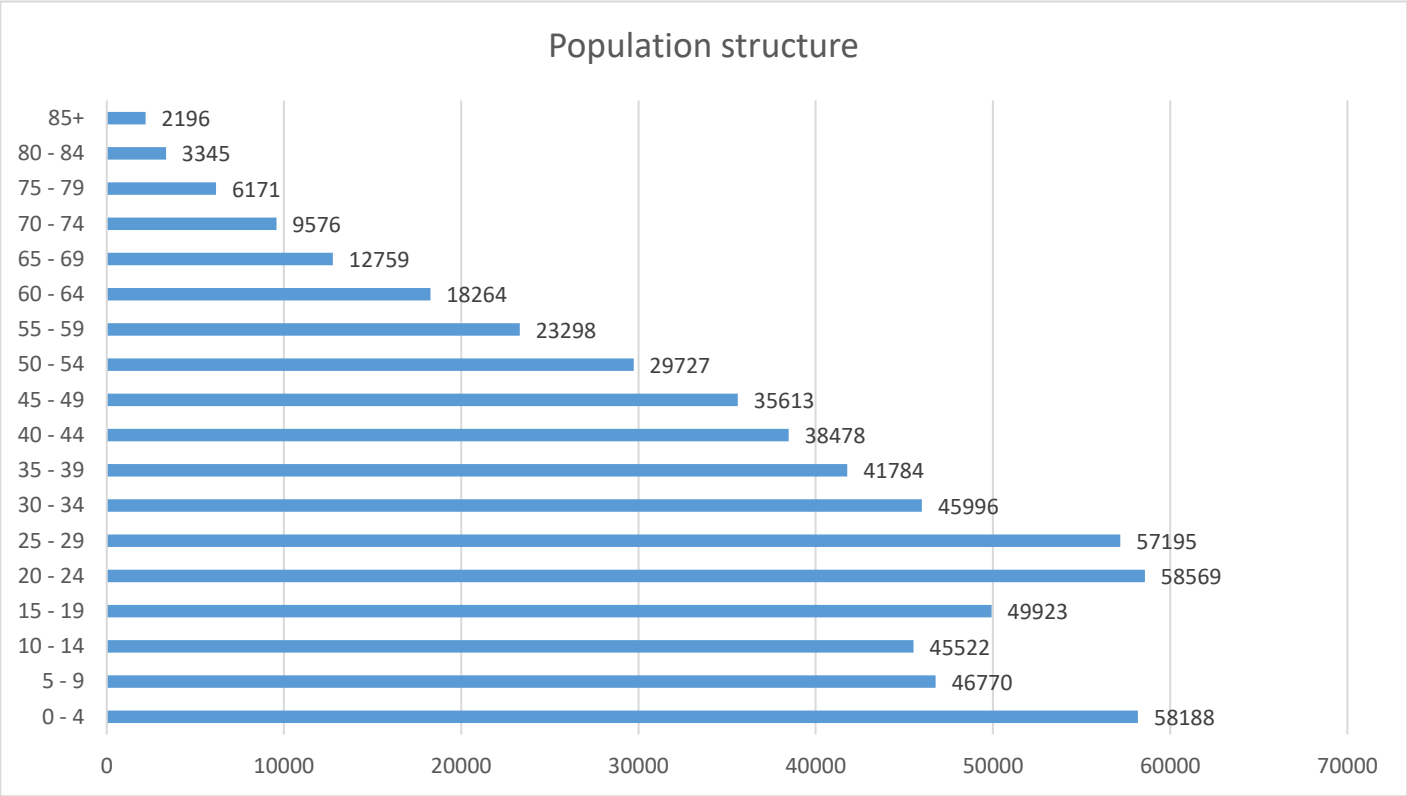
Table 2: Change in Population structure between 2001 and 2011

	0 - 14		**15 - 64**		**65 +**		Dependency Ratio	Index of Ageing
	Number	%	Number	%	Number	%		
2001	140 531	27.6	341 947	67.2	26 690	5.2	48.90	18.99
2011	150 480	25.8	398 842	68.5	34 047	5.8%	46.26	22.62

2.2.3.1 Age Distribution

The population pyramid for the district is shown in Figure 10 below. The highest percentage of the population in the Cape Flats District falls within the age category of between 20-24 years, followed by 0-4 years.

Figure 7: Population Pyramid



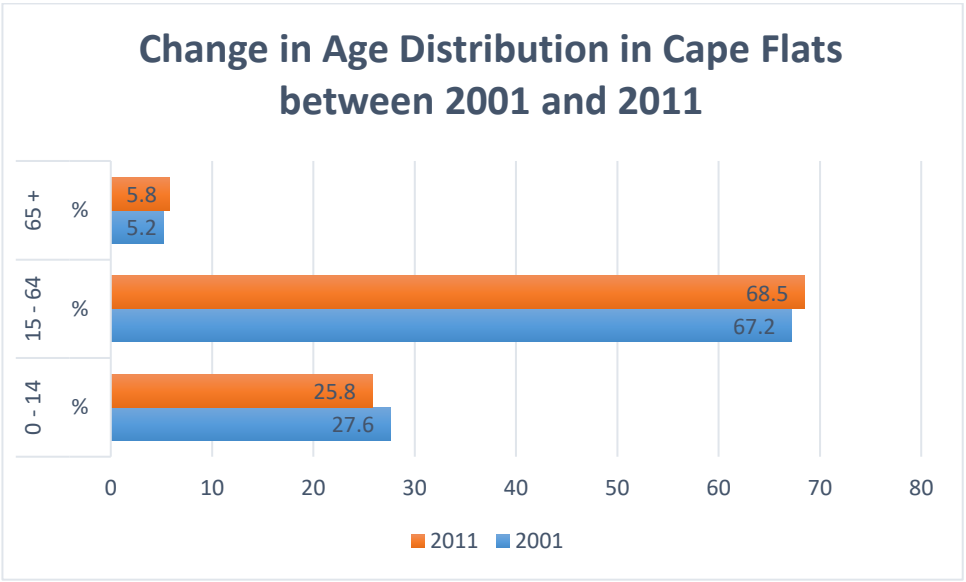


Figure 8: Age Distribution between 2001 and 2011

2.2.3.2 Education (aged 20+)

The Cape Flats District has low levels of education compared to city averages. In particular, the level of higher education in the district is notably lower than the metro average. It can be seen that the level of population in the district that has no schooling is right on par with that of the City as a whole. However, 9.6% of adults in the district have completed some form of higher education which is much lower than the average for the City which is just over 16% of adults. In terms of education levels Cape Flats District is below average when compared to the rest of the districts.

Table 3: (CoCT and Census 2011)

	No Schooling		Matric		Higher Education	
	2001	2011	2001	2011	2001	2011
Cape Flats	-	1.8%	-	28.6%	-	9.6%
City of Cape Town Average	4.2 %	1.8 %	25.4 %	30.2 %	12.6 %	16.2 %

2.3 Households

The following section provides an overview of the households in the Cape Flats District. The definition of a household is a group of persons who live together and provide themselves jointly with food or other essentials for living, or a single person who lives alone (Census 2011).

2.3.1 District Trends

The number of households within the district was estimated to be 175 768 at the end of 2018 and has increased by 2.24% between 2001 and 2011 and a further 2.88% between 2011 and 2018. This increase indicates a slight accelerated rate of household growth within the district.

The average household size decreased between 2001and 2011 from 4.26 to 3.99 and then further decreased to 3.77 in 2016 which indicates that households in the district are shrinking.

Table 4: Comparison of households and household sizes between the district and the metropolitan average

		2001	Average annual growth rate 2001-2011	2011	Average annual growth rate 2011-2018	2018
Households	Cape Flats	119483	2.24%	146243	2.88%	175768
	Cape Town Total	776 781	3.76%	1 068 573	3.29%	1 315 015
Average Household Size	Cape flats	4.26	- 0.27%	3.99	-0.22%	3.77
	Cape Town Average	3.72	- 0.60%	3.50	-0.15%	3.35

2.3.2 Spatial Distribution

The spatial distribution of households in the Cape Flats District closely resembles the distribution of population by means of sub-places. The areas with the highest populations are generally the ones with the most households. Household sizes however range across the district with smaller household sizes found in the more affluent areas while the opposite exists in the poorer areas.

The increase in households tends to outpace the increase in population. The following sub-places have seen significant change in households between 2011 and 2018.

- Phillipi SP 2 – 2449 Households
- Zondi – 1706 Households
- Nyanga SP- 1475 Households

The household growth rate for the district is depicted in the following map taking into account the percentage change of households between 2011 and comparing that against the 2018 projections.

This map is very similar to the population growth map which highlight the northern portion of the Philippi Horticultural Area (PHA) as the area with the highest percentage of household growth. This is largely due to the informal settlements that are growing within the PHA. It can be seen that all the areas that had the highest population growth has had similar higher household growth.

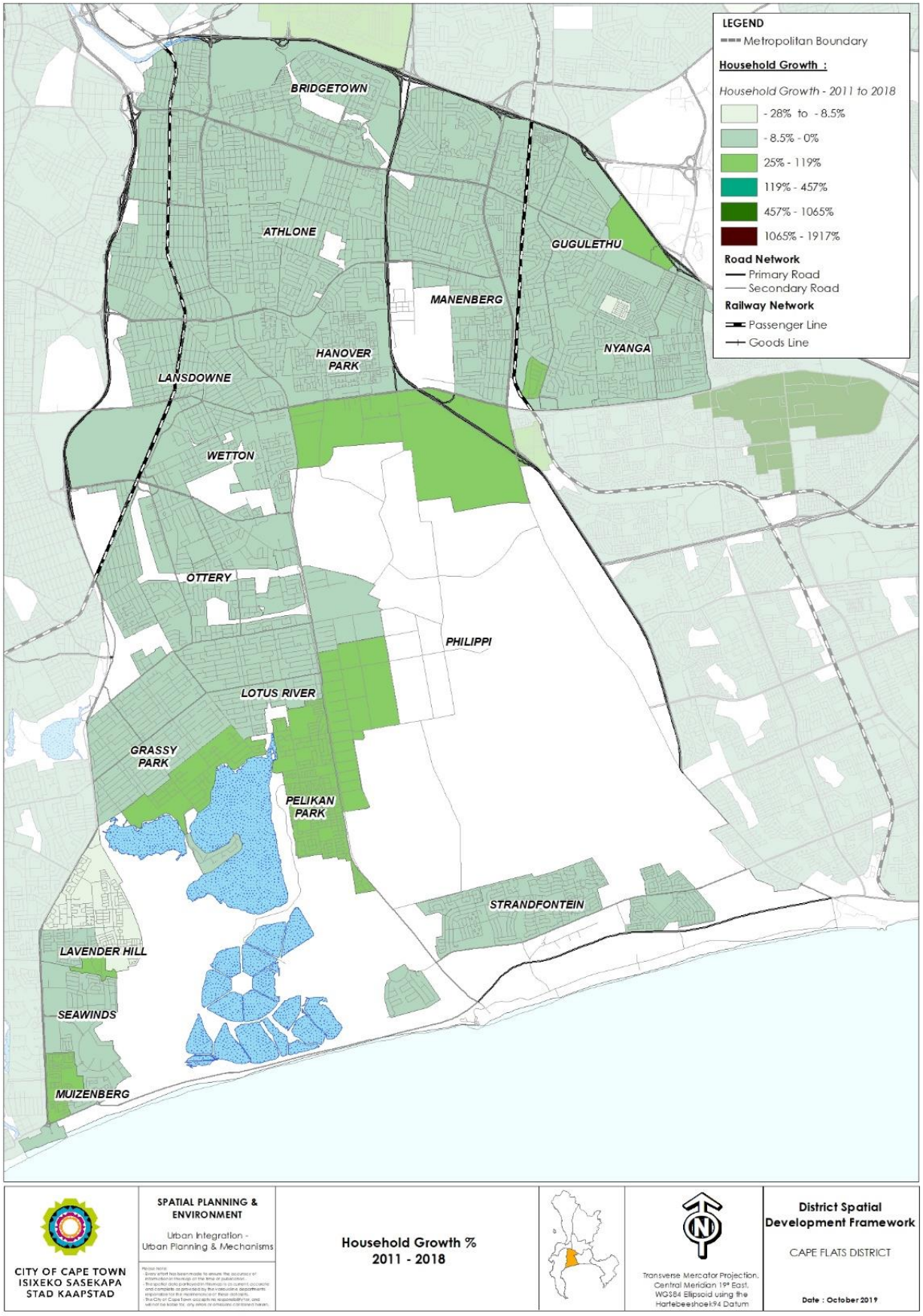


Figure 9: Household growth

2.4 Employment

In 2011, 79% or 398 842 people of the Cape Flats District's population were of working age (15 to 64 years). The labour force stood at 247 992 with 177 231 (72%) being employed and 70 761 (28%) unemployed. The not economically active population, which includes discouraged work-seekers and others not economically active, stood at 150 840.

The chart below indicates the number of employed vs unemployed that make up the labour force as well as the discouraged work-seekers and others not economically active that make up the not economically active population.

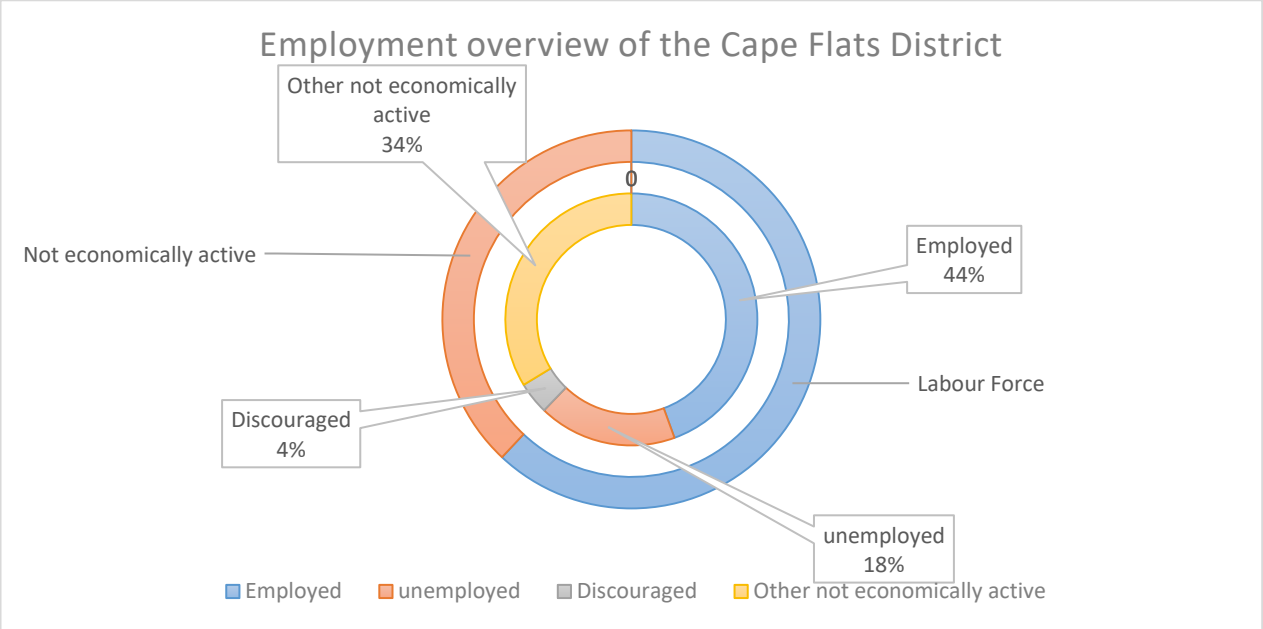


Figure 10; Employment overview of the Cape Flats District.

The table below compares the Cape Flats District to City average in terms of unemployment and employment between 2001 and 2011.

Table 5: District vs metro employment trends

		2001	%	2011	%
Unemployment	Cape Flats	687 729	31	70 761	28
	Cape Town Total	387 315	29.2	405 999	15.6%
Employment	Cape Flats	152 625	69	177 231	72
	Cape Town Average	939 207	70.8	1 294 239	49.7%

The table below summarises the labour force indicators for the Cape Flats District for 2001-2011.

Table 6: Labour force indicators

Cape Flats District Planning District Labour Force Indicators	2001	2011
Population aged 15 to 64 years	**341947**	**389832**
Labour Force	**221462**	**247992**
Employed	152745	177231
Unemployed	68717	70761
Not Economically Active	**123135**	**150840**
Discouraged Work-seekers	15113	16497
Other not economically active	108022	134343
Rates %		
Unemployment rate	31.02%	28.53%
Labour absorption rate	44.66%	45.46%
Labour Force participation rate	64.76%	62.18%

2.4.1 Employment and Unemployment

In 2011, the majority of the labour force, approximately 177 231 people, were employed. Unemployed people comprised the remaining 70761 people. The district has an unemployment rate of 28.53%, which is lower than the metropolitan average of 29.19%.

The large proportion of 'Not Economically Active' people results in a relatively low labour force participation rate, of 62.18%, despite the vast majority of the labour force being employed.

2.4.1.1 Labour Absorption Rate

The labour absorption rate of 45.46% indicates that less than half of the Cape Flats District's working age population was employed. Given the relatively high employment rate for the District, the labour absorption rate is lower than may have been expected. Again, this is due to a large proportion of "Other Not Economically Active" people.

2.4.2 Trends

Despite a rapid increase in population, the unemployment rate decreased from 31% in 2001 to 28% in 2011. The labour absorption rate has increased slightly from 44.66% to 45.46%, which indicates that the percentage of the population that has been employed has increased slightly while the labour force participation rate decreased from 64.7% to 62.18% over this period.

This indicates that there was a shortage of labour in the District, as there was an increase in population. The number of discouraged work seekers decreased quite largely over the same period.

2.4.3 Spatial Distribution of Employment

Unemployment distribution is shown for the various sub-places in the Cape Flats District in 2011.

The map below indicates that the Gugulethu/Nyanga Sub-district has the highest number of unemployed people. The sub-places with the highest unemployment numbers are Gugulethu which stands at 9036, followed by Manenberg (7539) and New Crossroads (5775). Other areas experiencing high unemployment include Lavender Hill (4713) Lotus River (3081) and Vrygrond (1986).

Thus, it can be seen that there are some correlations between areas with the highest densities in terms of population with accompanying high unemployment rates. These typically create distinct characteristics across the district with poverty pockets located where the population is concentrated in numbers.

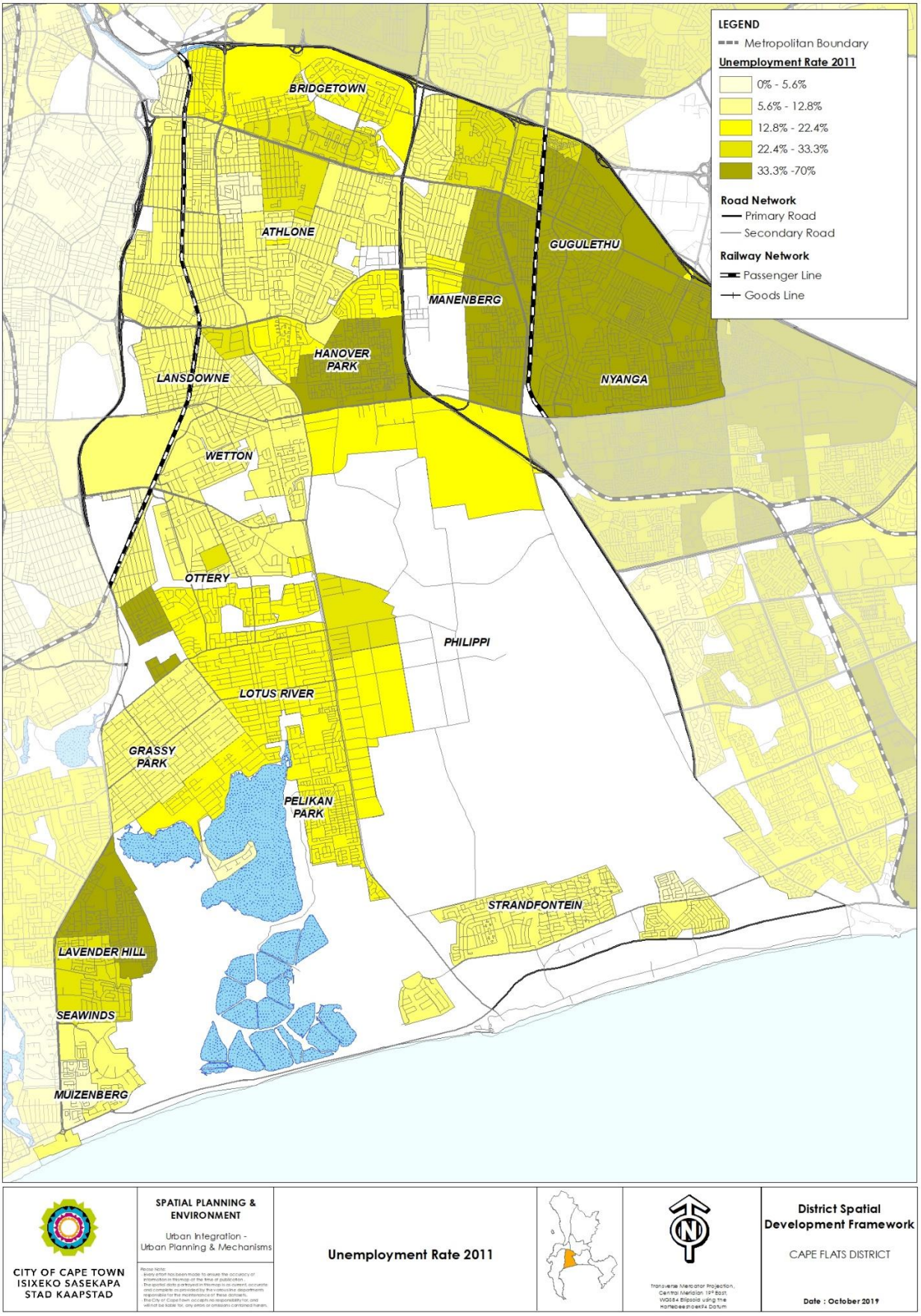


Figure 11: Unemployment rate, Cape Flats District

2.5 Income (Households)

The household income for the sub-places have been categorized into categories to represent the change in household income between 2001 and 2011. The mean household income has been used to represent the distribution of household income for the sub-districts. Table 11 and figure 13 below gives a more detailed representation of the household incomes by sub-place.

In both 2001 and 2011 the income group within which the highest number of households fall is R1-R1600. The graph indicates that the number of people with no income has decreased in 2011 while the number of households, which is a positive trend. This could be a result of more people being employed which aligns with the decreasing unemployment rate for the district. It seems that there has been a significant decrease in the number of households earning between R3201 and R51200 compared to that of 2001. It seems as if more households are earning less.

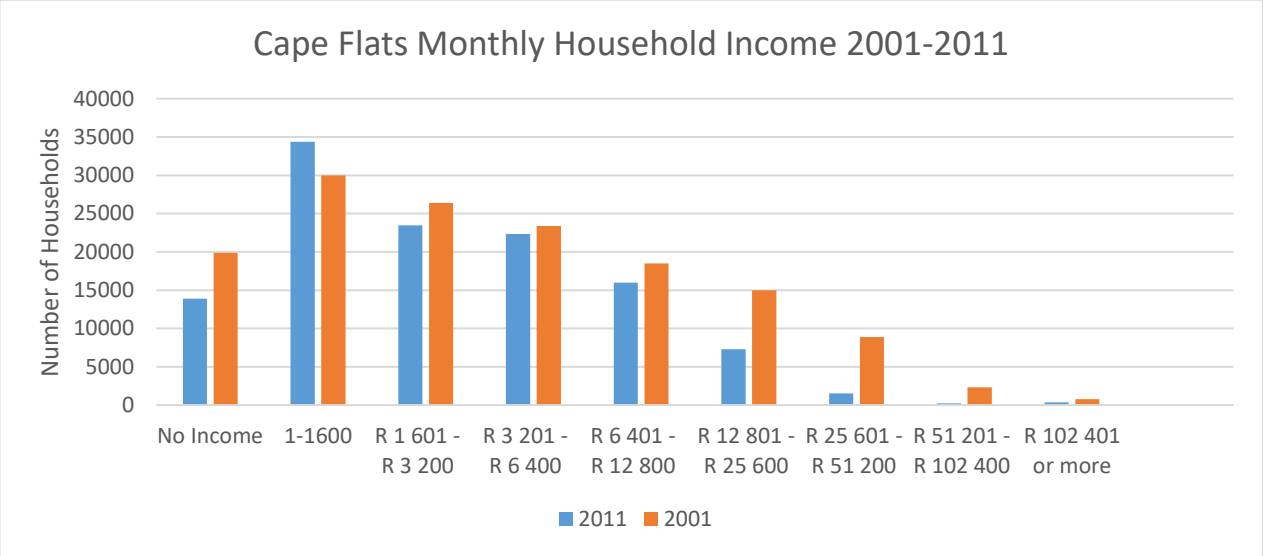


Figure 12: Graph showing monthly household income in Cape Flats District.

2.5.1 Spatial Distribution of household incomes

According to the 2011 Census, 14% of all households in the district had no income, 21% of all households in the district earn R1600 or less per month, most of which are located in the Manenberg- Gugulethu- Nyanga Sub-district. Approximately 18% of households fall within the R3201-R6400 income band while 13% earn between R6401 & R12800 per month. The districts highest income band (R102 401 or more) consists of 1% of the households.

From the map below it can be said that there exists great variation of household incomes in the district.

Figure 13 below represents the mean household income levels for all the sub-places within the district except those that have less than 10 households. It seems majority of the sub-places has a mean income of between R6401-R12800 and R12801-R25600. These numbers reflect the mean household incomes on the sub-places.

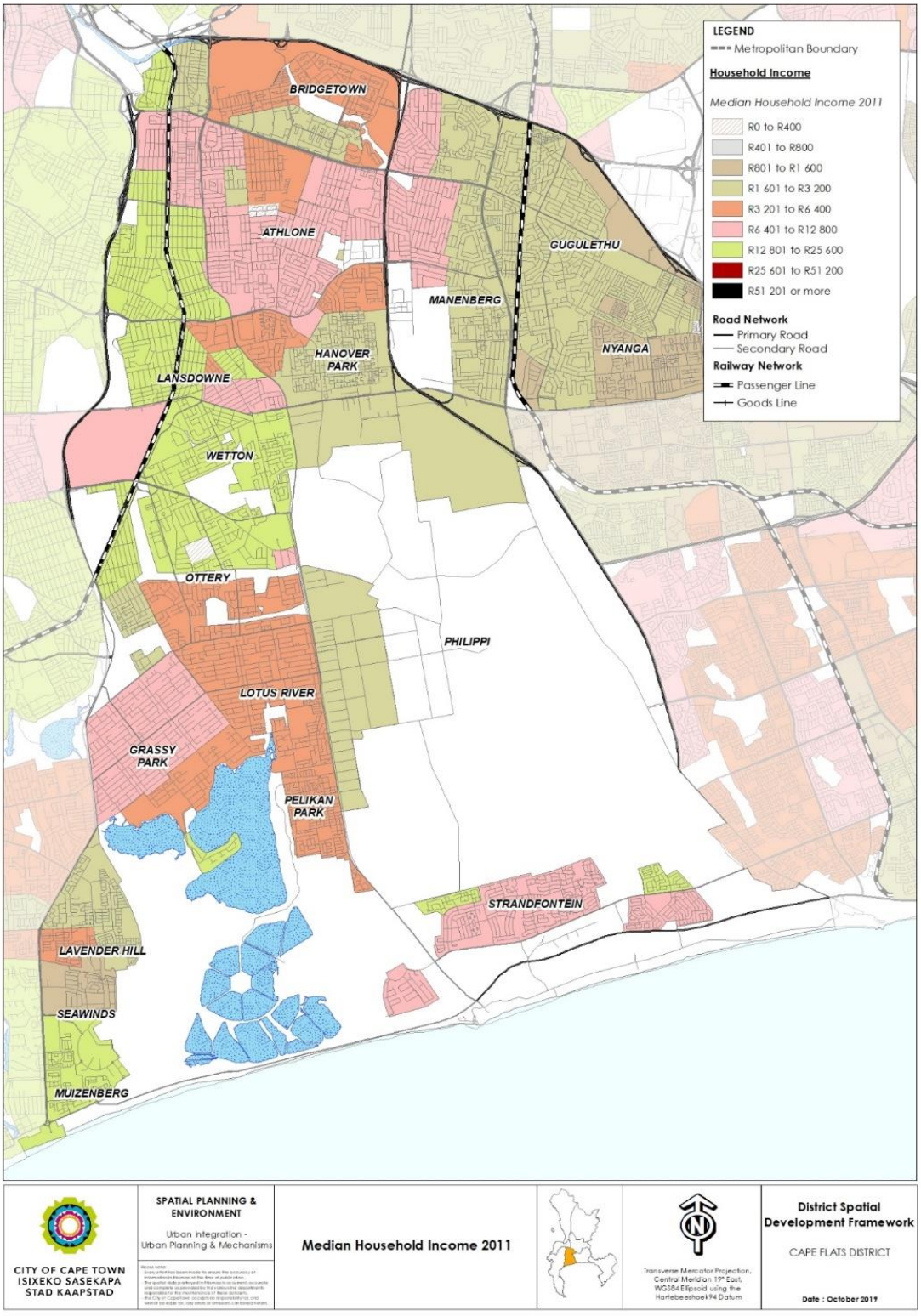


Figure 13 : Map showing Median Household Income by subplace for the Cape Flats District (Census, 2011)

2.5.2 Income Inequality

The Gini coefficient is an income inequality measure. The coefficient ranges from 0, which represents "absolute equality", to 1, which represents "absolute inequality" (Statistics South Africa, 2014).

Although Cape Flats Districts Gini coefficient is lower than the Cape Town average, it is the one of the most unequal district out of the eight in Cape Town. Interestingly, the Gini Coefficient for the district has remained constant between 2014 and 2018.

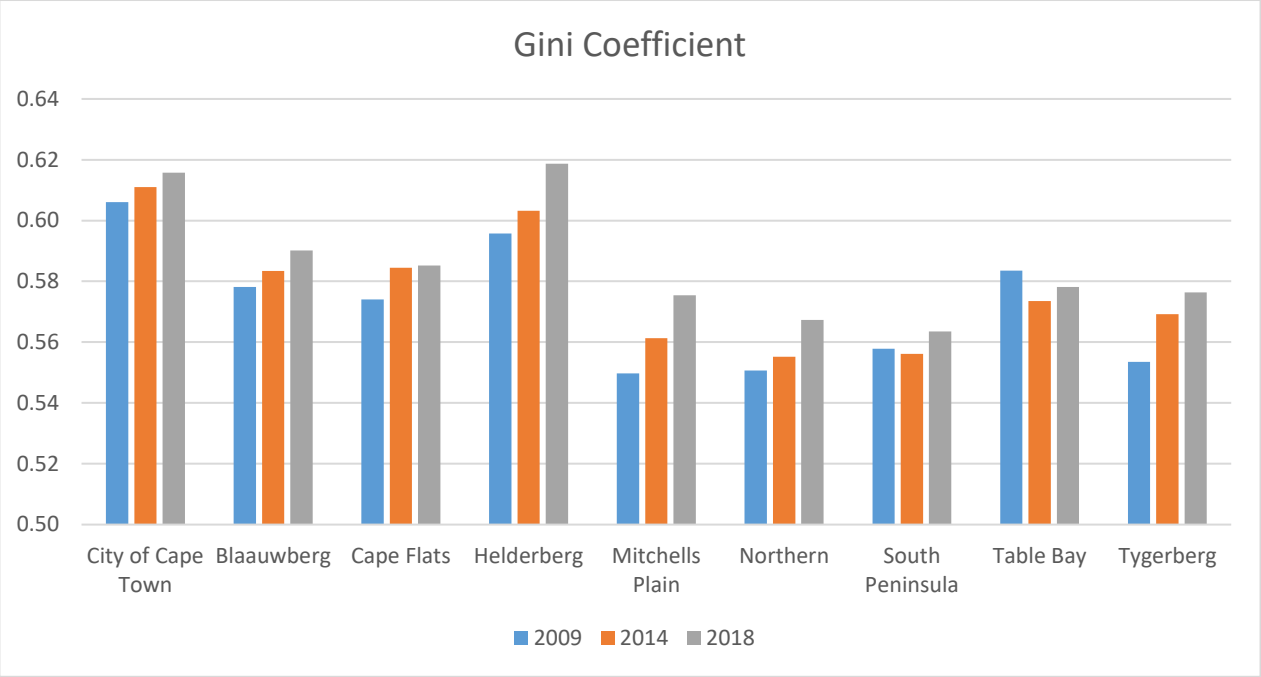


Figure 14: District vs Metro Comparison

2.5.3 Socio-Economic Indicators

The Human Development Index (HDI) is a composite indicator reflecting education levels, health, and income. The HDI ranges from 0, "no human development", to 1 which indicates "high level of human development" (United Nations, 2018).

Table 7: Human Development Index- District vs metro

District	Human Development Index (HDI)		
	2009	2014	2018
Cape Flats	0.71	0.70	0.66
City of Cape Town	0.70	0.73	0.74

The Cape Flats District has one of the highest HDI's out of the eight districts, well above the lowest in 2018, which was Mitchell's Plain/Khayelitsha with 0.66. The Cape Flats Districts HDI has been steadily decreasing from 2009 to 2018, at a faster pace than the City average. This is a negative indication for the District.

Summary of issues and trends

- The district has a relatively young population.
- The Index of ageing (number of aged relative to the number of youth expressed per 100) has increased from 18.99% in 2001 to 22.62% in 2011. This means that there are more people over the age of 65 in relation to those below 15 years.
- Areas of informality are concentrated in Gugulethu, Nyanga, Philippi and Seawinds/Lavender Hill.
- The highest concentrations of the population are located in the areas with the lowest household incomes and high unemployment numbers.
- Rapid population growth mostly in the informal settlement areas

Pressures & Constraints (Challenges)

- Invasion of the vacant land in the PHA.
- Limited economic opportunities in the district.

Integrated opportunities

- Utilization of remaining identified urban infill areas.
- Formalisation of the current areas of informality linked with creating opportunities for formal/informal employment.

Implications for spatial plan

- Ensure sufficient infrastructural capacity in focus areas.
- Ensure appropriate development and possible invasion of the PHA.

3 NATURAL AND HERITAGE ENVIRONMENT

The following section outlines the key environmental and heritage trends and spatial implications that have been identified for the District based on the Strategic Environmental Assessment, the City of Cape Town's State of the Environment Reports, the attributes for the district and other relevant policy documentation.

3.1 Status Quo, Trends and Patterns

3.1.1 Geology, Topography and Soils

3.1.1.1 Geology

The underlying rock formations of an area, i.e. the area's geology, comprise the foundation of its physical environment. The geology of an area is shaped by hydrological and weathering processes, which create the topography of the area. The underlying geology also gives rise to various soil types, which influence the indigenous fauna and flora of an area, as well as human agricultural practices.

The geology of the Cape Flats District is characterised by two geological units:

- **Cape Granite Suite**, which outcrops in the western portion of the district, in the Ottery area; and
- **Sandveld Group sands**, Quaternary aeolian sands characteristic of the Cape Flats area, which cover the remainder of the district.

In the Cape Flats District, the **Sandveld Group** is mainly represented by the Springfontyn Formation, which was developed through the deposition of windblown sand (an aeolian deposit) and consists of reddish to grey, unconsolidated quartzose aeolian sand. The Springfontyn Formation covers the north and north-western portion of the Cape Flats District, including Athlone, Manenberg, Ottery and the north-western portion of Philippi. The southern and south-eastern portion of the district, extending from Muizenberg across the Cape Flats and inland to Philippi and Manenberg, is characterised by the semi-consolidated aeolian sands of the Witzand Formation, with minor outcrops of the Langebaan Formation calcrete occurring in the south-eastern corner of the district.

3.1.2 Topography

Geology determines topography by influencing the slopes and soils in an area. A number of different morphological units, classified on the basis of slope, rock type and surface material, are recognized within the Cape Flats District.

The district is characterised by flat plains typical of the Cape Flats, which cover most of the district. The majority of the district is very low lying, with extensive vleis and wetlands (Zeekoevlei, Rondevlei) particularly in the south-western portion of the district. Capricorn Park landfill, located in the south-western corner of the district, is one of the more notable topographic features in this flat area. A reasonably substantial dune field is present between Pelican Park and Strandfontein, with dunes reaching approximately 40 m amsl.

The coastline is the most dramatic topographic feature of the district. The long, sweeping beaches of Muizenberg and Strandfontein dominate this section of False Bay.

3.1.2.1 Soils

Soil is the uppermost layer of the ground. It is the product of mechanical and chemical weathering, determined by climate, the underlying material and the geological characteristics of an area. Soils have an important biological function in supporting plants and animals as well as an economic function in supporting agriculture.

The relatively simple geology underlying the Cape Flats District has given rise to soils with little variation. The majority of the district is covered by predominantly deep podzols (Ga), which are bleached, apedal (structureless)sandy or loamy sand soils that contain a diagnostic subsoil 4 ferrihumic horizon (podzol), enriched by the downward movement of organic carbon, iron and aluminium, which may become hardened or even cemented as a result.

The southern and eastern sections of the district are covered in deep, calcareous, apedal (structureless) grey regic sands (Ha). These soils have a sandy texture and a low fertility status, typical of coastal plains. The Cape Flats District contains the Philippi Horticultural Area (PHA), most of which has been classified as an 'agricultural area of significant value given its existing use' in the City's Agricultural Land Review. The south-eastern portion of the PHA has been rated an area of significant value given its potential and emerging agricultural use, while smallholdings are located on a narrow strip along the central part of the western border of the PHA (CoCT, 2008*b*).

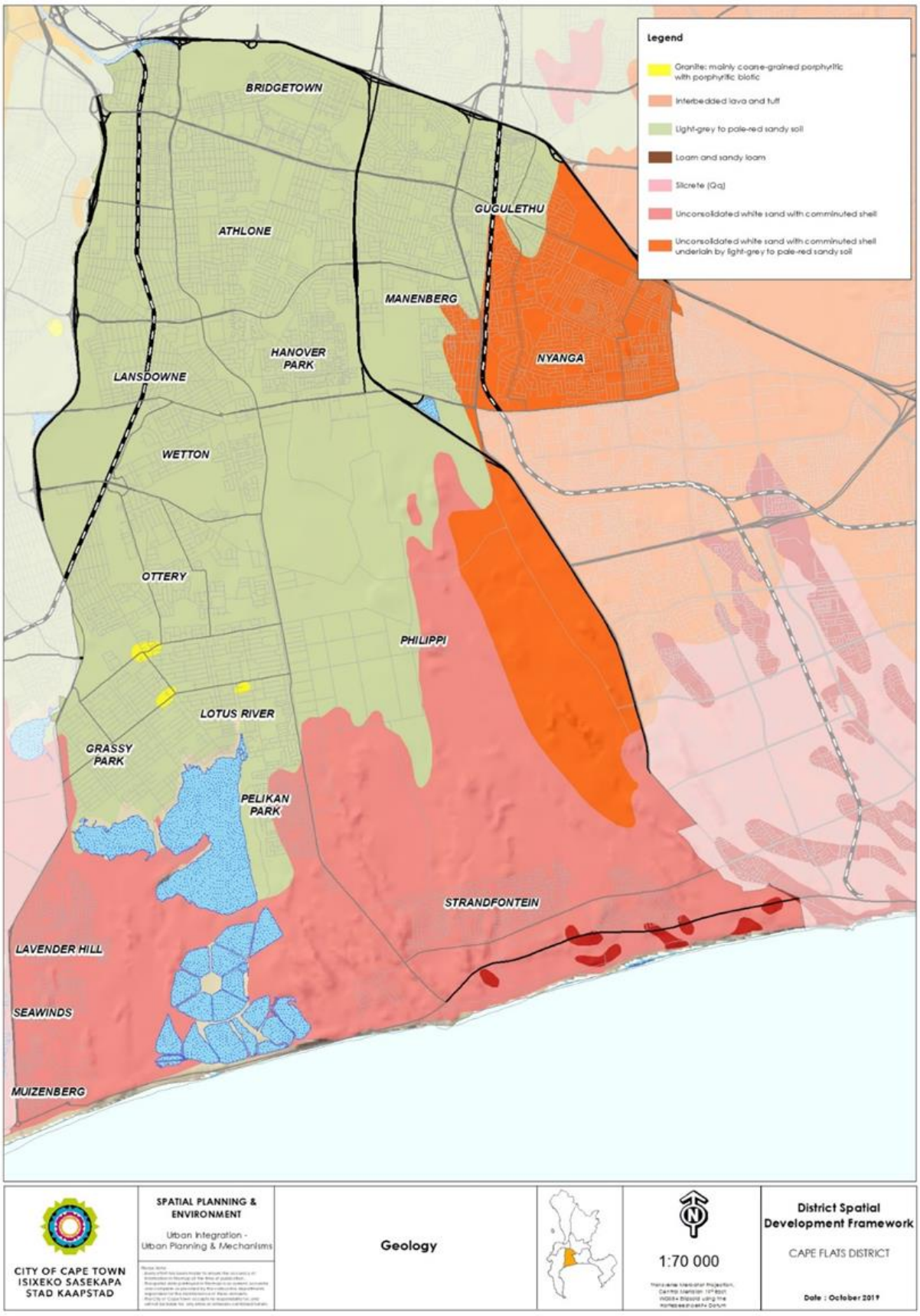


Figure 15: Geology of the Cape Flats District

3.1.3 Biodiversity

Biodiversity comprises the variety of life that clothes our terrestrial, aquatic (river and wetland), coastal and marine ecosystems; the many indigenous plant and animal communities within these ecosystems; as well as the genetic variety within and between the component species. It is not just a list of plants (flora) and animals (fauna), but a series of relationships in a complex web.

The City of Cape Town falls within the Cape Floral Region, which is one of the smallest but richest plant kingdoms of the world. Large parts of the Cape Flats District have been modified by urban development and agriculture. Biodiversity in the Cape Flats District is under threat from sand mining, continuing urban development, the expansion of agricultural areas, increasing fire frequency and infestation by invasive alien plant species. The district does contain remaining tracts of two Critically Endangered and one Endangered vegetation types, namely:

Table 8: Subset for the Cape Flats District of the 20 National Vegetation Types in Cape Town and their National Ecosystem Status

Vegetation type	Historic area in CCT (ha)		Area of Vegetation Remaining (ha)		% Remaining of Historical	% Historical Proclaimed/ managed	Ecosystem Status
	2009 Biodiversity network report	2018 SoER	2009 Biodiversity network report	2018 SoER			
Cape Flats Sand Fynbos	54 400	54 400	8 500	5 951	11.0	2.3	Critically endangered
Cape Flats Dune Strandveld	40 000	40 000	19 100	18 315	44.4	23.8	Endangered
*Cape Lowland Freshwater Wetland	1 500	1 500	1 100	1 100	15	8	Critically endangered

*Indicates vegetation types that have insufficient habitat remaining to meet minimum national targets. Italicized and bolded vegetation types are endemic to Cape Town and can only be conserved within the city area.

3.1.4 Fauna

All development applications must be informed by the National environmental web-based screening tools for EIA's (https://screening.environment.gov.za/screeningtool). This initiative consists of a number of spatial biodiversity priority and feature layers that details ecosystem and species level data to assist in identifying sensitive areas and needed specialist assessments. It is also important to note that while the information detailed here was current at the time of writing, taxonomic and status changes occur from time to time. As such, it is critical that the latest available information must always be sourced and utilized during decision-making processes.

Little is documented about the fine scale distribution of fauna species within the City of Cape Town (CCT). Even for better-known groups, such as mammals, species lists are generally available only for isolated sites such as for the proclaimed nature reserves. This being the case, very little quantitative data is available for each district. This is particularly evident with the invertebrate fauna and limited work has been done on these groups. There are undoubtedly numerous endemic and threatened invertebrate species within the City and certainly a number that have not yet been described. It is hoped that a protected area network that adequately conserves all the vegetation types and habitats in Cape Town, would conserve a representative suite of invertebrates. It is important to note that the invertebrate fauna is a critical component in all ecosystems. Many plant species are completely reliant on insects as pollinators and seed dispersers. The only groups of insects that are relatively well known are the butterflies and Odonata (dragonflies & damselflies) and these are discussed briefly in the relevant section below.

3.1.4.1 Fish Fauna

Due to the lack of large perennial river systems, only two indigenous freshwater fish species are recognized as occurring within the boundaries of the CCT. The Cape Galaxias (*Galaxias zebratus*), is known to still occur in many of the waterbodies in District G. The Cape Galaxia has been shown to be a species complex consisting of numerous taxa across the Western Cape. Ongoing genetic work will eventually allocate the populations within the CCT to species level. While there are at least two distinct lineages of G. zebratus present in the City, it is not clear to which lineage the Galaxias in District G belong. As the taxonomic status of these lineages has not been resolved and their conservation status has not been assessed, it is best to consider the presence of any Galaxias as being of conservation significance within the CCT.

The Cape Kurper (*Sandelia capensis*) is found throughout much of the Cape Floral Region. The latest taxonomic evidence has shown that what was previously thought to be one species actually represents a species complex of several taxa. The distribution and conservation status of each of these taxa needs to be defined. Within the CCT this fish has largely been eradicated from the Cape Flats and most remaining populations are in the upper reaches of streams and in dams in the mountain catchment areas. The occurrence of this species in District G is therefore unlikely, however should they be encountered this would be of conservation significance.

As there is a lack of clarity regarding the identity and conservation status of the freshwater fish species in the City, the presence of any indigenous freshwater fish is considered to be of conservation significance and would need to be carefully assessed.

Several rivers and inland waters (e.g. Rondevlei) within District G have invasive fish species which cause moderate to severe ecological impacts. These include Banded Tilapia (*Tilapia sparmanni*), Mozambique Tilapia (*Oreochromis mossambicus*), Carp (*Cyrpinus carpio*), Sharptooth Catfish (*Clarias gariepinus*) and Mosquitofish (*Gambusia affinis*).

The fish fauna section is based on information provided by Dean Impson, a CapeNature Fauna Resource Ecologist.

3.1.4.2 Mammalian Fauna

Of the 74 species of indigenous terrestrial mammals found or presumed to occur within the CCT, nine species are included in the 2016 Red Data Book of South African Mammals (Child, 2016). One of these is known to occur within District G. This is:

- Cape Clawless Otter (*Aonyx capensis*) – Near Threatened.

This species occurs along the coastline and uses most wetlands and rivers in the District.

Several species of bats are known to occur in the CCT but very little is known about their distribution. Any significant bat roosting sites identified within or near proposed developments would require a specialist report, which would assess the significance of potential impacts. All proposed wind turbine installations would need to consider potential impacts on bat fauna.

With regard to the larger terrestrial mammals which still occur within the District, such as Porcupines (*Hystrix africaeaustralis*) and Caracal (Caracal caracal), all have a national red list status of Least Concern. This indicates that the species are currently not threatened nationally. However, on a district or City scale, these species may be vulnerable as the populations may be small and or isolated and therefore potentially locally threatened. These species play an important role in the ecosystem and their continued existence in the District is important. Their future survival in is dependent on there being larger natural open spaces to ensure that viable populations exist and

persist. Ecological linkages that provide the opportunity for faunal movement between remnants is also critical for larger fauna. A critically important ecological corridor within District G is the coastal corridor, which links the False Bay Nature Reserve to other natural open spaces in in District H and F.

Of special interest in District G is the only herd of Hippopotamus (*Hippopotamus amphibius*) in the City of Cape Town. These animals were reintroduced to Rondevlei in 1981 after an absence from Cape Town of nearly 200 years.

3.1.4.3 Avifauna

Almost 400 species of bird have been recorded from the City of Cape Town. Of these, 51 species are listed as being threatened in the 2015 Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland (Taylor et al., 2015). Numerous threatened species that occur in the coastal and oceanic waters off Cape Town are pelagic seabirds which breed on islands in the Southern Ocean. These birds are therefore not associated with the mainland and need not be addressed in the EMFs. Also excluded are vagrant species which don't regularly occur in the City of Cape Town.

Of the bird species of conservation concern that are known to occur in District G, three are exclusively coastal. These are:

- The Endangered Cape Cormorant *(Phalacrocorax capensis)* feeds and roosts along the coastline but does not breed in the District. Large numbers occasionally roost within the Cape Flats Waste Water Treatment Works.
- The Near Threatened Crowned Cormorant *(Phalacrocorax coronatus)* roost and feed at along the coastline. They are associated with rocky coastlines and are there for limited to the few areas of suitable habitat in District G.
- The African Oystercatcher (*Haematopus moquini*) is classified as Near Threatened and is found along the entire coastline. They breed on the ground, just above the high-water mark in summer and as such are very sensitive to disturbance from recreational beach goers, dogs and illegal vehicle access onto the beach. There are several breeding pairs along the coastline of District G.

Many of the remaining birds of conservation concern are associated with wetlands. These include:

- The Near Threatened Old World Painted Snipe (*Rostratula benghalensis*) is secretive and therefore seldom recorded. They are often recorded at Rondevlei in the False Bay Nature Reserve but could occur in any wetland with shallow, vegetated fringes.
- Both African species of Flamingo, Greater Flamingo (*Phoenicopterus ruber*) and Lesser Flamingo (*P. minor*) are considered Near Threatened and occasionally visit the False Bay Nature Reserve. They do not breed in the area.
- The Great White Pelican (*Pelecanus onocrotalus*) is classified as Vulnerable and regularly visits the False Bay Nature Reserve.
- The Maccoa Duck (*Oxyura maccoa*) is Near-threatened and is regularly reported from the False Bay Nature Reserve where large numbers can be present at the Strandfontein Waste Water Treatment Works.
- The Caspian Tern (*Sterna caspia*) is Vulnerable and regularly recorded at False Bay Nature Reserve. It can also be seen occasionally along the coastline of the District.

- The migratory Curlew Sandpiper (*Calidris ferruginea*) is Near-threatened and subject to a global decline. In the District, they are common visitors to the False Bay Nature Reserve but can also occasionally be encountered along the coastline.

Raptor species of conservation concern include the following:

- The Vulnerable Lanner Falcon (*Falco biarmicus)* is occasionally recorded in the open areas in District G. They are not as frequent in urban areas as the Peregrine Falcon. They are not known to breed in the City of Cape Town.

- The Endangered African Marsh Harrier (*Circus ranivorus*) is dependent on extensive wetlands and is nationally threatened due to the draining and destruction of these wetlands. Within District G, there are several pairs in the False Bay Nature Reserve.

Important Bird Areas (IBA's) and other notable roost and breeding sites:

The False Bay Nature Reserve is a recognized Global Important Bird Area. The IBA includes the Cape Flats Waste Water Treatment Works (commonly referred to as Strandfontein) and the Rondevlei and Zeekoevlei wetlands. The diversity of habitats provide habitat for 76 freshwater bird species and coastal bird species. Birds also occur in abundance with up to 30 000 birds being present in some years (Marnewick, et. al., 2015).

Important roost and breeding sites:

In Philippi, there is an active water bird breeding site (a heronry) at Edith Stephens Nature Reserve and in the neigbouring wetlands at the Consol glass mine.

3.1.4.4 Amphibian Fauna

Of the 28 species of amphibian which occur within the CCT, 12 are considered to be species of conservation concern by the IUCN (https://www.iucnredlist.org). Three species are classified as Critically Endangered, two Endangered, five Near Threatened and two Data Deficient. Four species are endemic to the City of Cape Town boundaries.

Within District G, three threatened amphibian species are known to occur. These are as follows:

- It was thought that the Endangered Cape Platanna (*Xenopus gilli*) was locally extinct on the Cape Flats, with the only remaining Cape Town population occurring in the Cape Point Section of the Table Mountain National Park. The recent discovery of the species' continued existence at Kenilworth Racecourse Nature Reserve and the Rondevlei Section of the False Bay Nature Reserve is highly significant. These wetlands must be conserved, managed and protected from stormwater inputs going forward.

- The Endangered Western Leopard Toad (*Sclerophrys pantherina*) is occurs in suitable habitat through most of District G. They are known from the Edith Stephen's and False Bay Nature Reserves. They also occur at Royal Cape Golf Club and in the Philippi Horticultural Area. If the presence of this species are suspected on a site, then a comprehensive assessment would need to be conducted. The Western Leopard Toad Conservation Committee should be involved in proposed conservation or other activities that could affect this species. This would also ensure that the most updated distribution and breeding locality information forms part of the planning phase. Please see www.leopardtoad.co.za for more information.

- The Near Threatened Flat Caco (*Cacosternum platys*) is endemic to the City of Cape Town. Its global distribution is limited to the Cape Peninsula and the Cape Flats. It is not found in the mountainous areas of the Cape Peninsula and is limited to lowland wetlands. It is found at most wetlands throughout District D.

- The Near Threatened Cape Rain Frog (*Breviceps gibbosus*) only marginally enters western edge of District G. This species is not associated with wetlands or Cape Flats Dune Strandveld.

Potential species reintroduction:

- In the City of Cape Town, the Critically Endangered Micro Frog (*Microbatrachella capensis*) only occurs at the Kenilworth Race Course which is located in the neighbouring District H. This population is highly significant as it is the last remaining population on the Cape Flats and the City of Cape Town. Additional sites are being investigated for possible reintroduction of this species. One of the most promising sites is the Rondebosch East Common. The habitat is in the process of being restored and the potential reintroduction is being explored with CapeNature.

Amphibians are sensitive to environmental factors such as water pollution and/or altered hydrological regimes. The input of storm water and other effluent into wetlands can have a significant negative influence on amphibians and other biodiversity.

3.1.4.5 Reptile Fauna

Out of the 62 species of reptile found or suspected to occur within the CCT, six are considered to be of conservation concern (https://www.iucnredlist.org). Three of these are marine turtle species. Of the remaining three, only one occurs within District G:

- The Near Threatened Cape Dwarf Chameleon (*Bradypodion pumilum*) is found in natural areas as well as garden environments. The indiscriminate movement of these animals around suburbs by humans is problematic from a disease and genetic perspective. In addition, they are frequently taken into captivity as pets which is extremely detrimental to the animals and illegal.

3.1.4.6 Invertebrate Fauna

Little is known about the insect and other invertebrate fauna in District G. Ongoing research into invertebrates in Cape Town frequently elicits new species reflecting the high level of endemism within this area. Butterflies and Odonata (dragonflies and damselflies) are relatively well known and some information is provided for below.

Butterflies

Two highly threatened butterflies occur within the District. A brief summary of each of these butterfly species is included below.

- The Cape Freckled Ranger (Barber's Ranger) (*Kedestes barbarae bunta*) is classified as Critically Endangered (Morton, 2020 A). It is presently known only from a minute range (area of occupancy is less than 1 km²) in the Pelican Park section of the False Bay Nature Reserve

in District G. It is considered to be extinct from its former range of Steenberg and Retreat in the neigbouring District H. Most of the habitat in its former range has been destroyed by urbanization coupled with habitat fragmentation, invasive alien trees and increasing fire frequency.

- The False Bay Unique Ranger (*Kedestes lenis lenis*) is only found in the southern part of the Cape Flats and Cape Peninsula and has recently been upgraded to Critically Endangered (Morton, 2020 B).

Both of these Kedestes species are associated with Cotton Wool Grass (*Imperata cylindrica*) dune slack wetlands. Any such habitat in the historic range of these butterflies must be evaluated, both for the presence of these species and also as a potential site for possible reintroduction of either species in the species in future.

Dragonflies and damselflies (Odonata)

No Odonata of conservation concern are known to occur in District G.

3.1.5 Conservation areas

There are a number of protected areas in the district which mainly occurs in the south, except for the wetlands park to the north of the Philippi Horticulture Area(PHA). They include the following:

(a) The Edith Stevens Wetland Park
This community park has a medicinal herb garden, a vegetable garden, a flood retention pond with a bird hide and an indigenous plant nursery run by Working for Wetlands. It is a community park with a key focus on environmental education through projects such as the Primary Science Programme, but also conserves significant wetland vegetation.

(b) The False Bay Nature Reserve consists of six sections namely Rondevlei Section, Zeekoevlei Section, Zandwolf Coastal Section, Slangetjiebos Section, Strandfontein Birding Area Section and Pelican Park Section. The reserve has been declared a Wetland of International Importance (a Ramsar site), one of only 23 in South Africa and the only truly urban one.

- The Rondevlei section (290 ha)
  The reserve contains a permanent wetland with Cape Flats Sand Fynbos to the north, and seasonal wetlands and Cape Flats Dune Strandveld in the south. It is an important bird sanctuary and also accommodates hippos. The reserve also includes a museum, an auditorium, a network of footpaths, viewing towers, and several bird hides named after well-known birders.
- The Zeekoevlei section (344 ha)
  The reserve shares its northern and western boundary with residential areas and is a popular picnicking, sailing and fishing spot. A large variety of waterbirds frequent the vlei, including pelicans, flamingos, sandpipers, herons, oystercatchers and gulls.
- The Zandwolf Coastal section up to Wolfgat Nature Reserve: ± 815,7 ha
  The Zandwolf coastal strip acts as the corridor connecting False Bay Nature Reserve to Zandvlei Nature Reserve in the west and Wolfgat Nature Reserve in the east and makes up nearly a third of the False Bay Nature Reserve area. Thus, it links the conservation areas of the Table Mountain range with the Hottentots Holland mountain range and acts as a reservoir for faunal movement between these mountain ranges.
- Slangetjiesbos section (220 ha)

This section is centred on three spine dunes that rise to 20 m above sea level. The primary dune system forms an almost continuous barrier, running east-west along the northern edge. The area is very rich in plant species. The section has not yet been proclaimed, but its conservation significance has been recognised and conservation management consist mainly of clearing invasive alien vegetation.

- Strandfontein Birding Area section (387 ha)
  This area was originally made up of naturally occurring wetlands. The Cape Bird Club has been active in the area for more than 50 years by recording bird species and numbers on a regular basis. Much of the vegetation around the sewage detention pans has been altered or displaced with perennial grasses and other invasive alien species over time.
- Pelican Park section (244 ha)
  Pelican Park has been proclaimed as part of the reserve, even though this area was intended for residential development. Due to growing awareness of its ecological significance it has allowed some land to be set aside for conservation.

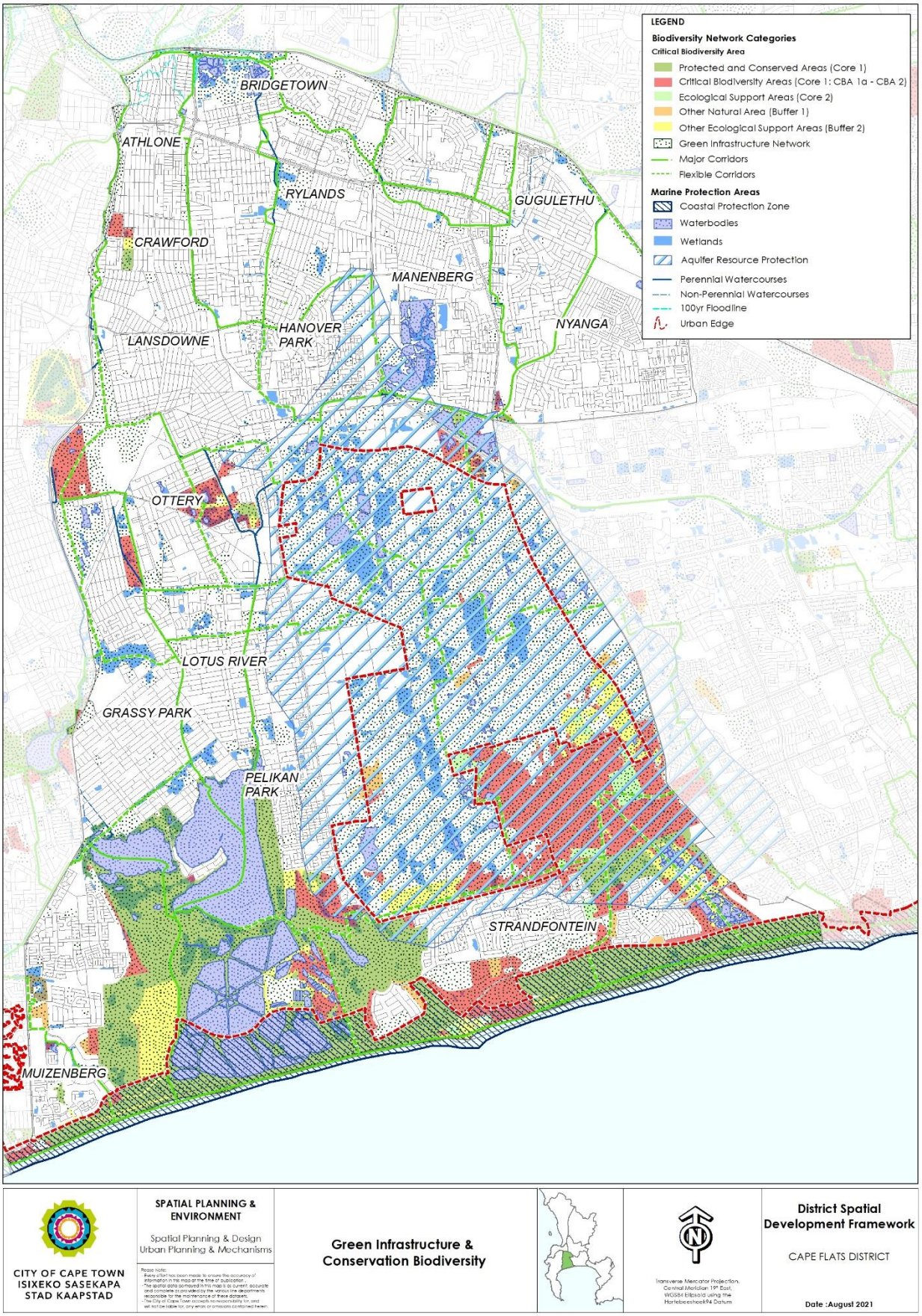


Figure 16: Green Infrastructure and Conservation Biodiversity of the Cape Flats District.

3.1.6 Hydrology

The pollution and degradation of rivers, wetlands and groundwater systems within the Cape Flats District are critical issues. The hydrology of the Cape Flats, much like the Cape Flats dune system, has been modified over time with the canalisation and re-direction of river systems to allow for ever-expanding urbanisation. This has resulted in the altered drainage patterns and catchment divides on a quaternary and quinary scale. The altered natural system has put strain on the underlying CFA, with portions becoming increasingly polluted from industrial runoff, informal settlements, cemeteries and fertilization in the PHA area, and winter flooding due to increased recharge to the aquifer.

3.1.6.1 Rivers and Estuaries

Rivers

A number of rivers run through the district. In the northern part are tributaries of the Salt River namely:

- The Kromboom River (on the border to the Southern District)
- The Blomvlei River and
- Parts of the Vygekraal.

These rivers flow through Rondebosch (Kromboom River), Athlone and Belgravia (Blomvlei River) and Silvertown to Gugulethu (Vygekraal).

The two southward flowing rivers in the district are the Little Lotus River and the Big Lotus River, which drain the western Cape Flats and flow into Zeekoevlei. These rivers used to be seasonal wetlands which have been canalised in the course of development and urbanisation of the Cape Flats.

All of the rivers in the Cape Flats District, but particularly the Big and Little Lotus Rivers, have lost most of their natural riparian habitat and their environmental functioning has been seriously compromised. Rivers have been degraded by pollution from agricultural and urban stormwater run-off, treated effluent from WWTWs and new industrial areas, extensive canalisation as well as infestation by invasive alien fish and vegetation. As a result, the rivers in the Cape Flats District have one of the worst health statuses of all rivers assessed in the greater Cape Town area by the River Health Programme. The health of the Vygekraal was classified as poor to unacceptable with the Big Lotus River health classified as poor according to the River Health Programme, 2005.

Table 9: Health status of major rivers in the Cape Flats District

River	River health*	Most notable problems
Vygekraal	Poor to unacceptable	• Canalisation • Release of treated effluent from urban areas and run-off • Littering • Infestation with alien vegetation • Infestation with alien fish in lower reaches
Lotus River	Poor to unacceptable	

Source: River Health Programme (2005)

Estuaries[1]

There are two estuaries along this section of the False Bay coastline namely:

- The Sand River (also known as Zandvlei) estuary

[1] *Source : Coastal Management Programme, 2014, C.A.P.E. Estuaries Programme, Estuary Management Plan: Eerste River Estuary, Prepared by Coastal & Environmental Consulting*

This is on the border with the southern district and is formed by a river that discharge into False Bay. The Sand River estuary is known to have a moderate fish community in terms of species richness and composition.

- Zeekoevlei canal outlet
  The Zeekoevlei River Estuary encompasses the catchment drainage area of the Big and Little Lotus Rivers and Zeekoevlei and is the outlet of the Zeekoevlei. The outlet channel extends from the Zeekoevlei weir to the sea (a distance of approximately 3km). The channel also receives final sewage effluent from the Cape Flats Waste Water Treatment Works (WWTW) and, as such, it forms an important component of the City's urban drainage system. In addition, Baden Powell Drive crosses the Zeekoevlei outlet channel a short distance upstream of its entry point to the sea. It is highly unlikely that this system retains any true estuarine characteristics due to the significant alteration of the flow regime and channel, and the impact of discharges from the WWTW. The Zeekoevlei outlet canal has no fish communities.

Both the Sand River estuary and the Zeekoevlei outlet canal are considered to have poor aesthetic states and have poor water quality.

Table 10: Status of estuaries in the Cape Flats District.

Estuary	Overall water quality*	Overall aesthetic state
Sand River Estuary	Poor	Poor
Zeekoevlei Outlet Canal	Poor	Poor

*Note: The order of rankings is Good, Fair/Moderate, Poor (Harrison *et al*., 2000)

3.1.6.2 Wetlands

The Cape Flats District contains two large wetlands namely Zeekoevlei and Rondevlei. Zeekoevlei measures 256 ha and is shallow with a mean depth of 1.9 m, although lake levels fluctuate by an average of 0.5 m between winter and summer. The lake is fed by the Big Lotus River and the Little Lotus River.

Although the surface waters of Zeekoevlei and Rondevlei lakes are physically separated, the vleis area linked via groundwater to each other as well as to the general pattern of sub-surface water movement across the Cape Flats, which moves in the general direction of False Bay.

There are a number of other wetland areas in the district, particularly in the Philippi Horticultural Area, which contains a large number of smaller dams and waterbodies.

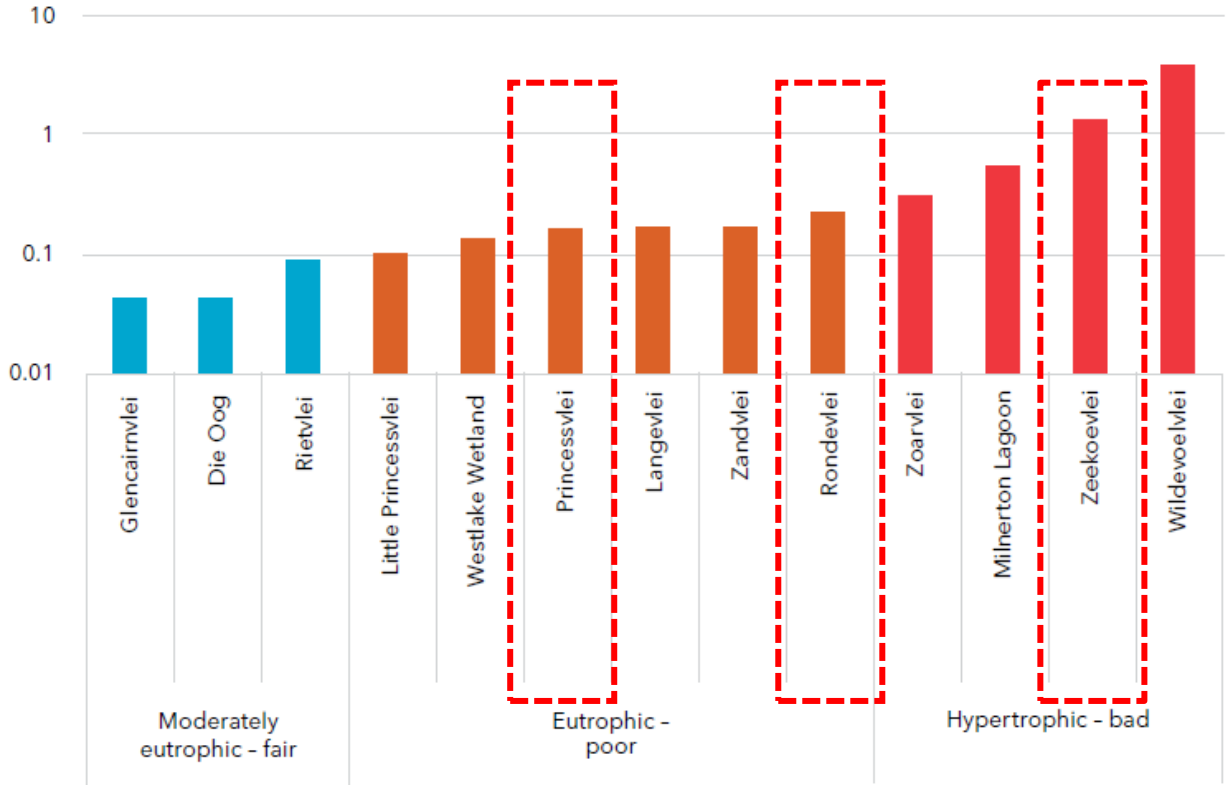
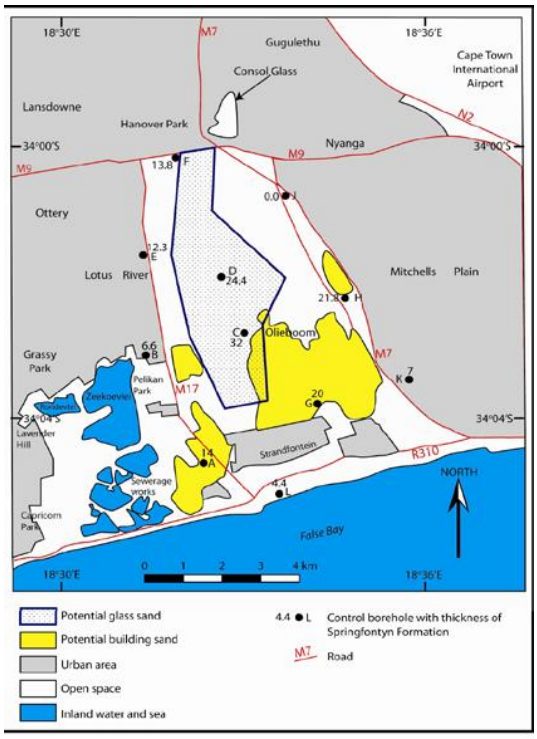


Figure 17: Trophic tendency in wetlands and vleis during 2016

Ecosystem health is determined through analysing the trophic state (extent of nutrient enrichment) or the ecological condition of a water body. The concentration of phosphorous in these water bodies is used as a proxy measure to identify this trophic state. Phosphorus is commonly identified as a key nutrient pollutant in urban and periurban areas. It can be seen that Rondevlei in the district has faired poorly and is in eutrophic whilst the Zeekoevlei was in hypertrophic state, which is an indication that these water bodies have poor ecosystem health.

3.1.6.3 Groundwater

False Bay Nature Reserve overlies the Cape Flats Aquifer (CFA). The CFA covers an area more than 400 km^2 and extends from False Bay in the south to Tygerberg Hills and Milnerton in the northeast and northwest, respectively.



Both natural (due to groundwater saturated sands) and artificial (from irrigation ponds and irrigation return flow) wetlands are common in the PHA, especially in the northwestern corner (e.g. Varkensvlei) and within the PHA area east of Punt Road (e.g. Lindesdam area) during winter (UMVOTO Africa (Pty) Ltd, 2017).
Significantly, the PHA is situated on a paleo channel within the CFA which has the greatest groundwater potential.

Parts of this aquifer are protected and most notably the sections underlying the Pelican Park section and part of the Slangetjiebos section and section of the False Bay Nature Reserve. Due to the aquifers' proximity to the sea and frequent extension to below sea level, coastal aquifers are vulnerable to saline water intrusion, especially if there is excessive abstraction or mismanagement of groundwater. Careful control of abstraction rates is thus important to preserve the quality of the groundwater.

According to the Indego Report, farmers have indicated that there are water quality differences spatially and seasonally in the PHA, with the southern part of the PHA having the best water quality and greatest water availability throughout the year. Despite these differences, however, the quality of groundwater in the PHA is generally good for agricultural usage.

3.1.6.4 Drought

The Cape Flats aquifer is an important source of irrigation water for vegetable farming in Philippi. The recent drought that was experienced in Cape Town has placed pressure on finding additional resources to provide in the demand of water. The Cape Flats aquifer was one of the areas identified as part of the water augmentation scheme and detailed aerial mapping was done to find suitable extraction points.

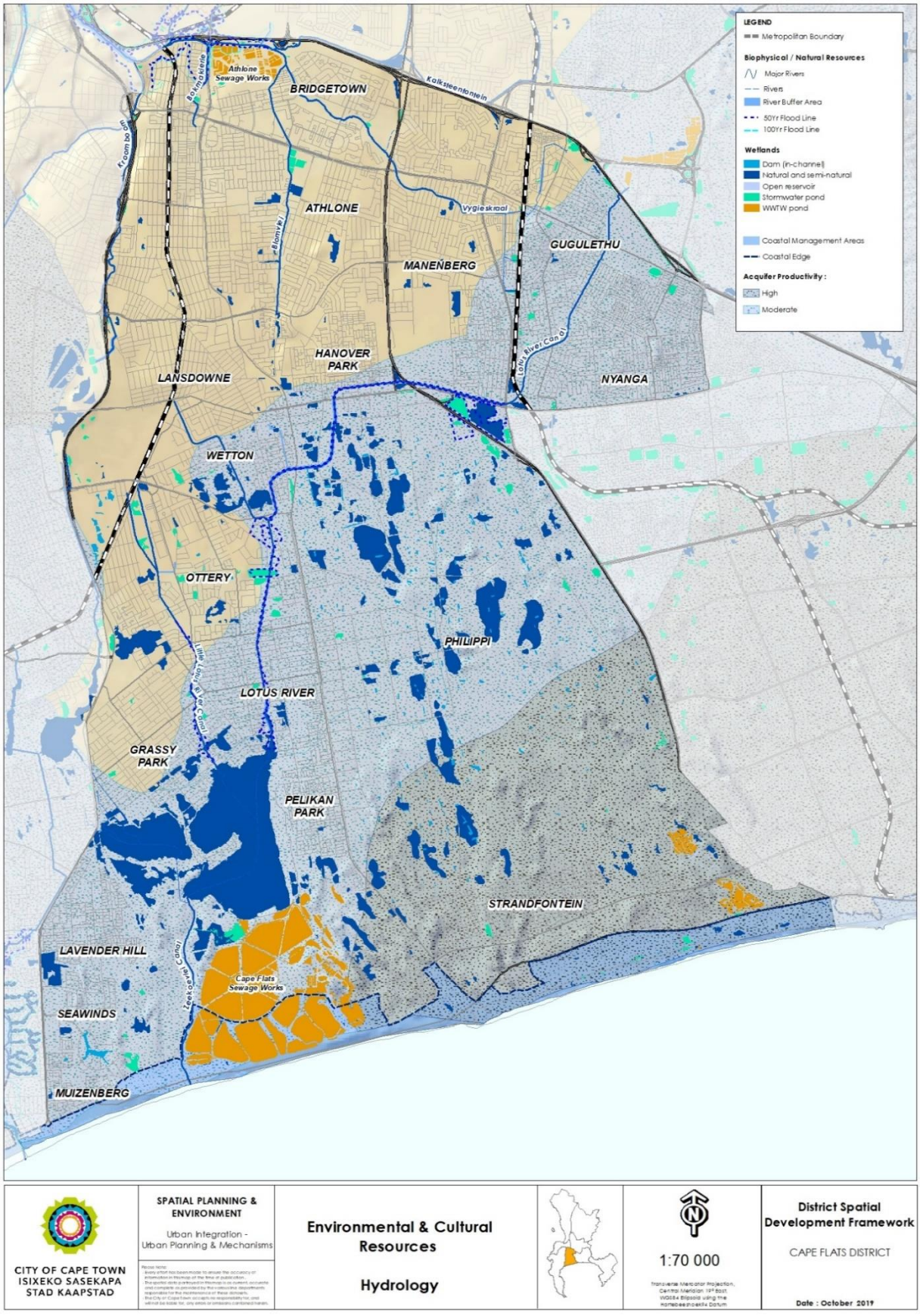


Figure 18: Hydrology Map, Cape Flats District

3.1.7 Coastal Areas and Dunes[2]

3.1.7.1 Coast

The district is bordered on the south by the False Bay coastline, which includes the beaches of Muizenberg and Strandfontein. The coastline is predominantly sandy with a rocky outcrop at the Strandfontein Pavilion and is vulnerable to erosion. False Bay is particularly sheltered due to its large bay area. Low wind speeds and weak currents during winter result in reduced mixing and circulation in the sheltered area of False Bay. Reduced mixing and circulation in these areas results in stagnation and trapping of poor-quality water close to the shoreline.

The sandy shores support a lower species richness than a rocky shore which offer a high variety of habitats. Both beaches are well maintained and this is evident from the fact that Muizenberg has held Blue Flag status for 8 years and Strandfontein for 5 years. The Blue Flag status programme assess beaches based on the levels of safety, amenity, cleanliness, environmental information and management thereof. A Coastal Protection Zone, in which coastal processes such as erosion, accretion, Aeolian activity etc. can take place, has been delineated to act as a 'buffer' between dynamic coastal process and the built environment.

Coastal nodes have been identified for intensification at Strandfontein with forms of development that support their function as a point of attraction, without detracting from it. These nodes make responsible use of the social and economic benefits of the coast, certain public spaces, historical and biophysical assets. It may include a range of functions from businesses (shops, services and restaurants), social facilities (including recreation and resorts) and residential development.

3.1.7.2 Dunes

A major dune system is situated along the coastline between Pelican Park and Strandfontein, with dunes reaching approximately 40 m amsl. These dunes have been impacted on by a range of activities, including recreational use, road infrastructure, urban development and illegal settlements, sand mining and agriculture as well as invasive alien plants.

The most obvious feature of coastal dunes is the gradient they present towards the land (away from the wind). The dune shapes found along the Cape Flats are typical of wave-dominated sandy shorelines and comprises embryo, parabolic and sand sheet dunes as well as undulating dune flats.

Partially vegetated dunes are present along almost the entire coastline of the district, with the exception of the immediate vicinity of the Strandfontein Pavilion. Wind-blown sand along the coastline of the Cape Flats District is problematic and result in higher maintenance costs, as sand blows across roads and builds up against walls, roads and fences.

Table 11: Dune status within the Cape Flats District

Dune Type	Location	Ecosystem Status	System Type	Impact	Impact Level
Embryo	False Bay - Muizenberg	Partially vegetated	Embryonic	Dissected by road; recreation	Moderate
Embryo	False Bay - Strandfontein	Partially vegetated	Embryonic	Dissected by road; recreation	Moderate
Undulating dune flats	Cape Flats - Zeekoevlei	Stabilised sand flats	Regressive inland	Acacia; urbanisation; fragmentation	Very high
Undulating dune flats	Cape Flats - Rondevlei	Stabilised sand flats	Regressive inland	Acacia; urbanisation; fragmentation	Moderate

[2] State of the Environment Report, 2018

Dune Type	Location	Ecosystem Status	System Type	Impact	Impact Level
Parabolic dune field	Cape Flats - Schaapkraal	Stabilised sand flats; partially exposed	Regressive inland	Acacia; agriculture; dwelling; tracks; sand mining	Very high
Parabolic dune field	Cape Flats	Stabilised; exposed sand flats; localised underlying limestones	Regressive inland	Acacia; urbanisation; agriculture; dwellings; informal housing; dumping; sand mining; tracks; fragmentation	Very high
Sand sheet	Cape Flats - Schaapkraal	Mobile sands; bare/partially vegetated	Regressive inland	Acacia; urbanisation; agriculture; sand mining?; informal housing; dumping	Very high
Sand sheet	Cape Flats	Mobile sands; bare/partially vegetated; mining depressions transformed into water bodies	Regressive inland	Acacia; sand mining	Very high
Sand sheet	Cape Flats	Shifting sands; bare/partially vegetated	Regressive inland	Acacia; tracks; agriculture	Very high
Sand sheet	Cape Flats	Mobile sands; exposed/eroded	Regressive inland	Encroaching acacia; sand mining	Very high

Source: Low and Pond (2004)

3.1.8 Agriculture and Mineral Resources

Agriculture

Agricultural land contributes significantly to the province and country's Gross Domestic Product. The MSDF designates the Philippi Horticulture Area (PHA) as a Unique Area, which is under threat from development pressure and illegal activities taking place in the area.

Philippi Horticulture Area

The Philippi Horticultural Area (PHA) is approximately 2 100ha in extent and plays a significant role in supporting food security at a metropolitan scale. The Cape Flats Aquifer (CFA) is an integrated underground water system covering 630 square kilometres, which has the potential to supply the City of Cape Town with 30% of its potable water needs. It is however almost entirely covered by impermeable substrates like tar and concrete, and the last remaining area that has not yet been developed is in the PHA. Essential to the health of the CFA is its recharge zone – the above-ground catchment area. The PHA farmlands and wetlands form the last natural green space where rainfall can permeate freely into the underground aquifer, a process integral to its survival. Thirty percent of the PHA floods during winter months, creating numerous seasonal wetlands. These wetlands are habitat to 98 bird species and play a vital function in 'recharging' the aquifer. Transforming any more of the PHA farmlands will starve and may eventually destroy the aquifer.

The PHA is split into three discrete areas namely:

- *The Philippi Farming Area (PFA)*

This has been identified as the area for horticulture and farming. However, further investigation and work is required with regard to the northern section which is currently included in the PFA.

- *Southernmost area*

This is inclusive of the Rapicorp/Oaklands and MSP/UVest areas. These areas forms part of the IGA based on the land use rights that have been granted. It is considered as core farming area and the ideal future designation should be Critical Natural Assets.

- *Remainder area*

This area is inclusive of Highlands Estate, as well as a far western area between Knowle Park and the Lotus River canal. The roll-out of the planned IRT in this area could justify a future amendment to the north-western area abutting Strandfontein Road to IGA or Urban Inner Core (UIC).

In addition to the above the Indego report notes that farmers are currently producing on 1200 ha of land with yields of approximately 3 – 4 harvests annually. It further notes that a survey that was done in September 2017 reflected that there were approximately 35 farmers active in the PHA. Furthermore, 5 of the farmers could be classified as "large" commercial farmers owing to the scale of their operations. The total area currently set aside for farming in the PHA is 1,884 hectares with just over 1,000 hectares having water available for irrigation. The productivity of land within the PHA varies in relation to the quality and quantity of water available and on the level of soil degradation. The southern portion of the PHA is regarded as the most productive land.

Mining

Much of the Cape Flats District contains an economically significant sand resource, which underlies the central portion of the district from Zeekoevlei and Schaap Kraal northwards. Philippi is one of the three major sand mining areas in the broader City of Cape Town metropolitan region (the other two being Macassar and Malmesbury). The uses for this sand include: fill, mortar and, to a lesser extent, plaster and concrete.

According to the Indego report, a large portion of the overlying Aeolian sands of the Witzand Formation has been mined, with the remaining resource being pushed further and further south. The surface outcrop over much of the PHA is currently represented by the Springfontyn Formation (or a very thin drape of Witzand Formation). The Witzand formation is mined down to its base which is predominantly 1 metre above the water level whereas the Springfontyn formation fulfils the requirements for glass manufacture. Consol Glass maintains that the PHA deposit is the best of its kind in South Africa and is a globally competitive resource (Consol Glass, 2011).

Furthermore, silica sand mining has a greater environmental impact than construction sand mining as it requires dredging into the CFA and the creation of a pond. This is problematic in the PHA, given its situation over the part of the CFA with the greatest groundwater potential. I also has a major negative visual impact and unlike the extraction of building sand, silica-mined sand cannot be rehabilitated for horticulture.

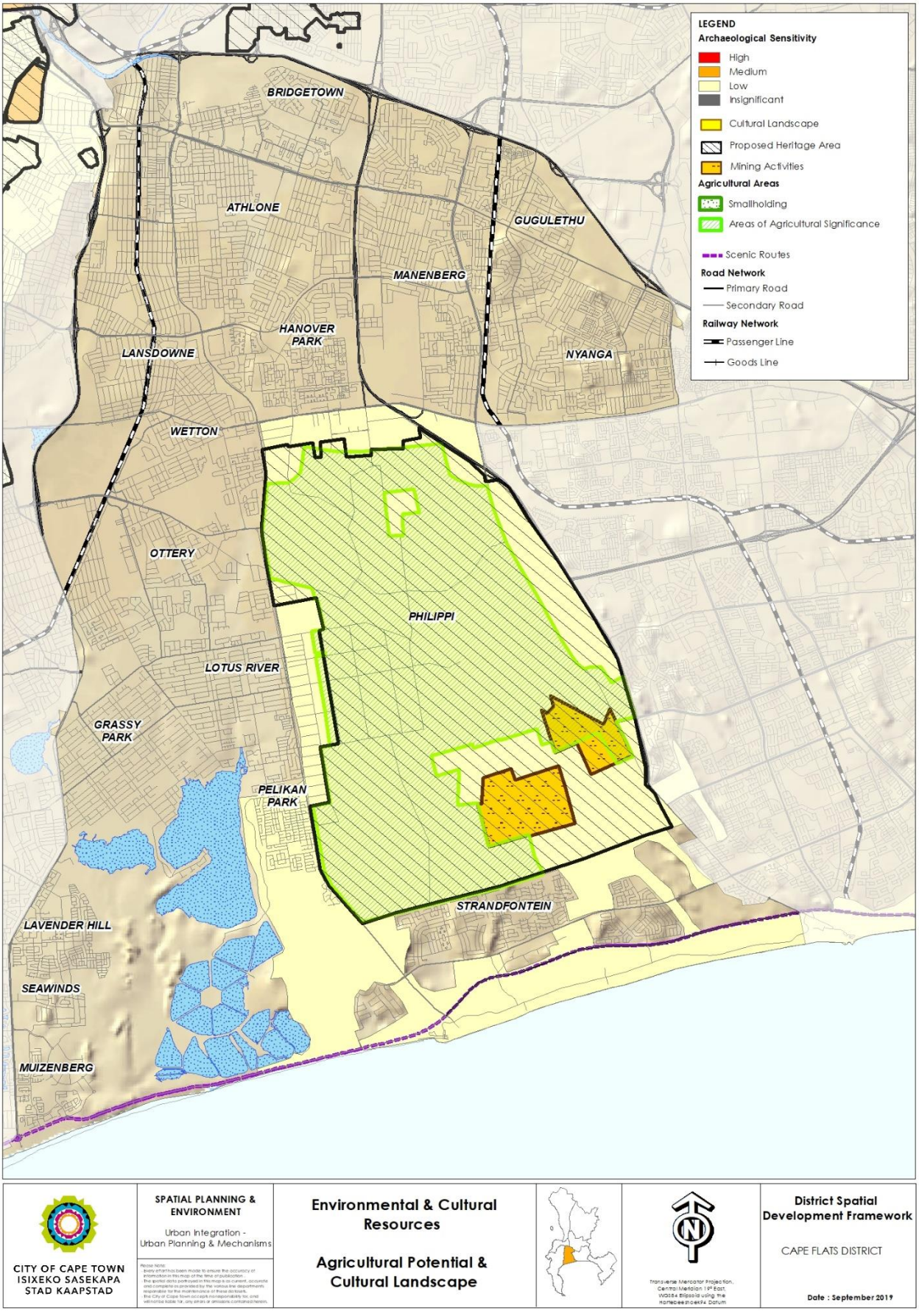


Figure 19: Agricultural potential, mineral resources and cultural landscape

3.1.9 Air Quality

The right to clean air is a basic human right. The quality of air is a key factor affecting the health of a city as air pollution represents a major health risk to residents.

Three main types of air pollutants are measured and reported on by the City of Cape Town, as follows:

- Nitrogen dioxide (NO_2)
- Sulphur dioxide (SO_2)
- Particulate matter (PM_{10})

In general, NO_2 levels have decreased over the past 12 years. They are generally within the guidelines standard. SO_2 levels have maintained low trends over the past 12 years, keeping within the guideline standards with discrepancies occurring every few years. However, PM_{10} levels are more problematic and have considerably increased at most sites over the years.

The City's Air Quality Management Plan outlines processes to monitor and manage air pollution. Management Actions include greening, community awareness and enforcing the City's air quality by-law.

3.1.10 Green Infrastructure

Green Infrastructure can be defined as "a strategically planned, designed and managed network of natural open spaces and 'engineered' ecological systems which provide ecological, community and infrastructure services.

In addition to further motivating for the protection of existing natural assets such as biodiversity and the coast, green infrastructure recognizes the role and importance of a range of urban green spaces or parts of the urban system, including but not limited to gardens, trees, parks, agricultural areas, rivers and wetlands, and storm water infiltration areas, and the role they play in providing ecosystem services, making the city more liveable, and building climate change resilience.

The City has mapped a green infrastructure network, (GINet) identifying and ranking green infrastructure services, the opportunities they present and benefits they provide.

The GINet is intended to be available on the CityMap Viewer accessible via the Open Data Portal.

3.2 Heritage and Heritage Management

Historically the Cape Flats was characterized by mobile dune fields with seasonal vleis. It was not particularly habitable and with the exception the harvesting of wild thatching reed and large game hunting around the vleis, the southern part of the district remained undeveloped until the mid 19th century when dunes were stabilized by the planting of Port Jackson and rooikrans and the Philippi Horticultural Area was established by immigrant German farmers.

During the mid-20th century, the Cape Flats formed the focus of the Apartheid town planning and people of colour living within the established areas of the City were forcibly moved to the Cape Flats.

The historical narrative of the establishment and development of Cape Town as a settlement and the City it is today, is reflected in its diverse cultural heritage and the wide range of heritage

resources that form our sense of identity. The narrative is not always a positive one, and in the case of the Cape Flats, the narrative is one of dispossession and the struggle for human dignity in the face of political and economic oppression. There has been an increase in the last 5 years of an indigenous or First Nation identity which is giving voice to communities on the Cape Flats to claim back their place within the cultural heritage of Cape Town.

3.1.11 Archaeological heritage resources

There is a relatively low archaeological signature in the Cape Flats District, possibly as a result of it being hot, dry and windswept in summer and wet and marshy in winter. Isolated stone artefacts and a human burial indicate that this area was frequented by indigenous people for many millennia prior to the establishment of the settlement at the Cape.

Isolated archaeological finds are still found on the surface e.g. 18th century smoking pipe found at the Edith Stevens Nature Reserve, but interpretation potential is limited given the lack of context of these finds. Also the coastal cliffs in the Wolwegat Nature Reserve contain fossilized animal bone: the remains of a hyena lair (about 45 000 years old) was discovered in the coastal cliffs in the 1960s.

Further to this, the PHA is reflected in a recent decision gazetted on the 20th April 2018 to provisionally protect the archaeological and paleontological sites, unmarked burials, landscape and natural features of cultural significance, and structures, situated on or at Cape Farm 738 and 767 ("Jobs Vlei and Ohloff Farm") in the PHA for a period of two years. This protection is granted in terms of Section 29(1)(a) of the Natural Heritage Resources Act, No. 25 of 1999.[3]

This area is known for its municipal bottle dumps (Browns farm and Nantes Park) as well as a number of historical cemeteries.

3.1.12 Cultural landscapes

3.1.12.1 Rural cultural landscapes

The Philippi Horticultural Area is the only remaining historical cultural landscape in the Cape Flats District. It had its origins in a project which looked at taming the Cape Flats (*de groote woeste vlakte*) by settling a group of German immigrant farmers in the area between 1877 and 1885. Approximately 100 families were relocated into this area which originally extended from Athlone in the north; Wynberg/Retreat railway line in the west and the Klipfontein Mission in the east. Presently, less than 10% of the original agricultural area remains, but for its size supports a significant number of people and in 2006 was producing for both local and international markets. According to the Indego report the German Church Complex in Springfield, Springfield Estate and Ottery Road precinct have been identified as having conservation-worthy building status.

Cultural landscapes in which living heritage/cultural practices take place need to be identified and included in the planning process so that these can be formalized and protected for future generations.

The PHA has been identified as a site for investigation for protection in terms of S31 of the National Heritage Resources Act for its environmental and cultural interest associated with the transformation of the landscape from an inhospitable dune field to a productive agricultural landscape. The area continues to act as a 'bread basket' despite challenges relating to crime, development pressure and illegal land-use. The PHA serves as a model for urban food sustainability

[3] Indego report

and contributes towards urban food security and contributes to the socio-economic benefit of (vulnerable) communities that work and live in the PHA.

3.1.1.1 Urban cultural landscape

The urban landscape of the Cape Flats is one shaped by Apartheid town planning. Little is known about the origins of Athlone, the oldest of the suburbs on the Cape Flats. It seems to have developed as an essentially smallholding area in the late 19th century on the eastern bank of the Krombooms river. Rapid urbanization of the early 20th century as well as the Forced Removals of the mid-20th century saw people of "colour" relocated to Athlone from District Six, Green Point and from other areas declared "white" under the Group Areas.

Grassy Park, Gugulethu, Nyanga have their origins in the Group Areas forced removals of the 1940s and 1950s. So-called 'coloured' people from e.g. Harfield village, Claremont and Constantia were relocated to Grassy Park, while (black) African people evicted from Retreat, Bo-Kaap and the inner city were relocated to Gugulethu, while Nyanga was the destination of people evicted from e.g. Parow, Goodwood and Bellville.

It is not surprising then that the Cape Flats developed as a focal point in the struggle against the inequalities of Apartheid. One of the challenges in heritage management is the identification of struggle sites and other sites of significance where the heritage significance is intangible and is not reflected or related to the fabric of the site or place, as well as the provision of social facilities or spaces/places to accommodate cultural events and practices.

A summary of the significance of heritage resources that have been identified in the Cape Flats District is given in Table 12.

Table 12: Heritage resources in the Cape Flats District

Heritage Resources	Characteristics	Heritage Significance	Heritage issues, concerns and comments
Existing proposed heritage / conservation areas Wetlands/ Natural area	• Edith Stephens nature reserve / park • Zeekoevlei • Pelican Park • Lotus River stormwater relief system • Strandfontein sewerage plant (bird life) • Varkensvlei forest reserve	• Heritage significance as being the remnants of a historical landscape which extended over much larger area	• Pollution from small industries and informal settlements • Powerline Strandfontein to Landsdowne Road creating CMOSS system • Unrealised potential as urban nature and recreational areas
Struggle sites	• Cape Flats is embodiment of Apartheid town planning • Zwelisha Drive site • Mahobe Drive site	• Need for memorialisation	• More research needed
Philippi agricultural area Proposed heritage area	• Vestiges of 19th century German agricultural enterprise including avenues, hedges, farming methods	• Remaining extent of last productive urban market gardens in Cape Town • Source of employment • Degree of continuity between the early settlers and the people who currently farm in the area	• Pollution of ground water from surrounding factories and informal settlements • Crime • Further subdivision of properties for non- agricultural use • Economic cost of retaining farms as viable agricultural lands • Development pressure ito housing • Intrusion of industrial enterprises into agricultural area
Athlone	• Wood and corrugated iron houses	• Fast disappearing style of prefabricated low income housing	• Erroneous perception that these houses are not conservation worthy • Aspirations of owners to improve living conditions

3.3 Heritage management

The intangible heritage of Cape Town includes the narrative of the Forced Removals, sites of struggle history and the living cultural practices of residents which include (but are not limited to) traditional access to sites and/or places and heritage practices (initiation; morning call to prayer etc.). One of the challenges in the long term planning of the City is the recognition of intangible/living heritage and the provision of social facilities or spaces/places to accommodate cultural events and practices.

3.1.2 National Heritage Resources Act, Act 25 of 1999

The NHRA comprises two levels of protection: Formal Protections and General Protections. The general protections include buildings older than 60 years (S34); archaeological and paleontological sites (S35); and burial grounds older than 100 years and graves of victims of conflict (S36). The City must ensure that all decision-making is informed and compliant with national legislation.

A list of places and spaces formally protected under the NHRA is included in Annexure 1hereunder.

3.1.2.1 Formal Protections

- Section 27: Provincial Heritage Sites: These are heritage sites have been formally protected in terms of Section 27 of the NHRA. While many were declared under the previous National Monuments Act (1969) they are Provincial Heritage Sites under the NHRA and are managed by HWC. These are places that are of exceptional heritage significance and are relevant across the Western Cape region.

- Section 30: Provincial Heritage Register: The Provincial Heritage Register is the formal protection in terms of the NHRA for individual local heritage resources (Grade III). HWC maintains the Heritage Register, which is a list of all the formally protected (Grade II) heritage sites as well as any other Grade III heritage resources. Sites are only placed on the Heritage Register once they have been gazetted in the Provincial Gazette.

- Section 31: The Heritage Area is the protection mechanism for geographical areas or places of environmental or cultural interest. HWC or The City (provided it has retained heritage competency) may, by notice in the *Provincial Gazette*, designate any area or land to be a Heritage Area on the grounds of its environmental or cultural interest, or the presence of heritage resources.

3.1.2.2 General Protections

- S34: Buildings/structures older than 60 years
  In terms of Section 34 of the NHRA a permit is required from HWC for alterations or demolition of any structure or part of a structure that is older than 60 years.

  The City maintains a digital heritage inventory of all buildings older than 60 years.

  Not all buildings that are older than 60 years are conservation worthy. The NHRA makes provision for lifting the requirements for S34 approvals within a defined geographical area on condition that the relevant heritage authority (HWC) is satisfied that heritage resources within that defined geographical area have been adequately provided for in terms of the formal protections of the Act. The formal protection for Grade III heritage resources is the Heritage Register (S30) and Heritage Areas (S31).

- S35: Archaeological and palaeontological sites
  In terms of Section 35 of the NHRA all archaeological objects are the property of the State and a permit is required (from HWC) to destroy, damage, excavate, alter, deface or otherwise disturb any archaeological site.

  The potential for uncovering archaeological heritage resources increases in areas which have not been extensively transformed by urban expansion. Scatters of stone tools dating from the Earlier, Middle and Later Stone Age have been recorded across this District and testify to the long history of human occupation in the landscape. VOC outposts were established along the main routes into the interior, partly to protect the settlement, but also to monitor the movement and trade between the freeburghers and the Khoekhoe. Often Later Stone Age artefacts and pottery are found in close proximity to early farmsteads.

3.1.2.3 Municipal Planning By-Law

The City of Cape makes provision for the consideration of heritage in its general process and criteria for deciding applications under S99 of the MPBL. In addition to this, it provides for the further protection of heritage through its Heritage Protection Overlay zoning in the Development Management Scheme.

3.1.2.4 Heritage Protection Overlay Zone

A list of the existing HPOZ/old Urban Conservation Areas is included in Table hereunder.

3.1.2.5 Scenic Drives Overlay Zoning

The development of a scenic drives network aimed to link the diverse parts of the Cape Town Metro through the promotion of the scenic qualities and tourism potential along the existing road network.

3.1.2.6 Scenic routes

The development of a scenic drives network aims to link the diverse parts of the Cape Town Metro through the promotion of the scenic qualities and tourism potential along the existing road network. The following criteria are used to identify a scenic route:

- Outstanding scenic qualities in terms of views (cultural or natural landscapes)
- Scenic qualities with a strong sense of place
- Range of scenic qualities
- High natural or cultural landscape qualities
- Links between major scenic, historical (or recreational) points of interest

Two main categories of Scenic route were identified:

S1: Routes fulfilling requirements of both "scenic" and "drive": limited access routes through areas of scenic value (largely natural/rural, high scenic qualities)

S2: Routes fulfilling the requirements of "scenic", but not "drive": routes that traverse scenic areas, but which are frequently accessed (largely urban, but with high scenic qualities)

Baden Powell Drive runs along the coast line between Monwabisi resort and Strandfontein/Muizenberg and is classified as a SR1 route. It is one of the longest scenic routes in the City. There are various destination places and resorts along this route and has limited development opportunities to the south of the road at the risk of informal housing settlement expansion.

Table 13: Scenic Routes in the Cape Flats District.

Category	Route	Policy/land use controls
S1	Baden Powell	One of the longest scenic routes in the City, connecting Table Mountain with the Philippi Horticultural area, with the major residential areas of Strandfontein, Mitchells Plain and Khayelitsha with the winelands.

3.4 Key Development Pressure and Opportunities

3.4.1 Development Pressures and Constraints

3.4.1.1 Biodiversity

- Encroachment of invasive alien vegetation and fauna as well as development on rivers and wetlands
- Natural fire regimes have been altered in the district due to an increased incidence of fires resulting from human activity and negligence
- Illegal sand mining and dumping especially in or near critical biodiversity areas in the south of the PHA
- Illegal informal land occupation a threat.
- Loss of lowlands vegetation due to development.

3.4.1.2 Hydrology

- Historic modification and canalisation of rivers, which severely impairs the rivers' ecosystem functioning
- Large-scale use of fertilisers in the PHA, which are carried into adjacent water courses in stormwater run-off and contribute to pollution of groundwater in the Cape Flats Aquifer
- Increase in demand for water from the Cape Flats aquifer
- Illegal dumping along rivers resulting in pollution
- Littering which finds its way into the stormwater systems and into the rivers and vleis.
- Effluent seepage at the Cape Flats WWTW
- Poor water quality in rivers and wetlands due to pollution, reducing or changing the composition of biodiversity in those habitats
- Limited capacity of the natural environment to absorb wastes from development without sustaining significant damages (e.g. degradation of Zeekoevlei and Rondevlei due to urban runoff received, and the limited capacity of the Cape Flats aquifer to absorb groundwater pollution)
- Sewage ingress into rivers/ vleis due to blockages and vandalism

3.4.1.3 Coastal Areas

- Demand for more recreational areas on and access to the coast.
- Polluted industrial and domestic run-off and seepage from Cape Flats WWTW degrade the coastal system
- Baden Powell Drive dissects dune fields along the entire coastline of the Cape Flats District, but particularly south of the Cape Flats WWTW;
- Invasive alien vegetation (particularly Acacia spp.) has impacted on the dune systems, especially near Rondevlei and south of the PHA
- Development along the coastline and resulting modification of the coastal environment, particularly around Muizenberg and Strandfontein
- Destruction and fragmentation of dune systems due to urbanisation (including road infrastructure), sand mining, agriculture in the southern PHA and recreational activities (particularly around Muizenberg and Strandfontein)

3.4.1.4 Cultural, Heritage, Agricultural and Mineral Resources

- Poor living conditions and the urgent need to upgrade these means that heritage issues are often not considered a priorityy
- Potential for economic opportunities related to heritage tourism (township tours) largely unrealised Potential for economic opportunities related to environmental tourism (nature reserve and points of interest along the scenic drive) discouraged by high levels of crime
- Continued development and informal housing along the scenic route poses a threat not only to the scenic route, but also to the sustainability of the nature reserve.
- Expansion of industrial, urban and agricultural activities results in on-going conversion of undeveloped land
- Sand mining in the southern portion of the PHA leads to destruction of the landscape and character of the site
- Decline of agricultural activities in some parts of the PHA due to pressures for urban development, crime and competing (sometimes illegal) land uses in the area

3.4.2 Integrated Opportunities

Conservation of core environmental features and assets (including POS, beaches, rivers, wetlands, biodiversity etc.) will yield the following integrated benefits for the future growth of the city and its residents:

a. Positive economic development through tourism, job creation, GDP growth linked to:
   - Establishment of ecological corridors through rehabilitation and conservation
   - Sustainable harvesting of medicinal and flowering plant species
   - Economic opportunities and associated job creation in agricultural, industrial, construction, retail and sand mining sectors
   - Tourism and job creation linked to recreation, environmental education and coastal amenity

b. Strengthens the city's resilience to climate change and mitigate risks associated with natural and unnatural disasters:
   - Rivers and wetlands provide ecosystem services such as water purification, assimilation of contaminants, conveyance of stormwater and flood attenuation
   - Aquifers and ground water sources are critical for water security especial in today's drought context;
   - Preservation of critical biodiversity and open spaces improves the city's ability to adapt to climate changes, by increasing our ecological footprint, diversifying natural resources, providing cooling in face or projected increased heat etc.

c. Positive social development by:
   - Sports and recreation activities (surfing, wind surfing, diving, swimming etc, particularly at Muizenberg);
   - Potential for strengthening farming in the PHA, and therefore food security in the CoCT, in conjunction with conservation of the historical agricultural setting
   - Adding value to sense of place through maintenance of historical PHA landscape (e.g. small farmsteads marked by palm trees etc.

3.5 Spatial Implications for District Plan

The following table documents the key spatial implications for the district plan in order to mitigate any potential negative impact on the natural and cultural environment; and enhance the opportunities associated with conservation of natural and cultural resources.

Table 14: Environmental Spatial Implications

NATURAL/CULTURAL RESOURCE	SPATIAL IMPLICATION
A. Biodiversity 	1. Conserve remnants of sensitive and threatened vegetation types and control development pressure in the key sensitive areas such as the coastal belt 2. Conserve habitat remnants of the Critically Endangered Barber's Cape Flats Ranger butterfly near Strandfontein 3. Where these remnants conflict with areas earmarked for development, ensure adequate botanical and faunal impact assessments and identify appropriate mitigation measures, before these activities are approved; 4. Rehabilitate and maintain areas of sensitive natural vegetation and high biodiversity value and establish "green corridors" where possible 5. Ensure developments face onto green corridors or conservation areas – for both security and amenity purposes. 6. Protect and optimise natural open space resources and promote natural service systems over engineering solutions to provide urban ecosystem services such as stormwater management; 7. Control illegal sand mining, particularly in the coastal area and close to sensitive biodiversity in the south of the PHA; 8. Support the expansion of the Edith Stephens Wetlands Park and establish as a new multi-purpose park. 9. Protect and optimise natural open space resources and promote, where possible the use of green infrastructure or nature-based solutions over engineering solutions to provide urban ecosystem services such as stormwater management. 10. Consolidate and re-enforce the open space "green corridors", connecting biodiversity remnants where possible. 11. Introduce indigenous landscaping into public open spaces. 12. Control and remove alien invasive vegetation. 13. Control illegal dumping, particularly in and adjacent to important biodiversity sites.
B. Rivers, Wetlands and Ground Water 	14. Establish and maintain appropriate river and wetland buffers and prevent inappropriate land uses in these areas 15. Improve interfaces between development and natural resources. Orientate proposed new development (industrial, mixed use and residential) and existing developments that are being reconstructed towards the rivers and include the river corridor at every possible opportunity 16. Prevent inappropriate land uses in identified flood prone areas 17. Protect the re-charge and extraction areas for aquifers and groundwater sources and promote sustainable urban drainage, as appropriate. 18. Restore river systems wherever possible. 19. Clear invasive alien vegetation within river corridors and restore the riparian zone by reintroducing indigenous riparian vegetation. 20. Control illegal dumping, particularly in and adjacent to rivers and wetlands. 21. Maintain and upgrade public open spaces along rivers. 22. Implement measures to improve the functioning of, and water quality in rivers, where possible, and implementing green infrastructure or nature based solutions to improve ecosystem health
C. Coastal Areas & Dunes 	23. Prevent development within the coastal edge, except at identified nodes, which have been identified for amenity opportunities 24. Maximise amenity opportunities, with minimum disturbance to the coastal environment and processes 25. Address social issues relating to crime and vandalisation of facilities 26. Prevent inappropriate development in or close to sensitive dune systems.
D. Heritage and Cultural Landscapes 	27. Ensure that construction activities in special heritage areas comply with guidelines and regulations (e.g. the Springfield Road and Otter Road Precinct); 28. Identify heritage resources so that they can be conserved for future generations (eg Athlone wood and iron houses) 29. Identify and enhance heritage resources so that they can contribute to the development of heritage tourism opportunities 30. Support and enable traditional practices and access to resources 31. Maintain and restore cultural landscape features eg replant tree avenues in the PHA 32. Identify and map the location and significance of historical struggle sites within the district 33. Curb/control urban sprawl by exploring innovative housing solutions in low income areas which provide adequate housing options as well as quality puplic open space

E. Mining and Agriculture 	34. Protect, Conserve, Retain and optimise horticultural areas 35. Retain the portions of the PHA for the future mining of silica sand. 36. Where feasible and environmentally sustainable, extract mineral resources (building sand) prior to development 37. Facilitate mixed-use development where possible to provide more employment opportunities close to residential areas 38. Address social issues relating to crime and unemployment in the areas close to the PHA to alleviate pressures on the viability of this agricultural zone 39. Enable sustainable agricultural practices and support vulnerable communities by ensuring that the PHA is protected and conserved as a significant agricultural area and that encroachment by industrial and commercial activities is not allowed.

4 LAND USE AND DEVELOPMENT TRENDS

The Cape Flats District is located in the southern part of the City of Cape Town metropolitan area and covers approximately 13 200 ha (132 km^2). It comprises of a significant part of the Cape Flats, and is bounded by the M5 in the west, N2 freeway to the north, Govan Mbeki Road and Weltevreden Road in the east and the False Bay coastline to the south.

It is characterized by diverse land use patterns, and contrasting transformed (i.e. urbanized) and untransformed (i.e. natural) landscapes. Mixed land use patterns with higher settlement densities in the older urban fabric in the northern portions of the Cape Flats District. Settlement density and land use diversity decreases as one moves south.

All sectors of the metropolitan economy are represented in the Cape Flats District. In terms of the primary sector, the Philippi horticultural area is an important source of Cape Town's fresh produce, and the farms here provide local job opportunities, particularly for unskilled workers. The Cape Flats District is also of mining significance, with building sand extracted in the PHA and minerals extracted for glass production in the Sand Industria area.

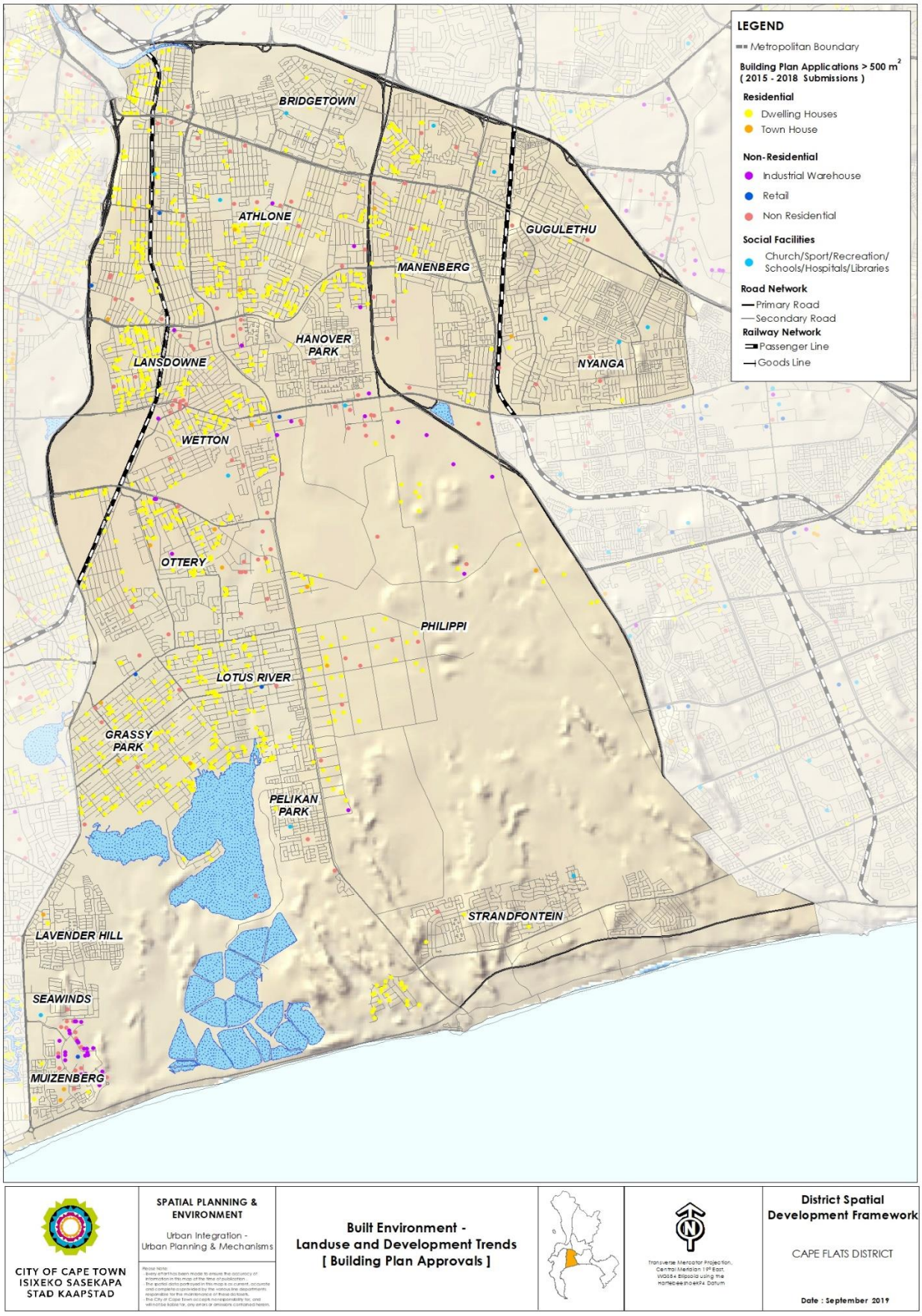


Figure 20: Building plan approvals according to land use type

4.1 Residential

The Cape Flats district has seen an increase in the number of infill developments in the form of small, medium and large blocks of flats in areas like Rondebosch East, Crawford, Athlone, Ottery, Lansdowne, Schaapkraal and Grassy Park. Examples include The Palms, Melville Place, Vanguard Villas, Olive Grove, Baker House, and Sunrise Crescent.

Higher density residential developments mostly happened in Muizenberg including Evergreen Phases 2 and 3, Ocean Breeze, Coral Sands and Dune Crest. These trends can be indicative of increased interest in the area and the willingness of property owners in the Cape Flats to invest.

Future developments include areas within the airport precinct, Knole Park, Pooke se Bos (Athlone) and Oaklands (private development on South-eastern portion of PHA). It should be noted that the Uvest development, also within the PHA area has been refused. Furthermore, there appears to be increased interest in gated development proposals in the district e.g. Golden Grove farm, The Palms phases 1 and 2, Melville Place as well as in the Schaapkraal area. Densification in the form of small scale subdivisions as well as second (and third) dwellings id frequent.

A number of human settlement projects have also been completed and these include Pelikan Park, Chapman's Peak Street (Heideveld), Table Mountain Street (Heideveld), Cave Peak Street (Heideveld), Helderberg Close (Heideveld), Mpumelelo Bhonge Way (Nyanga) and St Paulus Street (Lavender Hill). There is however uncertainty about Pelikan Park Phase 2 because of numerous environmental constraints on the site. However, it has been requested that the site must be flagged for further investigation.

There has been an increase in informal settlements especially along the N2, portions of Guglethu and Nyanga in settlement including Barcelona, Kanana, Philippi SP2, Phola Park as well as Vrygrond closer to Lavender Hill. There is also evidence of informal settlement expansion between 2011 and 2016 around the PHA with areas including Siqalo, Jim se Bos and Egoli informal settlements (*Indego report, 2018*). The 2017/2018 roof count indicated that an estimate of 29 500 informal dwellings were spread across the district.

4.2 Industrial

Industrial areas include Capricorn Park, Ottery Gardens, Nerissa Estate, Ottery East, Hanover Park industrial area, Sand Industria, Kewtown and Athlone Industria. Although Lansdowne Road Industrial area and Capricorn Park were identified as two emerging industrial areas in the district there has not been significant investment in the last number of years. However, the industrial pocket south of Govan Mbeki Road (Sheffield) has been effective and that the promotion of mixed-use and industrial development in this location should be continued.

There has been the addition of a few smaller scale industrial warehouses or extension to existing businesses.

However, there has been substantive mining of sand in the Philippi area. Philippi is one of the three major sand mining areas in the broader City of Cape Town metropolitan region (the other two being Macassar and Malmesbury). The uses for this sand include: fill, mortar and, to a lesser extent, plaster and concrete. The remaining Witzand resource, together with the area of the Springfontyn formation and potential glass sand, are delineated in the figure below.

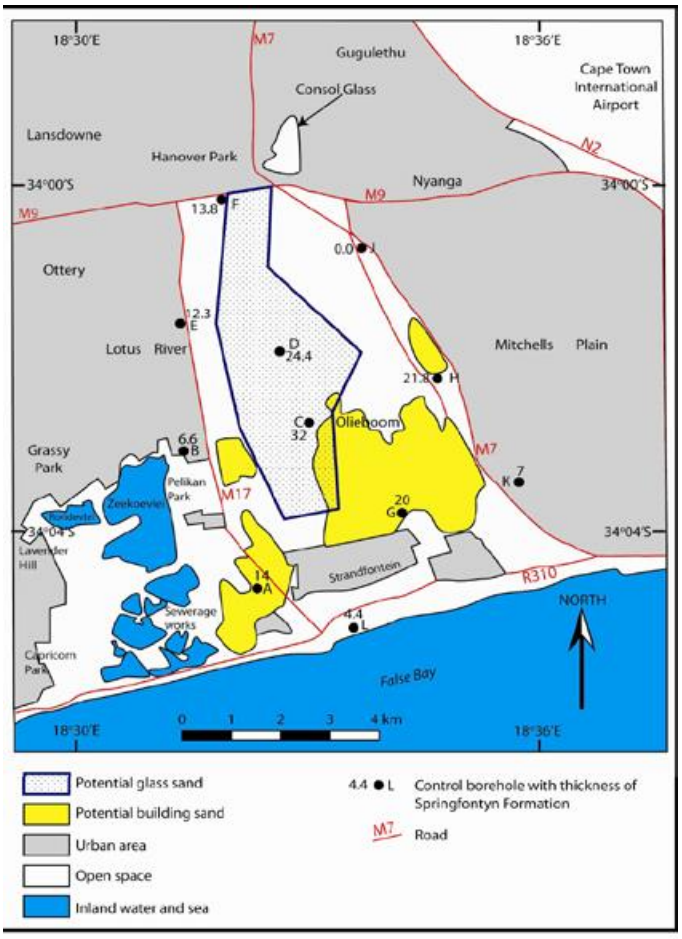


Figure 21: Distribution of Witsands and Springfontyn Formations within the PHA

Furthermore the Indego report notes that the locational performance of Philippi remains weak even though there has been growth in the Philippi East and North Industrial areas with the investment of retailer Distribution Centres (DCs).

The value of retail, industrial and commercial property in Philippi is relatively low. Philippi East is classified as "very unsafe" and Philippi North as "unsafe" in terms of crime and safety issues. (Town, ECamp). The results of Business Retention and Expansion (BR&E) exercises conducted with firms in Philippi East by the City in partnership with the Philippi Economic Development Initiative (PEDI) in 2014 showed that the top five locational advantages (in order of preference) were: local customer loyalty; central location; quality and supply of local labour; low rent; and proximity to markets. The top five disadvantages of being in Philippi East were: crime rate; transport costs; negative image of the area; lack of municipal support; and shortage of skilled labour. Eighty percent of participating firms indicated that they had no intention of moving, closing or selling their business (City of Cape Town, 2014).

4.3 Retail and Office

Existing linear retail activity takes place along Lansdowne Road(Landsdowne), Victoria Road and to a lesser extent Klipfontein Road. There has however not been a significant increase in large retail activities other than the Vangate Mall which was constructed in 2005.

The historic retail nodes in Athlone and emerging Ottery has been very static. The main contributing factor to this decline in investment in the district could be assumed to be as a result of the increase in crime in the area. The limited/lack of promotion of the Athlone CBD as well as the lack of heritage protection can also be a contributing factor. The response from the private sector has been slow, as evidenced by the many vacant buildings in the CBD. Further to this is also the completion of the Vangate Mall which could have had an impact on the pattern of shopping of consumers as well as the decline of rail passengers boarding / alighting at Athlone station.

The smaller commercial nodes in the town centres such as the Hanover Park Town Centre, Zolani Centre, Eyona Centre,Manenberg Town Centre and Strandfontein Town Centre have seen a decline in economic activity over the last number of years, often as a result of security concerns. Other factors that could also have impacted on this includes disinvestment due to retailers chasing more well

located areas/nodes/malls. In addition there is also arguably a changing dynamic in retail customer profile Grassy Park has however seen renewed investment over the last 5 years with the introduction of a Clicks, the significant upgrade of the hardware store, the introduction of a new bank and the imminent completion of a new retail centre on the Cnr Victoria & Fourth streets.

Kromboom Road's character is changing into a more commercial street (similar to Belvedere Road) and further investigation should be explored.

The level of available information of the informal sector for the area is very limited. There are a few areas within the district that according to the Cityviewer have been approved as informal trading locations. These include Joe Gqabi (Philippi) in stock Road as well as Dennegeur Avenue in Strandfontein.

4.4 Mixed Use

A process of intensification and diversification of land use is taking place along the emerging Lansdowne activity corridor as well as at the mixed-use Ottery node.

4.5 Agricultural land and smallholdings

The Cape Flats District contains the PHA that produces vegetables for the local market. The Indego report indicates that according to surveys in 1990 there were approximately 1400 hectares used or farming. These included 41 vegetable/cut flowers farms and 17 stock (pork and poultry) and dairy farms. A similar survey in 2017 indicated that there are approximately 35 active farmers which if farming about 1200 hectares and just less than 1100hectares of these are used for vegetable production. The productivity of the PHA land varies in relation to the quality and quantity of water availability. The southern portion is regarded as the most productive land.

The large commercial farmers are mostly selling to the retail market whereas the smallholders are active in the formal and informal market and sell directly to hawkers, bakkie traders and spazas. Both large and smallholder farmers are absent from export and restaurant chains and franchises.

It is under threat from development pressure and illegal activities taking place in the area. Whilst the central portions of the PHA are still actively farmed, agriculture as a land use is under threat from urban development pressures – particularly in the north and on its western and eastern fringes. Of these factors the Indego report stated that crime is one of the major contributing factors. This include personal safety as well as vandalism of properties and produce. These are further heightened by the easy access to the PHA as a result of limited or lack of fencing. Other factors include droughts and inclement weather conditions such as strong winds. All these factors have an impact on the farmer profit levels which had increased the interest of many commercial farmers in an exit strategy.

Furthermore there has been an increasing interest in the Schaapkraal area and particularly for smaller subdivisions as well as for industrial development. The demand for industrial land included dog food manufacturing activities and freight companies and the PHA area are favourable because the properties are large.

4.6 Supportive land uses

The number of queries about ECD proposals has increased as a consequence of the registration process (PGWC) and the awareness sessions provided via the City's ECD drives. The requests for the accommodation of telecommunication infrastructure (typically freestanding base telecommunication stations) are increasing, and the pressure on the development management offices to process these applications is high. There have been serious concerns about the proliferation

of telecommunication infrastructure in the district, and recommendations for the refusal of many of these applications are increasing.

4.7 Development Pressures

- Increase in significant urban development of large scale human settlements within the PHA
- Illegal sand mining
- Increase in informal settlement which has an impact on pressure for formalization

4.8 Vacant land

Figure 22 depicts all the vacant land opportunities in Cape Flats. The vacant land has been grouped into four categories using the following criteria:

Table 15: Vacant land opportunities in Cape Flats

Code	Category	Description
1	**Underutilised vacant land:**	Vacant Land **without any** of the following attributes: • reservations, • public projects (human settlements; social facilities etc.) • building plan approvals • rezoning land use approvals. 2.
2	**Potentially-utilised vacant land:**	Vacant Land **with any** of the following attributes: • reservations, • pending building plan approvals, • any public projects in pipeline stage, 3.
3	**Utilised Vacant Land:** (vacant land under development or a registered intent to be developed)	Vacant Land **with any** of the following attributes: • any public projects in planning or construction stage, • existing building plan approvals, • rezoning land use approvals
4	**Vacant Land Reserved and/or Zoned for Community or Recreational use:**	This will include vacant land currently zoned OS1, OS2, OS3, CO1, CO2. [Only applicable layers that did not fall within the utilised (3) of potentially-utilised (2) categories]
5	**Vacant Land Zoned for Transport Use:**	This will include vacant land currently zoned TR1, TR2 and Utility. [Only applicable layers that did not fall within the utilised (3) of potentially-utilised (2) categories]

It must also be noted that land located in the Critical Natural Assets and Discouraged Growth STAs as designated by the City's approved MSDF have been excluded in Figure 3.

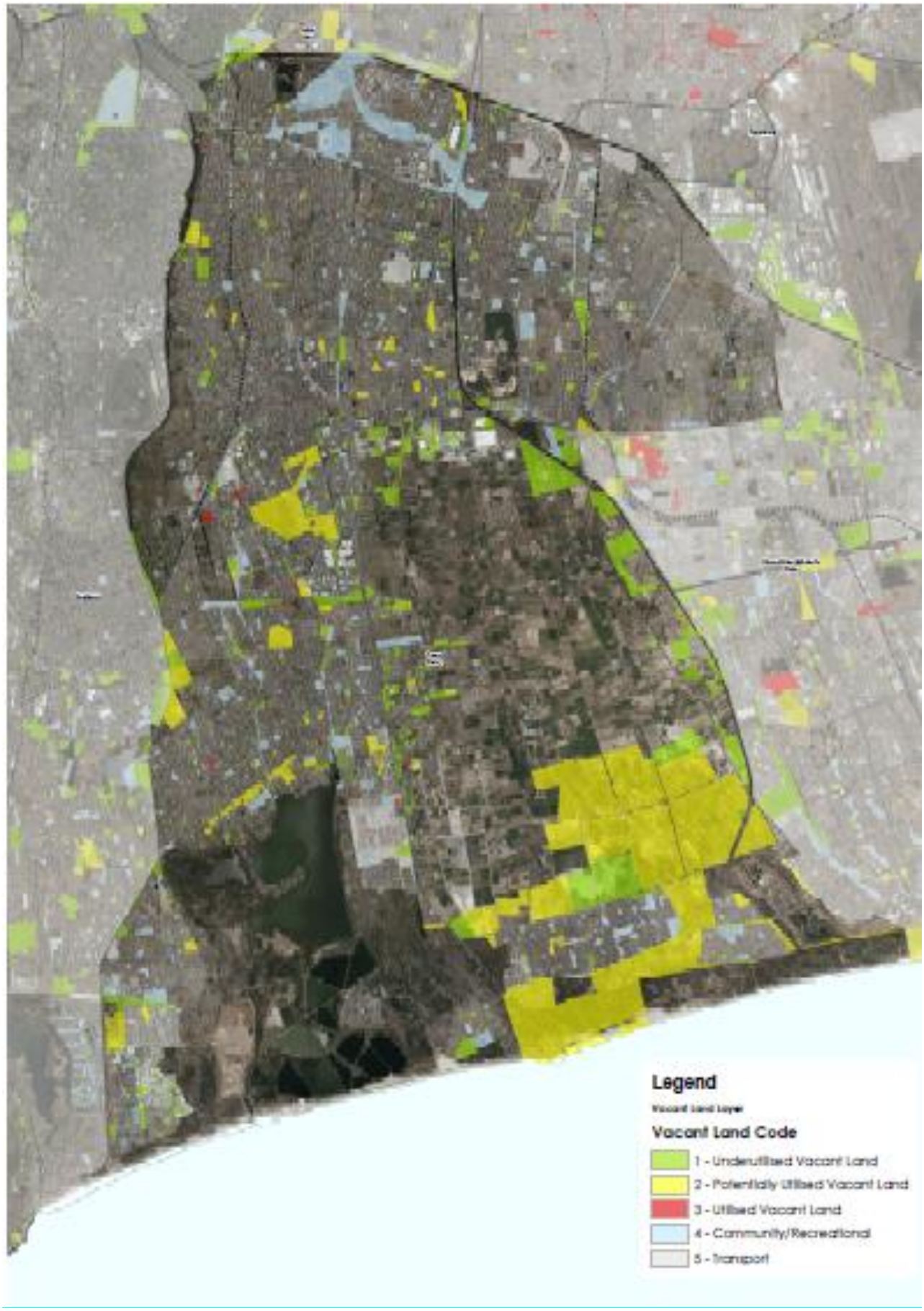


Figure 22: Vacant land, Cape Flats District

Vacant land in the district is located dispersed across the area with large parcels as indicated in the PHA area as well as parts of Ottery, Hanover Park and Athlone.

Properties shaded in blue and grey are land zoned for community or recreational use, and should ideally be reserved as such in order to accommodate existing communities and anticipated growth/intensification in residential development. Further to this the properties shaded in yellow has potentially been reserved for current or future projects. The information available for the Cape Flats district shows that the larger portions identified as vacant has already been "earmarked" for projects. These include the Oakland development, Strandfontein and Ottery/Wetton. The remaining green portions are land that is currently underutilized and vacant. The district has very limited land parcels that is vacant and underutilized with many of these identified parcels being located along the periphery of the PHA and a few smaller sized parcel within the existing residential suburbs.

4.9 Key Challenges and Opportunities

4.9.1 Challenges

- The Cape Flats District experiences pressure particularly from low-income sectors and has some of the largest informal settlements in the City, particularly at Nyanga and Crossroads. Since 2009 informal settlement has become the predominant residential supply mode as can be seen by the population growth per suburb.
- Unregulated and/or illegal sand mining, particularly in the southern part of the PHA
- Illegal land uses in the PHA and lack of control and management of the general area
- Increase in crime levels, resulting in crop theft and compromised safety of workers
- Lack of employment opportunities versus increased population densities
- Backlog in housing and service infrastructure provision, particularly in informal areas
- Poor east-west movement linkages and inefficient public transport systems
- The under developed Athlone CBD considering its proximity to major freeways, railway station and being geographically in the middle of the metro area.
- Lack of investor confidence

4.9.2 Opportunities

- Implementation of Phase 2A of the BRT in order to strengthen east-west movement linkages.
- Integration of planned upgrading and formalization of various informal settlement projects such as Sweet Homes and the Southern Corridor Programme to sustainable settlements.
- Industrial areas and job creation
- Development framework / guidelines of the PHA to ensure sustainable integrated opportunities for employment, conservation of high potential agricultural land and appropriate development. This could include the development of a tourism activity cluster linking the PHA to the Cape Flats toursim attractions in townships and natural areas.
- Maximisation of the economic potential of the broader Philippi area through greater investment in agro-processing within the Philippi industrial area (Demacon Market Studies, 2013).
- Philippi North presents moderate opportunities for industrial development compared to Philippi East.

5 TRANSPORT AND ACCESSIBILTY

5.1 Introduction

This chapter provides an status quo analysis of the mobility and accessibility networks within the Cape Flats District.

There is a strong focus on transport as an informant of the CTMSDF, using the TOD Strategic Framework (2016), in line with international planning trend which recognizes the need for spatial planning tools to support public transport and non-motorised transport options, as well as reducing the need to travel. The CTMSDF now needs to be translated "down" in scale to a district level. This section therefore focuses on the application of TOD to a district / corridor level.

The diagram below is useful in this regard, showing TOD at various scales.

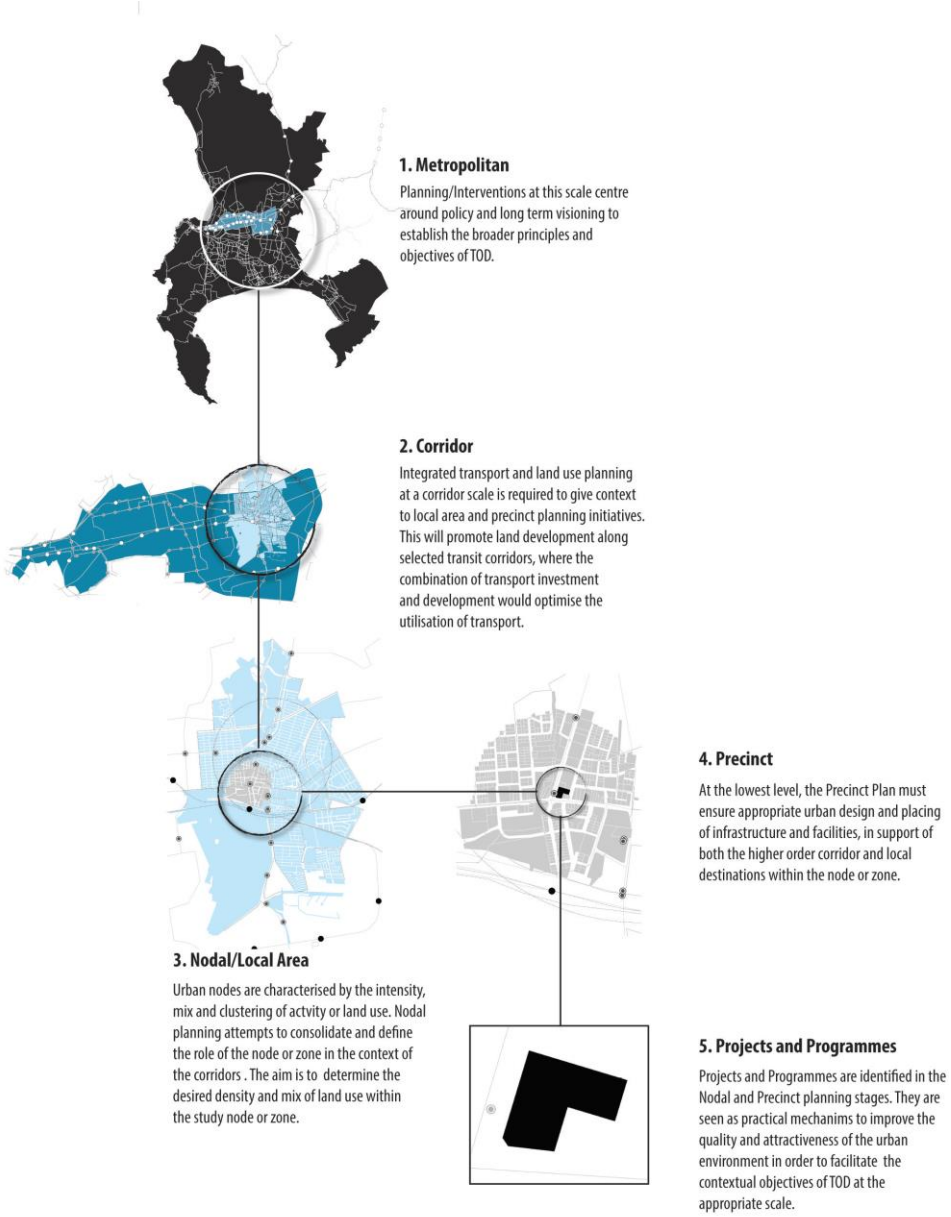


Figure 23: Transit Oriented Development Concept at Various Scales (Source: TOD SF, 2016: 24)

At a metro scale, there is a need to balance and shorten trips through:

i. maximising the residential opportunities in and around the CT CBD;
ii. maximising the work (and education) opportunities in the Metro South East;
iii. enabling greater internal trip generation (i.e. balance trip producers and attractors) in Atlantis, greater Somerset West area, and the Far South.

At a corridor scale, TOD requires the generation of bi-directional flow (to replace the current "tidal" commuter patterns), reduced travel distances to public transport, and higher seat renewal (multiple origins and destinations along the route). The district plan will identify which corridors in the district should be reinforced with land use proposals.

5.2 Strategic Parameters & Informants

The City of Cape Town developed a host of strategies which aim to provide various strategic intents and objectives to guide the delivery of an efficient transport system and outline the primary framework within which the system develops. Further strategies address other transport needs such as non-motorised transport, universal accessibility, parking, operations, etc. These strategies are highlighted in sections below.

5.2.1 District Specific Transport Strategies

5.2.1.1 Metro South-East Integration Zone (MSE IZ)

The National Treasury enables metropolitan areas to identify and plan for corridors which serve to integrate previously separated parts of the city, through enabling and encouraging the spatial targeting and prioritization of public investment into these areas. The MSE IZ is a plan and related investment strategy to enable human settlement, social development, economic development and TOD. It therefore becomes an important informant to the portion of the district plan which it covers, as shown below. The priority local areas are Manenberg/Hanover park, and the Athlone CBD.

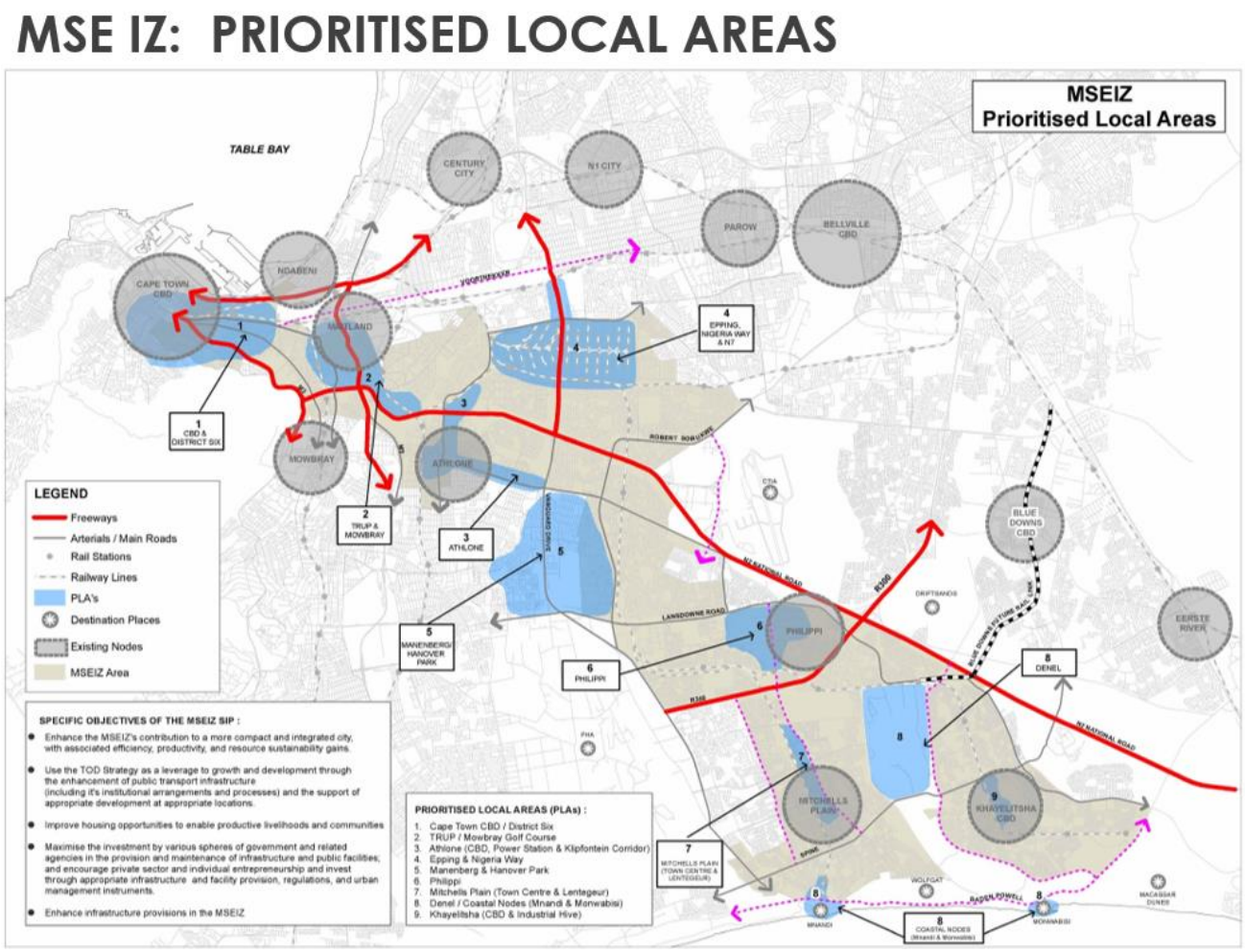


Figure 24: Metro South East Integration Zone Concept

The district falls substantially within this Integration Zone, and has been the subject of a planning process and investment strategy. The District plan will take cognizance of these plans, which contribute towards integrating the district with adjacent areas to the west and east.

5.3 State of Public Transport

5.3.1 Existing Infrastructure and Services

5.3.1.1 High Order Public Transport

Rail

Rail corridors pass through the north-western and north-eastern portions of the district. In the north-west 6 stations along the Cape Flats rail line serve local commuters, and of these Athlone station is the district's main public transport interchange.

In the north-east there are 2 stations along the Mitchell's Plain-Khayelitsha line: Heideveld and Nyanga Junction.

While the service has deteriorated since 2012, as a result of institutional failure, lack of maintenance and investment, and ongoing vandalism and crime, the system will endure, and it is expected that service improvements will eventually attract back users, even if this is only in the medium term. Hence the rail network continues to be an important structuring element in this plan.

Bus rapid transit (BRT)

There is currently no BRT service which services the district, but some infrastructure is already in place for the roll-out of Phase 2A (see under "Planned Transport Infrastructure and Services" below).

In addition, Strandfontein Rd has been "enabled" for a future phase of BRT, as the road was requiring upgrade anyway.

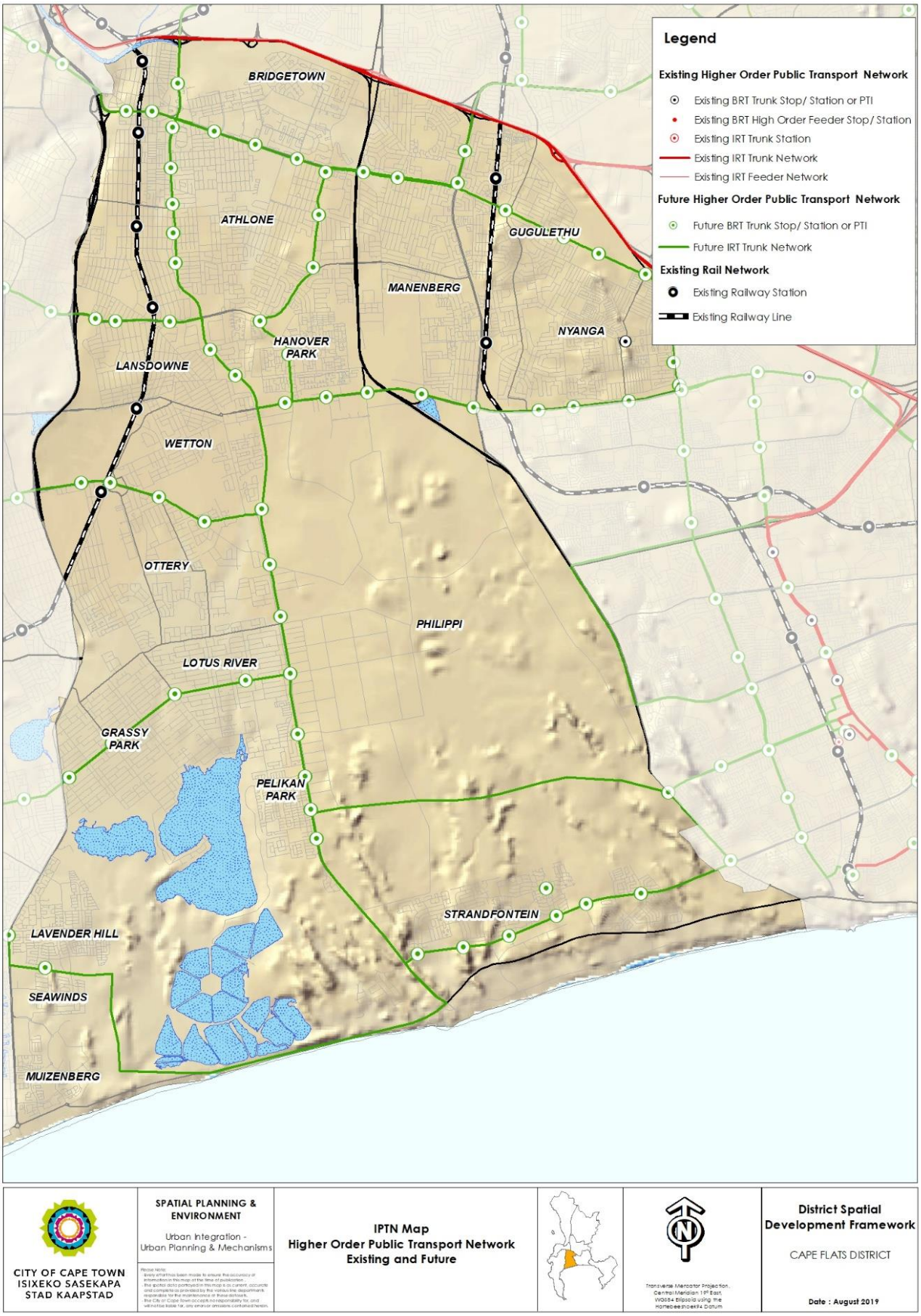


Figure 25: higher order public transport network

5.3.1.2 Low Order Public Transport

Minibus Taxis (MBT) and GABS (incl PTIs)

A grid of bus line haul services complements the Cape Flats District's rail network.

Due to the lack of rail services across the district, the area is mostly served by MBTs which are dynamic and agile enough to operate in this area. Evidence shows that these are however thinly spread: the most utilized route is Klipfontein Rd, which serves the district but also links Khayelitsha in the east to Mowbray (and the CBD) in the west. Gugulethu Mall and the PTI in Nyanga attract the greatest volumes of boardings and alightings, despite the fact that neither are associated with a rail station.

The following PTIs serve the area. While most were established as part of the integrated public transport system, Gatesville, Ottery Hypermarket, Gugulethu and Vangate Malls attract public transport as a result of their retail and employment opportunities.

Table 16: Public Transport Interchanges, Cape Flats District

No	Name	Formal/ Informal	Any plan for upgrading
1	Athlone Station Transport Interchange (Langa Route)	Formal	
2	Bonteheuwel	Formal	
3	Bridgetown Minibus-taxi Rank	Formal	
4	Gatesville Minibus-taxi Terminus	Formal	
5	Grassy Park Public Transport Interchange	Formal	
6	Gugulethu Public Transport Interchange	Formal	
7	Hanover Park Public Transport Interchange	Formal	Scoping
8	Heideveld Station Transport Interchange	Formal	
9	Lansdowne Minibus-taxi Rank	Informal	
10	Lotus River Public Transport Interchange	Formal	
11	Manenberg Public Transport Interchange	Formal	
12	Nyanga Central Public Transport Interchange	Formal	Part of ORIO planning and implementation process; In planning phase for upgrade
13	Ottery Hypermarket Minibus-taxi Rank (Eastbound)	Formal	
14	Vangate Mall	Formal	
15	Vrygrond	Formal	

NMT

Most of the NMT infrastructure and activity is concentrated in the north of the district, due to the low income levels of the area, the relatively short travel distances, and the accessible urban form. On the other hand, the use of NMT infrastructure by pedestrians and cyclists is curtailed *because of safety – not only from crime, but the prevalence of gangs in some areas prohibit residents from crossing gang boundaries.*

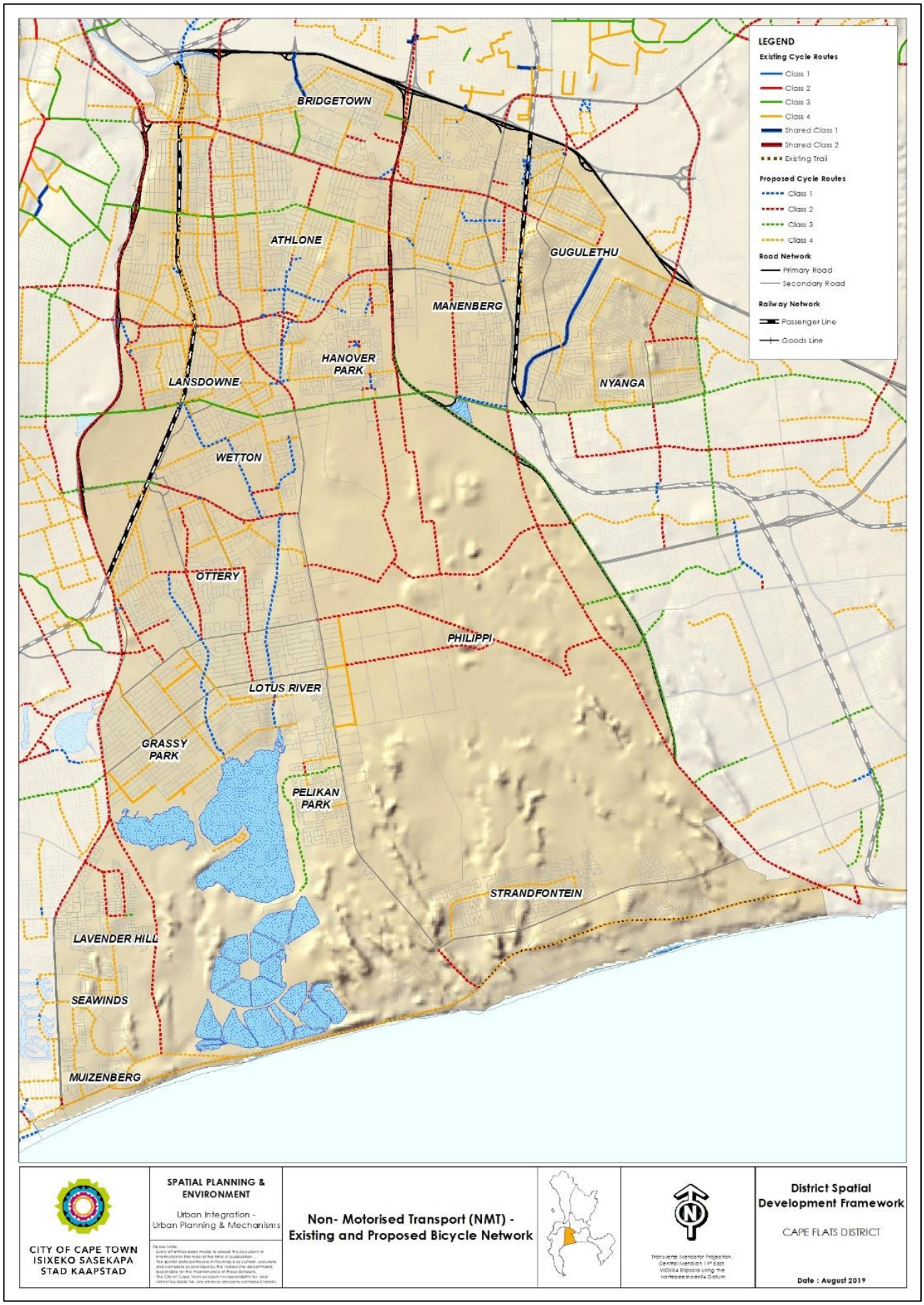


Figure 26: Existing and Proposed Cycle Routes

5.3.2 Planned Transport Infrastructure and Services

5.3.2.1 *BRT trunks, feeders and stations*

As part of Phase 2 of the City's public transport plan (IPTN), three MyCiTi trunk routes and a number of feeder routes are proposed for the district. Feeder routes are still to be determined: but their purpose is to extend the trunk service through providing easier access to it. In Phase 2A, which is currently being planned for implementation, trunk routes will run from Mitchell's Plain and Khayelitsha along Govan Mbeki Rd, Jan Smuts Drive, Turfhall Rd, Racecourse Rd, Chichester Rd and Imam Haron Road into Claremont, and along either New Ottery Road or Wetton Road into Wynberg. A district route is planned in a further phase along Klipfontein Road, from Mitchell's Plan to the CBD via Mowbray.

The Phase 2A feeder routes are only indicative at this stage, but are planned to give greater access to the trunk service. This service will substantially benefit the district. Stations are planned for Hanover Park and Blomvlei, creating potential of TOD development there.

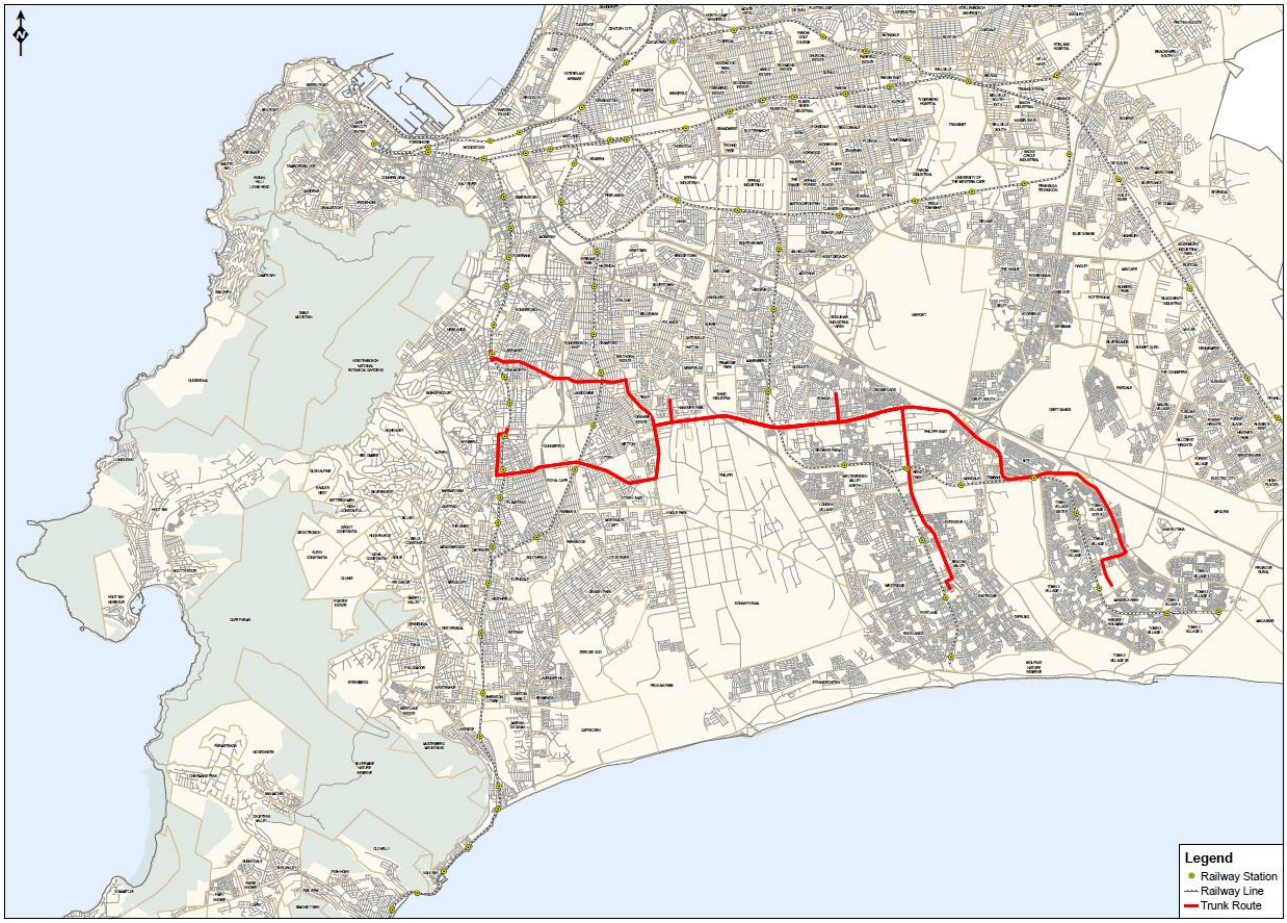


Figure 27: Planned Phase 2A MyCiTi Trunk Routes

5.3.2.2 *Rail*

PRASA's Modernisation Plan of 2012 remains an expression of their intentions. It will result in significant upgrades to the infrastructure, stations, station precincts and the service in this district.

The long term plan for a rail link between Philippi station in the east, and Southfield station in the west, through the PHA has relevance for this plan. However, implementation is likely to be beyond the timeframe of this planning phase.

5.3.2.3 PTIs

The Nyanga PTI is significant in that it is a high-functioning PTI, despite it not being at a railway station. An extensive planning process which addressed not only the public transport activities, but also the informal trading, integration of the surrounding community facilities, walkability of the area, and improved safety through built infrastructure, has been completed (referred to as "NUNU"). The Nyanga PTI precinct is one of the focus areas of the ORIO planning and implementation project being managed by the City, which addresses urban management and upgrade.

5.3.3 Level of Public Transport Accessibility

As part of the TODC model a scoring of the various Transport Accessible Precincts (TAPs) around stations and stops in the city was conducted. The overall score provides a measure of the level of accessibility of the City's current public transport network using the following indicators:

C1. Status of station: Existing or Proposed
C2. Status of network: Existing or Proposed
C3. Connectivity: Accumulative Travel time to the City's top 10 employment destinations
C4. Capacity: Capacity of stations to accommodate passenger volumes
C5. Modal Integration: Level of integration between modes of public transport (Rail/BRT/PTI/Feeder)
C6. Intensity: Number of people within 500m of a station/core feeder stop

Note that this scoring methodology does not take into account the *functionality* of the public transport services. The measure is purely a *locational* score. Based off these scorings, the following patterns are highlighted for the district:

- The TAPS in the northern portion of the district have particularly high accessibility.
- The Athlone CBD and surrounding area has the largest cluster of high accessibility scores in the district.
- The Klipfontein Rd and the proposed Phase 2A corridor have high future accessibility scores.

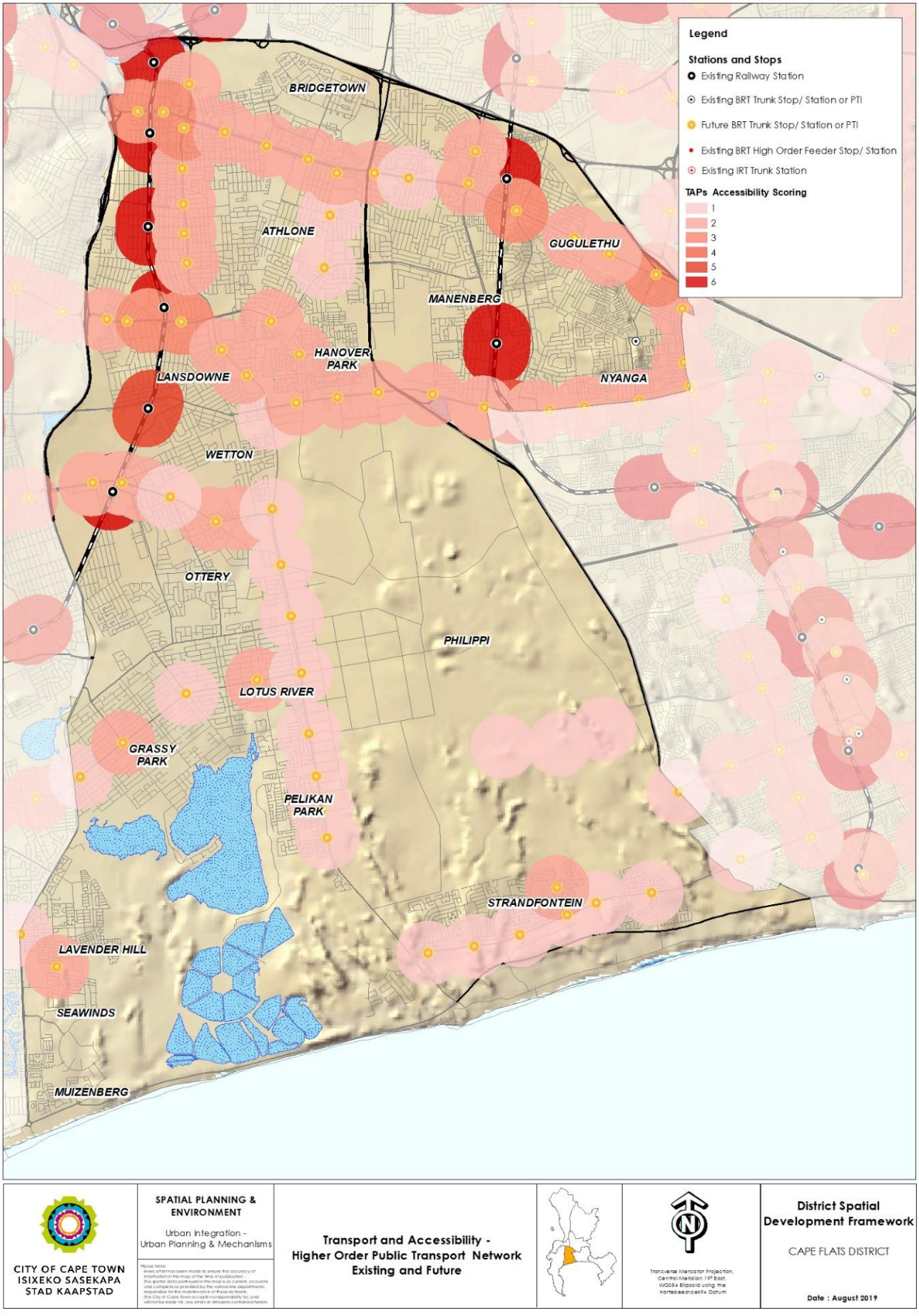


Figure 28: Higher Order Public Transport Network

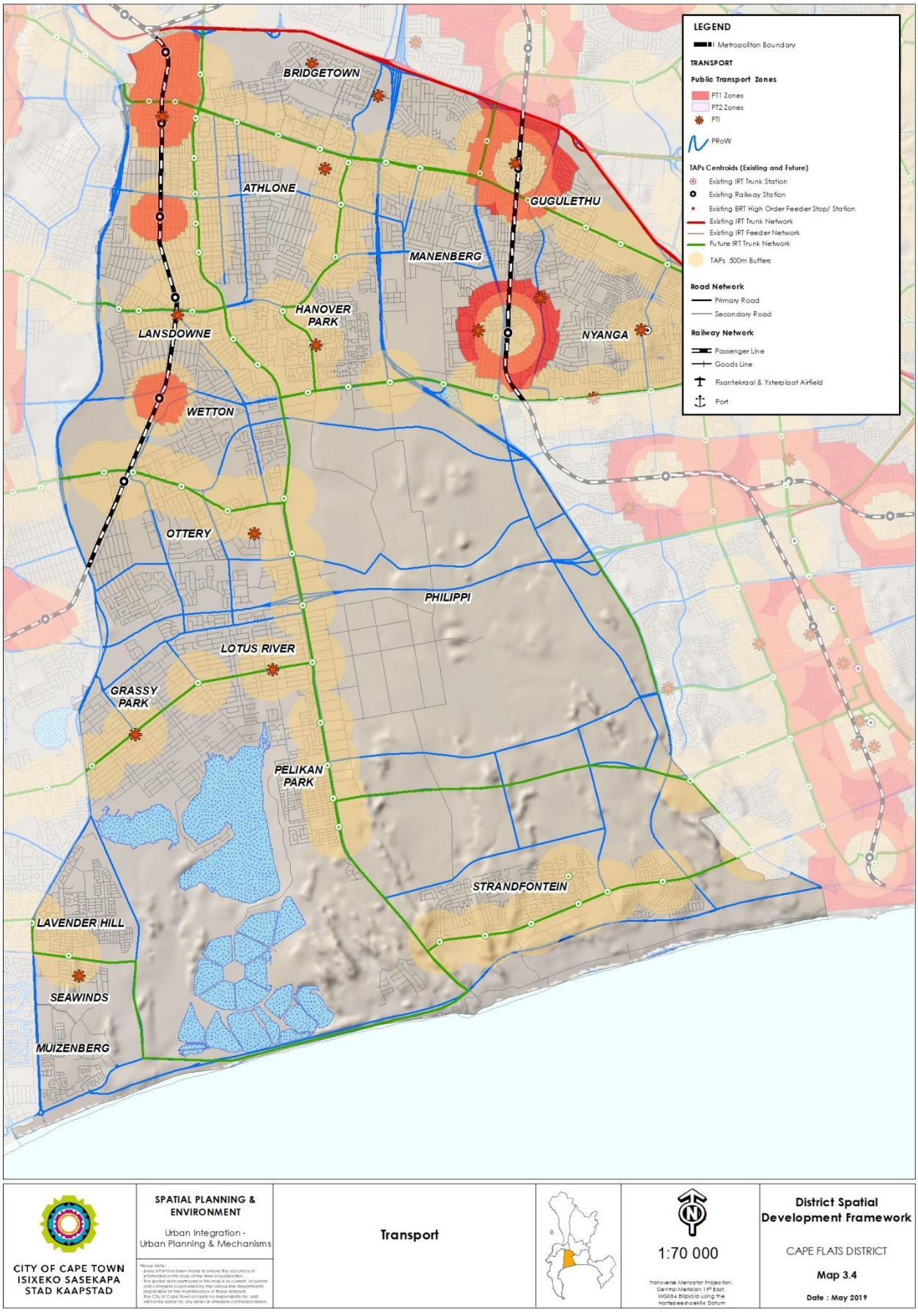


Figure 29: Current Public Transport and related infrastructure

5.4 State of Road Infrastructure

5.4.1 Overview of the district road network

The central and southern parts of the district are serviced by a loose network of roadways because of the lack of urban development there. East-west routes are severely constrained by the Philippi horticultural area (PHA) and the Cape Flats Sewerage Works, various vleis and related nature reserves, and the Cape Flats landfill site.

The most significant routes in terms of the road hierarchy include:

- Klipfontein Road (secondary arterial) which performs an important east-west function in the northern portion of the district.
- Wetton/Lansdowne/Imam Haron Road (secondary arterial) which traverses the district and connects it to the southern suburbs in the west and Philippi / Mitchell's Plain and Khayelitsha in the east
- Duinefontein Rd and Vanguard Drive (expressway) in the east.
- Baden Powel Drive (expressway connecting the district to the southern suburbs in the west and Mitchell's Plain/Khayelitsha and Stellenbosch/ Somerset West in the east.
- Spine Road (primary arterial) which is a key east-west linkage in the southern part of the district, connecting through to Mitchell's Plain in the east and to Strandfontein Road in the west.
- Strandfontein Road (secondary arterial) which provides an important north-south connectivity role within the district and at a city-wide level, between Strandfontein and Pinelands/Langa.
- Several east west-connections through the district including from north to south:
    - Turfhall road connecting parts of Athlone and Belgravia with Rondebosch East
    - 5th Avenue which runs through Lotus River and Grassy Park all the way to Retreat Station
    - Klip Road
- Schaapkraal Rd (a rural road), which traverses the PHA is extensively used as link through the area, in the absence of the planned roads traversing the PHA.

5.4.1.1 Roads constructed over the past 5 years

Strandfontein Road has been upgraded, and includes infrastructure for the MyCiTi trunk and feeder rollout.

5.4.1.2 Current road projects

The map below shows recently constructed / upgraded roads, and possible future construction in the short and medium term.

5.4.2 *Congestion Management*

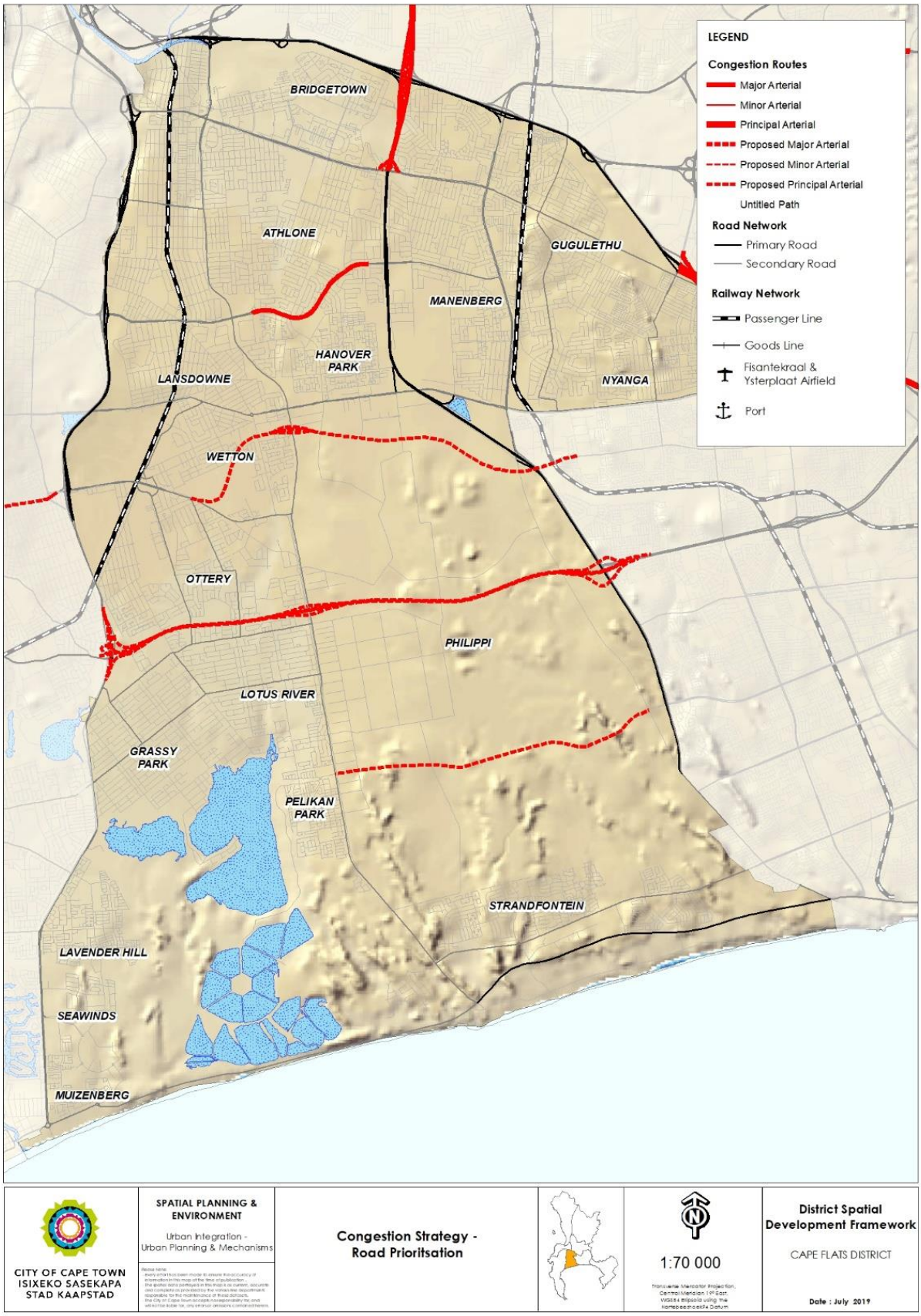


Figure 30: Congestion Strategy Road Prioritisation

5.4.3 ***Parking***

There are no parking issues pertinent to this district.

5.4.4 Planned Road Infrastructure

The road network plan (see map below for planned new builds / upgrades) allows for four east-west arterial routes which will ultimately traverse the Philippi Horticultural Area to link Mitchell's Plain with the Southern Suburbs: R300 extension to De Waal Rd in Southfield, Sheffield Rd extension to Ottery Rd as well as Morgenster Rd and Wespoort Rd extensions to Strandfontein Rd.

Several new road connections which have an impact on the district have been made provision for in terms of the metropolitan transport plan including:

- The R300 freeway is earmarked to be extended westwards across the Philippi horticultural area to link-up with the M5.
- Extension of Sheffield Road through northern portion of the PHA, which will form the boundary between the Philippi Horticultural Area (south) and the Lansdowne Rd Industrial Area (north) westwards to link-up with Ottery Road;
- Sections of Baden Powell Drive along the False Bay coastline are aligned within the dynamic beach zone and are subject to periodic flooding in storm surge conditions. Whilst an alternative alignment for this important coastal route has been identified, this is a long term proposal that will be costly to implement.

5.5 The State of Freight

The freight sector is critical to the efficient movement of goods in support of the economy and the provision of services. On the other hand, it can be a hindrance to traffic flow, and trucks place a disproportionate maintenance burden on road infrastructure (and the impact of accidents are great).

Freight movement in the city as a whole can be seen on the map below: clearly the largest volumes are on the national roads, and related to the Port. Cape Town's deep water port processes ±15 million tons of freight per annum, with around 95% of freight movement on the land-side being road-based. The port together with over 30 industrial areas located in various parts of the City, contribute to a high number of trucks on the municipal road network.

The City's Freight Management Strategy addresses the planning and management of freight operations within the city's functional region. It recognises the need to shift the modal split back towards rail where possible.

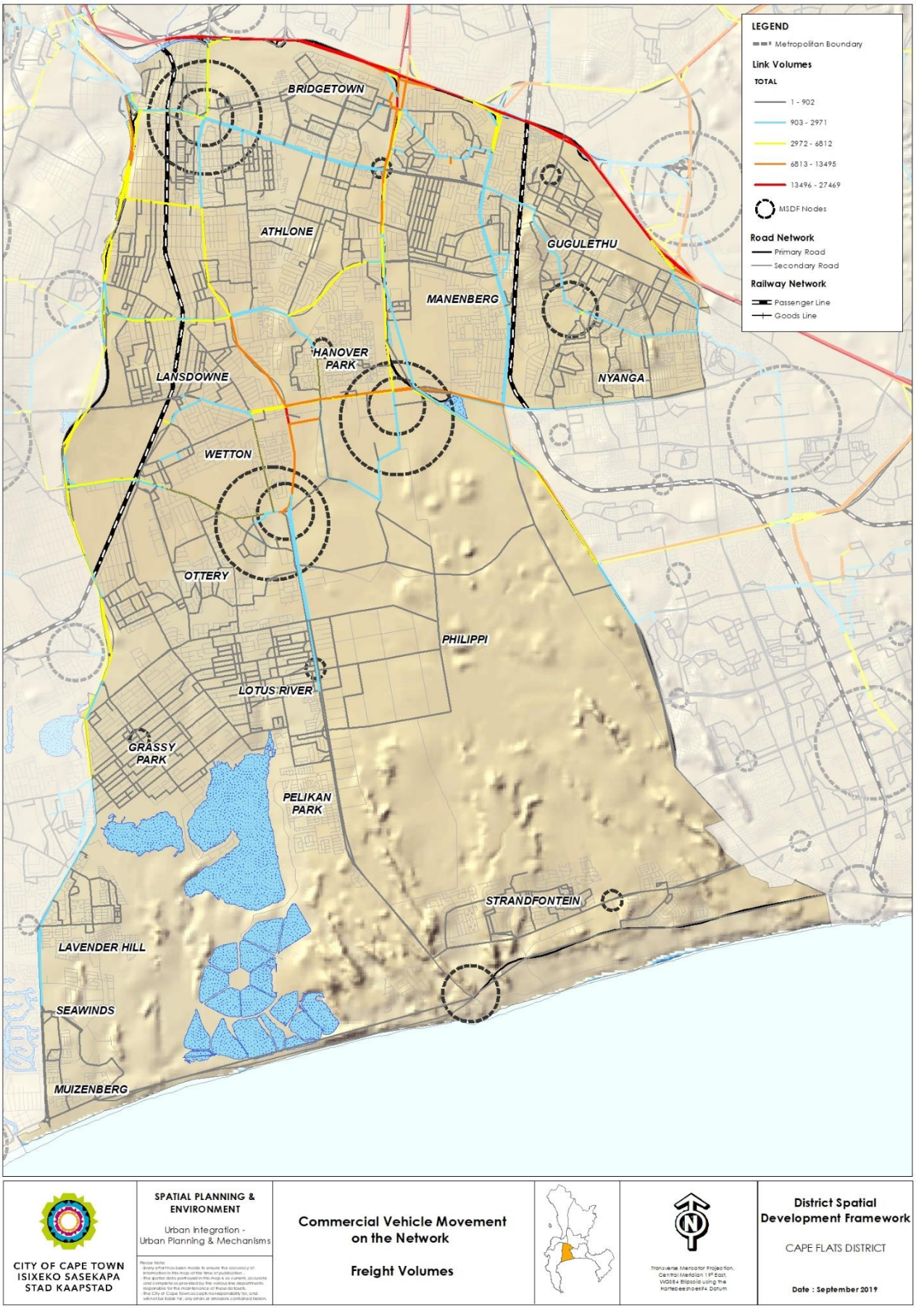


Figure 31: Road Based Freight Volumes

Figure 31 shows that the district probably experiences the least freight movement of all the districts. The exception is along the N2, but this passes along the periphery of the district: very few goods are developed within the district. The only exception is likely to be the Philippi Horticultural area, producing fresh produce.

5.6 Travel Patterns

5.6.1 Current (EMME Demand – Base year 2013)

The following features for the district as whole are:

- Few trip attractors are located in the district, so residents move out of the district to access work and education opportunities, the closest of which are mainly to the north.
- Trip generators are clustered in the north east of the district, around Gugulethu and Nyanga
- Trip generators and attractors are separated from each other: with trip generators predominating in the north-east and south west of the district, with some trip attractors in the north and north-west.

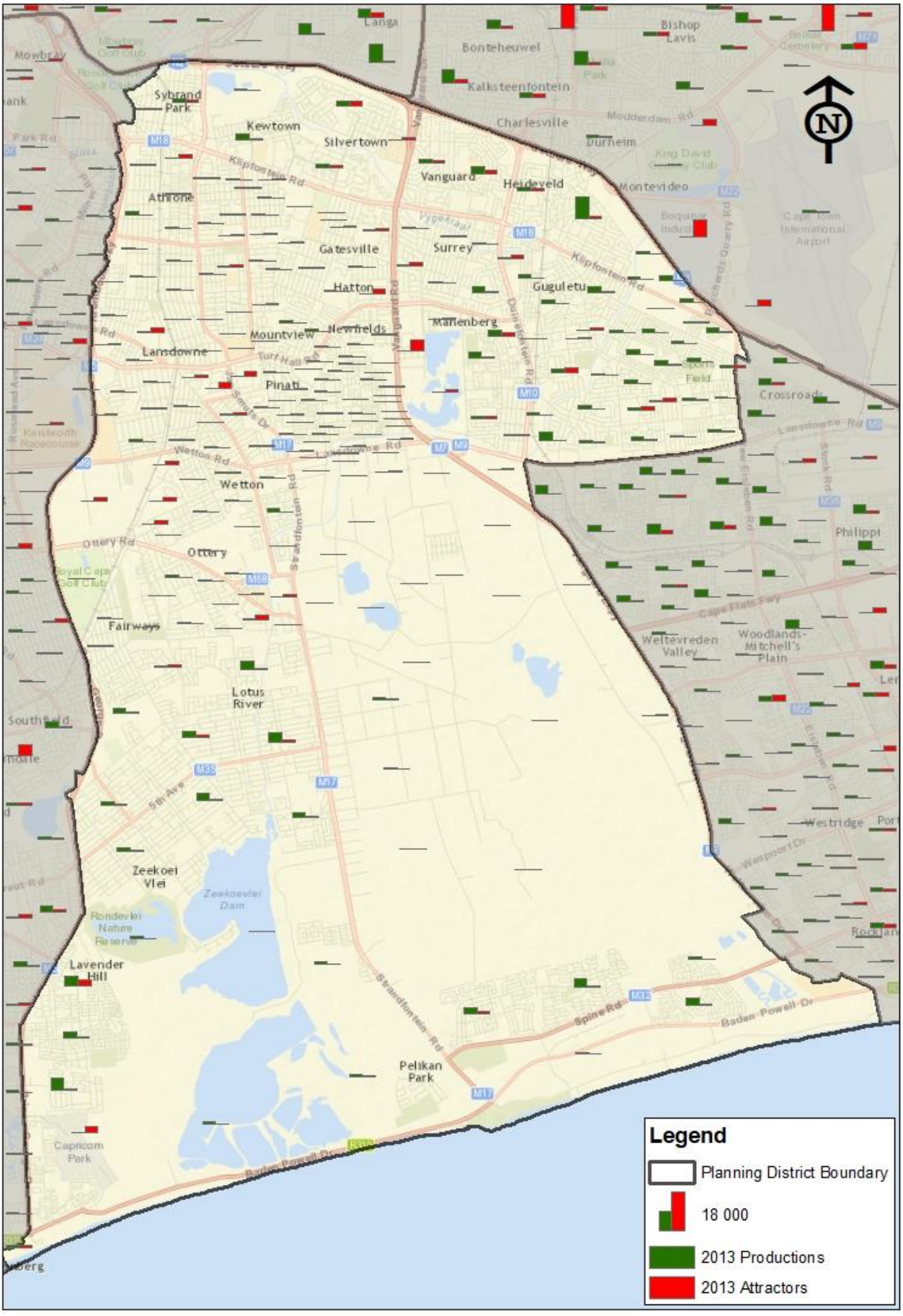


Figure 32: Base Year Trip Generators and Attractors: 2013

Many residents move out of the area, mainly to the CBD and surrounds to the west and north. A significant majority of these trips is by public transport.

- The district attracts minimal trips from all areas except the Mitchell's Plain / Khayelitsha area (most of these are by public transport)
- There is a large volume of through-movement between the metro south-east, and the CBD and surrounds.

This results in an inefficient use of public transport and of the road-space, which is strongly tidal (mono-directional).

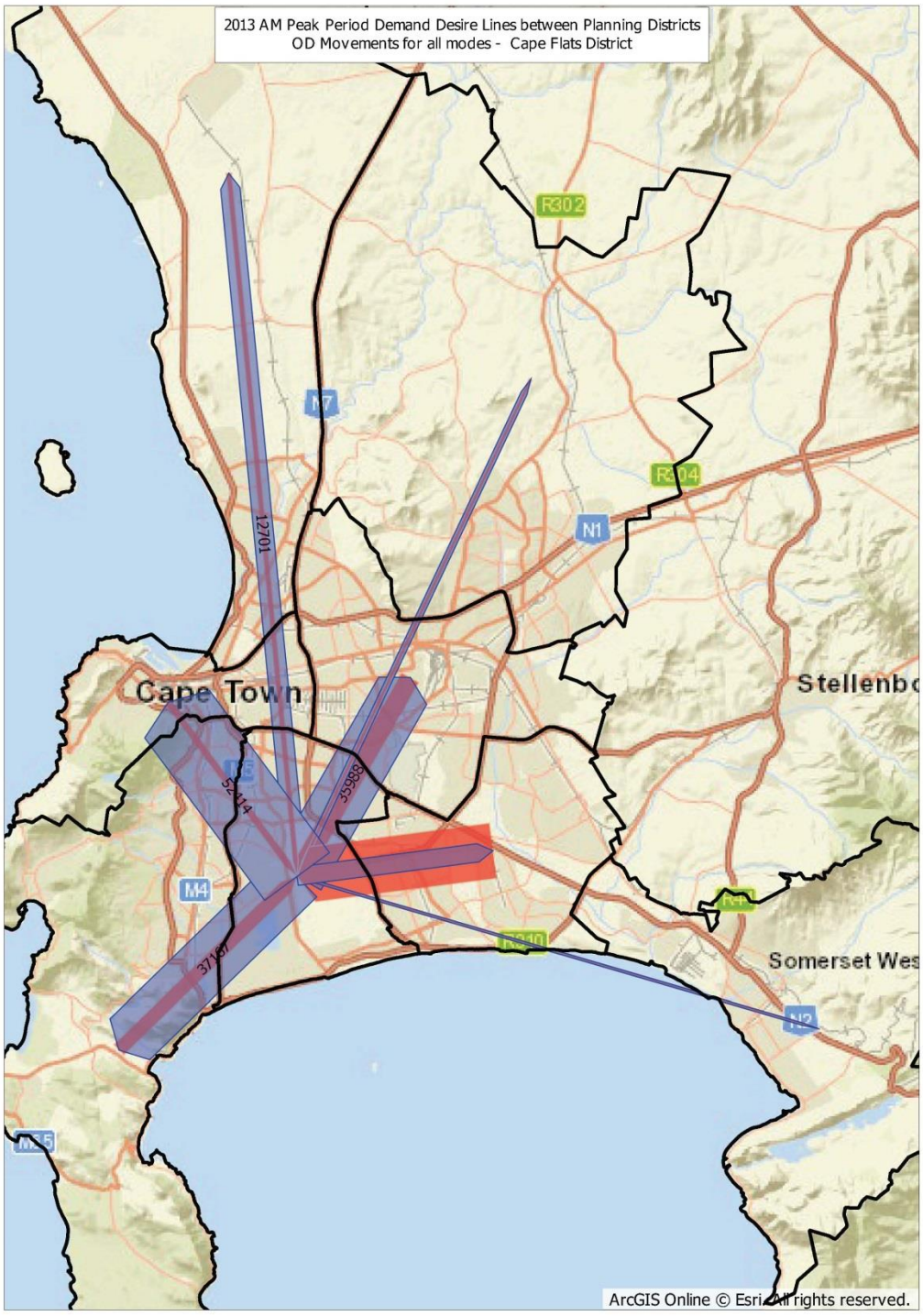


Figure 33: Origin-Destination for Commuter Trips (2013)

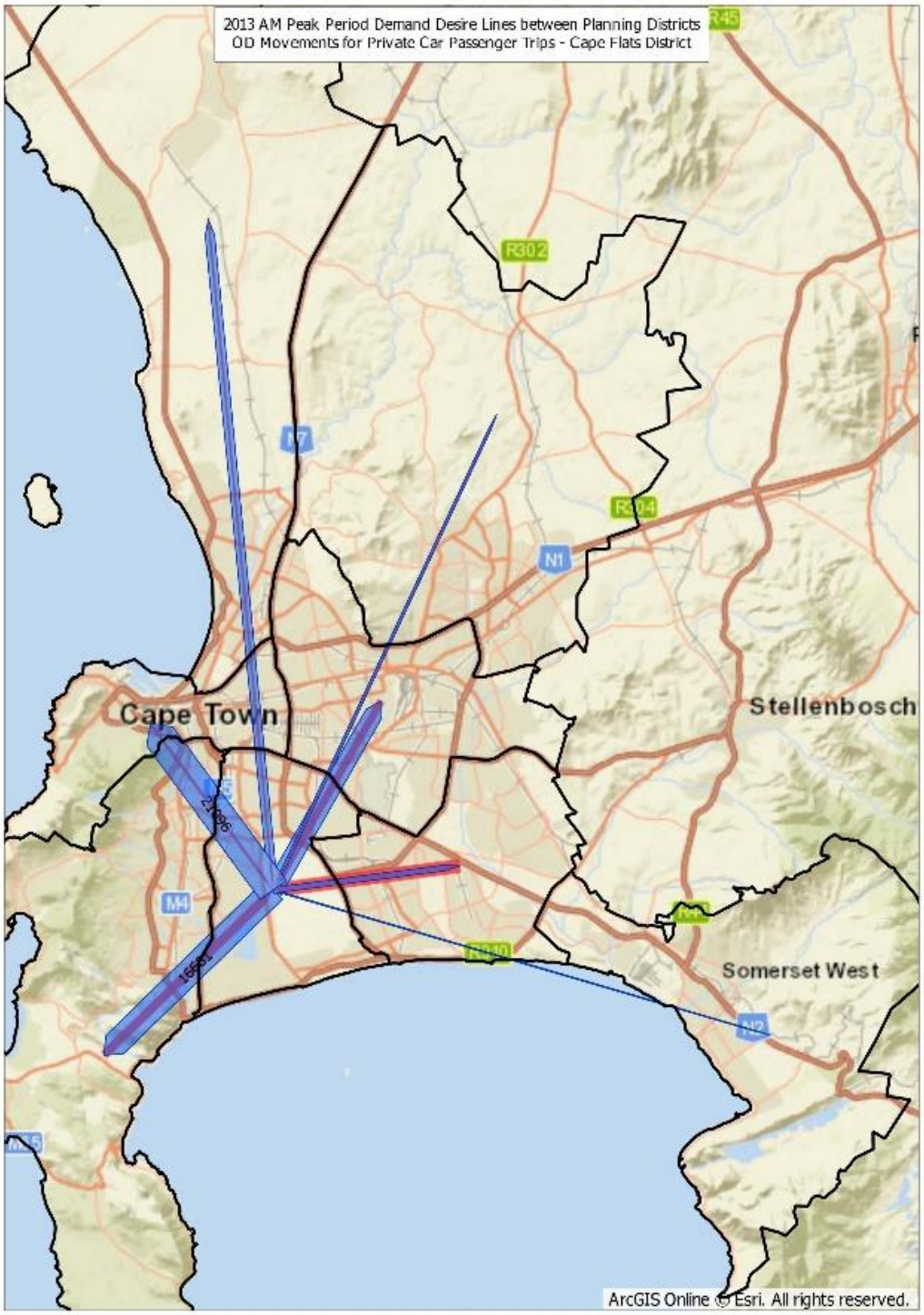


Figure 34: Origin-Destination Patterns for Private Transport

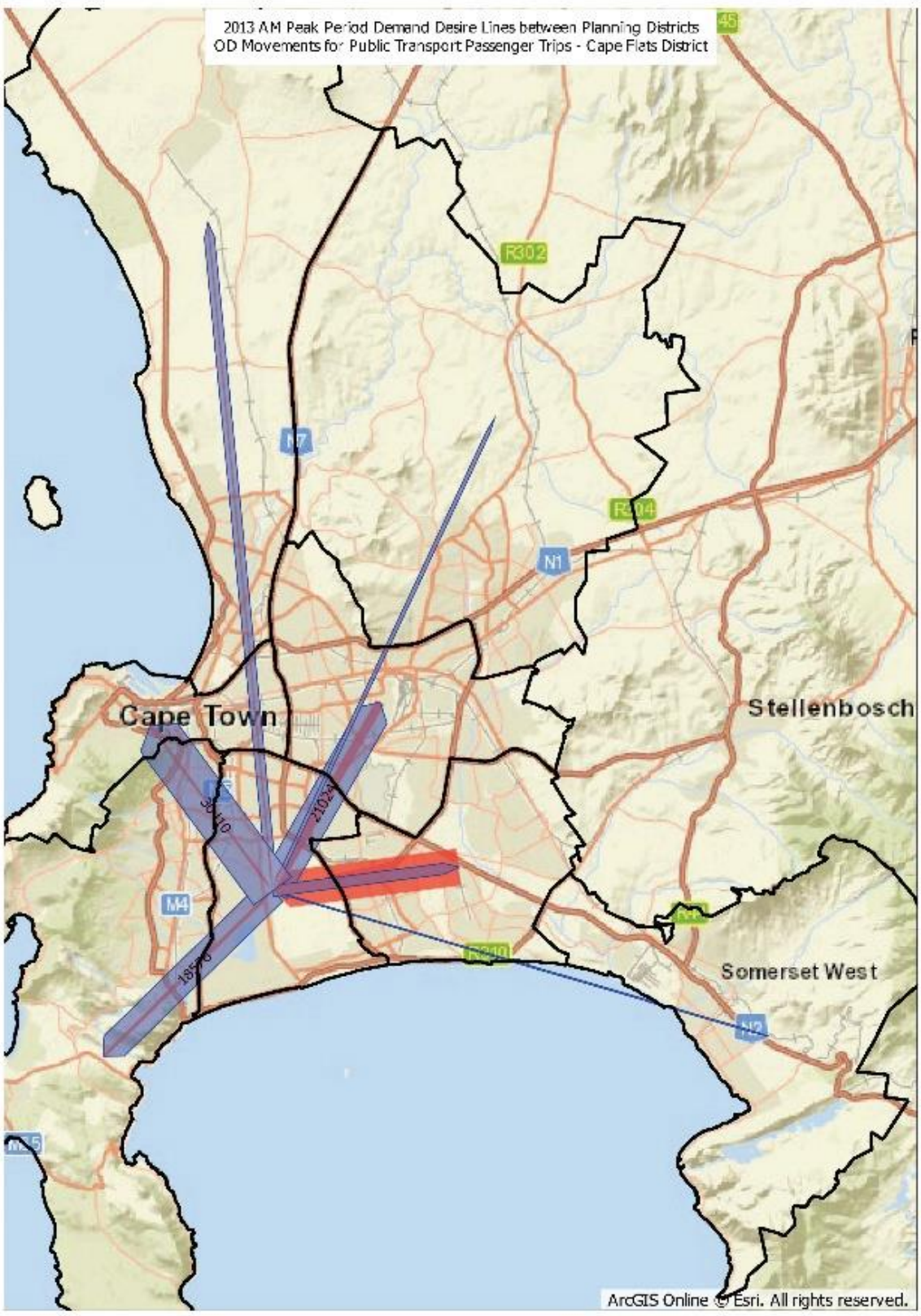


Figure 35: Origin-Destination Patterns for Public Transport

Table 17: Trip Generation

Origin	Destination	NMT	Car	Taxi	Bus	BRT	Train	Public Transport	Total
Cape Flats	Table Bay	334	2466	5383	4543	73	5587	15586	**18386**
Cape Flats	Blaauwberg	7	1041	1832	973	7	382	3194	**4242**
Cape Flats	Northern	0	835	454	346	1	527	1328	**2164**
Cape Flats	Tygerberg	905	3402	3690	3285	0	3347	10322	**14629**
Cape Flats	Helderberg	0	709	609	606	0	740	1955	**2665**
Cape Flats	Khayelitsha / Mitchells Plain	232	920	814	1169	0	750	2733	**3884**
Cape Flats	Southern	1046	5499	3720	3306	0	2760	9786	**16331**
		2524	**14872**	**16503**	**14227**	**81**	**14094**	**44905**	
Cape Flats	Cape Flats	1850	4206	2506	2782	0	1327	6614	**12671**
Table Bay	Cape Flats	132	1084	498	268	1	1093	1860	**3076**
Blaauwberg	Cape Flats	5	162	284	290	2	168	744	**910**
Northern	Cape Flats	0	406	90	99	1	459	649	**1054**
Tygerberg	Cape Flats	425	1150	1798	958	0	1448	4204	**5780**
Helderberg	Cape Flats	2	861	828	636	0	1058	2522	**3385**
Khayelitsha / Mitchells Plain	Cape Flats	767	2379	3095	4939	1	2779	10814	**13960**
Southern	Cape Flats	297	2548	454	401	0	1001	1857	**4701**
		1627	**8589**	**7046**	**7592**	**4**	**8007**	**22649**	

5.6.2 Cost of Travel

This nature of tidal movement across the city results in an inefficient use of public transport and of the road-space: people traveling into the CBD in the morning, and out in the afternoon. The has a significant cost.

5.6.2.1 User costs

The newly-developed Urban Development Index (UDI) measured the cost of travel for different income groups, different travel modes, and to their top 5 destinations[4] in terms of travel time, travel distance, and direct costs.

Modal choice is influenced by a range of factors: not simply direct costs, but indirect costs such as safety (of the service itself), security (on the service, as well as accessing it), level of flexibility (of the service), reliability (of the service), and the impact of congestion on the service. The high rate of NMT as the primary mode of transport as evidenced in poorer areas has less to do with short travel distances, and more to do with affordability.

Generally, transport users in this district are relatively not too badly off (compared to other districts), especially with respect to direct public transport costs as a proportion of income, and motorized travel

[4] The top 5 commuting destinations were identified for each area based on employment and education patterns

distance to their top 5 destinations. The exception is the Strandfontein area, where users commute an average of 31km by private transport.

The direct costs of private transport travel as a percentage of income is highest (40%) on the Mitchells Plain side of the district and on the Muizenberg side (42%) for the low income group, and high (23-24%) for the middle income group living in the southern part of the district.

The southern part of the district is also disadvantaged with respect to travel time to their top 5 destinations: averaging 32-35min by private transport, and by bus: 92mins from the Pelikan Park area, and 122min from the Muizenberg area.

The northern part of the district is generally well off in terms of travel distance, but public transport users "pay" in terms of travel time (e.g. in the Langa area, travel time averages 80min by bus).

5.6.2.2 Operational costs

There is a high cost to operate public transport in a sprawling urban environment. If the travel demand patterns of the city remains at current variables this will translate into a deterioration of the recurrent annual operating deficit for the whole MyCiTI system by approximately R1 billion (IPTN Business Plan, 2017).

5.6.2.3 Environmental and Economic costs

- Serious constraints on economic growth and development - congestion currently costs Cape Town R2.8 billion per year.
- Increasing negative environmental impacts
- CO_2 emissions and energy consumption

5.6.3 Future Ideal Distribution of Trip Generators and Attractors (2032)

In modelling the future land use patterns which would generate the demand for trips to be served by the IPTN, an "ideal" scenario, namely "Comprehensive Transit Oriented Development", or CTOD, was run for 2032. The CTOD response is to try to balance trip attractors and trip producers in all areas, to theoretically eliminate/ minimise the need to travel by having jobs and residences in the same area. The map below shows this ideal future state to work towards, with growth in the right locations to minimise travel time.

From a transport optimisation perspective, the large quantity of anticipated residential units (trip producers) in some locations which are far from existing trip attractors needs to be countered / matched by new non-residential land uses (trip attractors) in order to achieve this goal.

From a spatial planning perspective, this means mixing land use (diversifying land use). This DSP must use it as a guide and determine how this is achievable.

The following features for the district as whole should be pursued:

- Increased job opportunities spread throughout the district
- Significantly increase job opportunities in the south east of Philippi horticultural area to provide a substantial number of jobs in the district, with could contribute positively to travel patterns, enabling bi-directional flow.

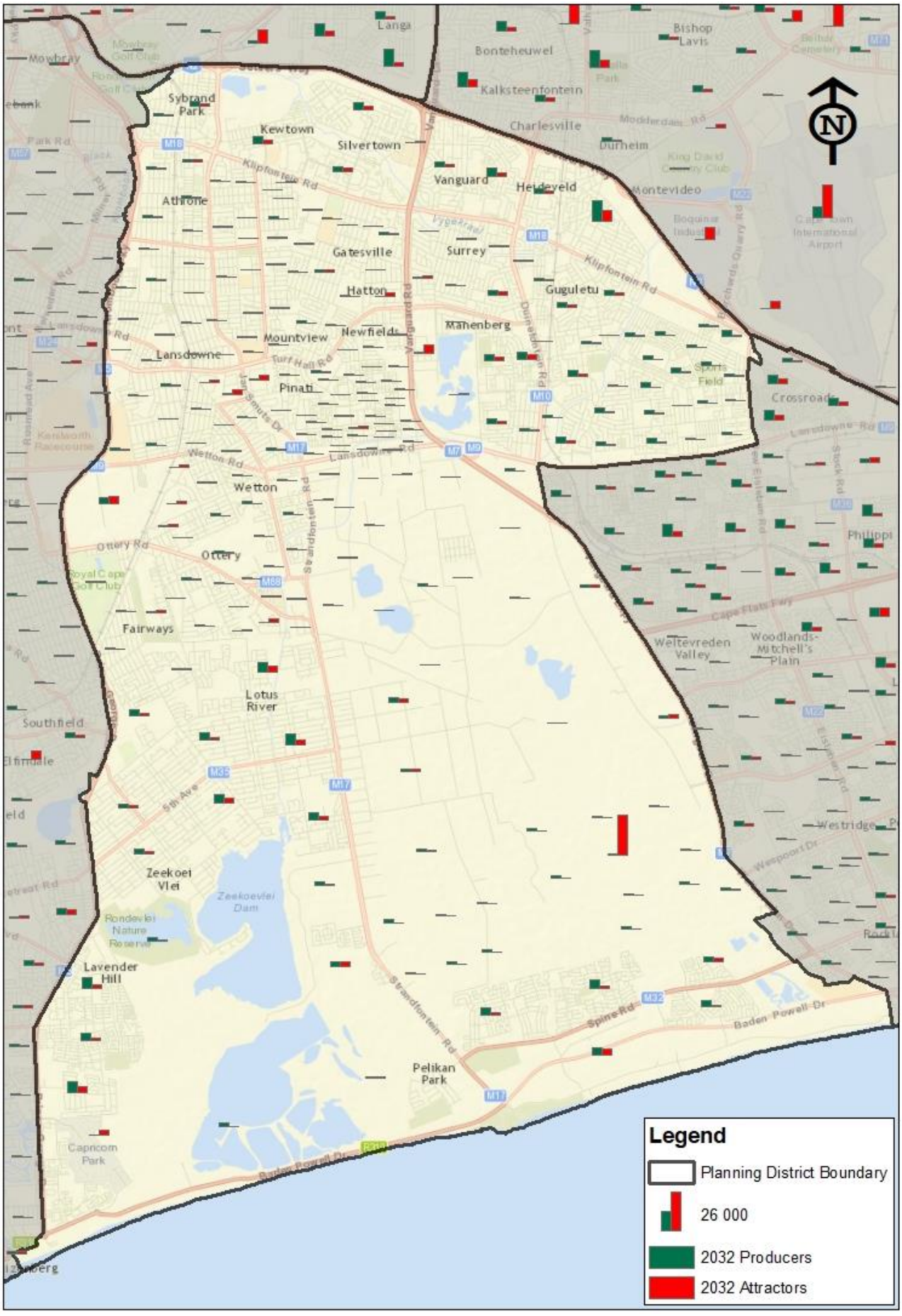


Figure 36: Future Trip Generators and Attractors (2032)

5.7 Key Transport Challenges and Opportunities

5.7.1 Constraints

- While the PHA and the Zeekoevlei water system do hinder access across the district, they are important "green lungs" which should be preserved and protected. Given this, access should be strengthened around them.
- The challenge is that the urban form is characterized by insular townships with low density development. This leads to low transport densities which cannot support quality public transport because of long commuting distances, low seat renewal (through multiple destinations along the route), and little bi-directional flow. The plan will attempt to address these challenges, which are land use issues.

5.7.2 Opportunities

- The City is moving towards incrementalism in the provision of public transport. This should benefit the district whose residents are largely dependent on public transport.
- New generation technologies are evolving rapidly in the transport sector, and may benefit the district, for example cashless payment for public transport.

5.7.3 Spatial Implications

Potential exists to impact on the movement patterns in the district, particularly through enabling future economic development within residential areas, and supporting any latent potential for the development around the Strandfontein node (in line with CTOD).

The northern part of the node should benefit from the focused public investment of the Metro SE Integration zone, and the public transport and related investment of Phase 2A. Densification and diversification should be pursued along public transport routes.

Throughout the district, it may well be worthwhile aligning with the Resilience Strategy process: some of its related pathfinding questions have relevance:

- How can we can we improve the design and co-location of public facilities to achieve multiple resilience dividends?
- How can we incentivise city residents to become more involved in resilient place making?
- How can partnerships in society be leveraged to contribute to reducing the stress of traffic congestion?

6 INFRASTRUCTURE

Medium Term Infrastructure Investment Framework (MTIIF)

Figures 40 and 41 shows the current level of supply (slight/severe lack as well as adequate/spare capacity) of water, sanitation, electricity and stormwater infrastructure in the Cape Flats district as identified in the 2015 Medium Term Infrastructure Investment Framework.

6.1 Electricity

Bulk electrical infrastructure includes:

- Existing main transmission substations (MTSs)
- New MTSs
- Existing 132/11 kV distribution substations
- New 132/11 kV distribution substations
- Existing 132 and 66 kV underground (UG) cables and overhead lines (OHLs)
- New 132 kV UG cables

The information used for the assessment of bulk electrical infrastructure capacity is from 2018 peak loads at distribution substations. The information was processed and each substation supply area classifies according to its level of existing capacity. There are 114 substation supply areas in the metropolitan area. 82 of these are within the City of Cape Town's distribution area, while 38 are within Eskom's area of distribution. The table below gives the definitions used to classify the capacity of a substation area. The assessment was done using Transport Analysis Zones (TAZ's) indicated in blue in Figures 38 and 39, which have different geographical delineations when compared to the substation supply areas.

Table 18: Definition of electrical system capacities

Capacity status	Definition
Severe lack of capacity (red)	Over 100% of firm substation capacity
Slight lack of capacity (Orange)	90% to 100% of firm substation capacity
Adequate capacity (Yellow)	70% to 90% of firm substation capacity
Spare capacity (Green)	Less than 70% of firm substation capacity

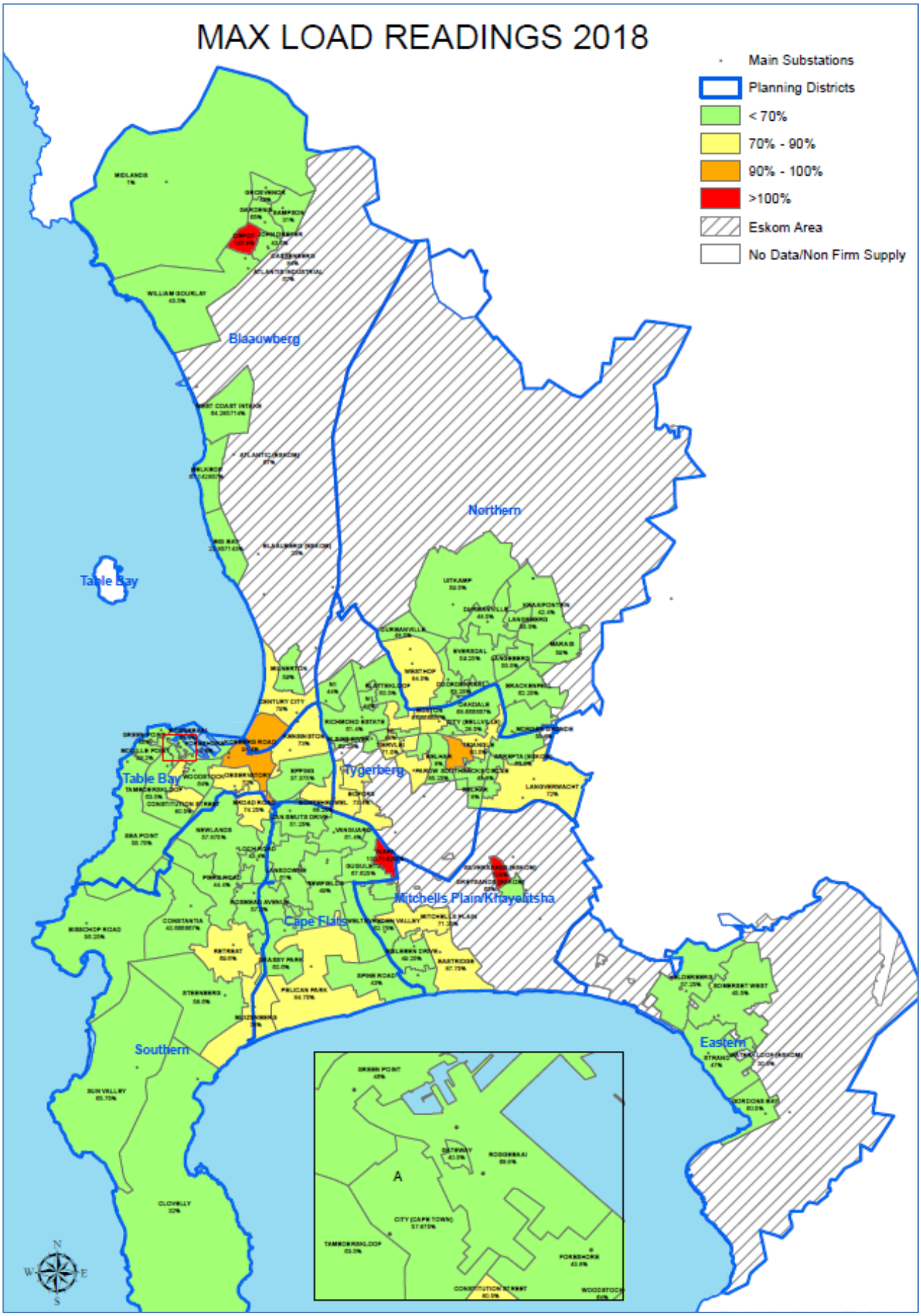


Figure 37: Substation Loading 2018

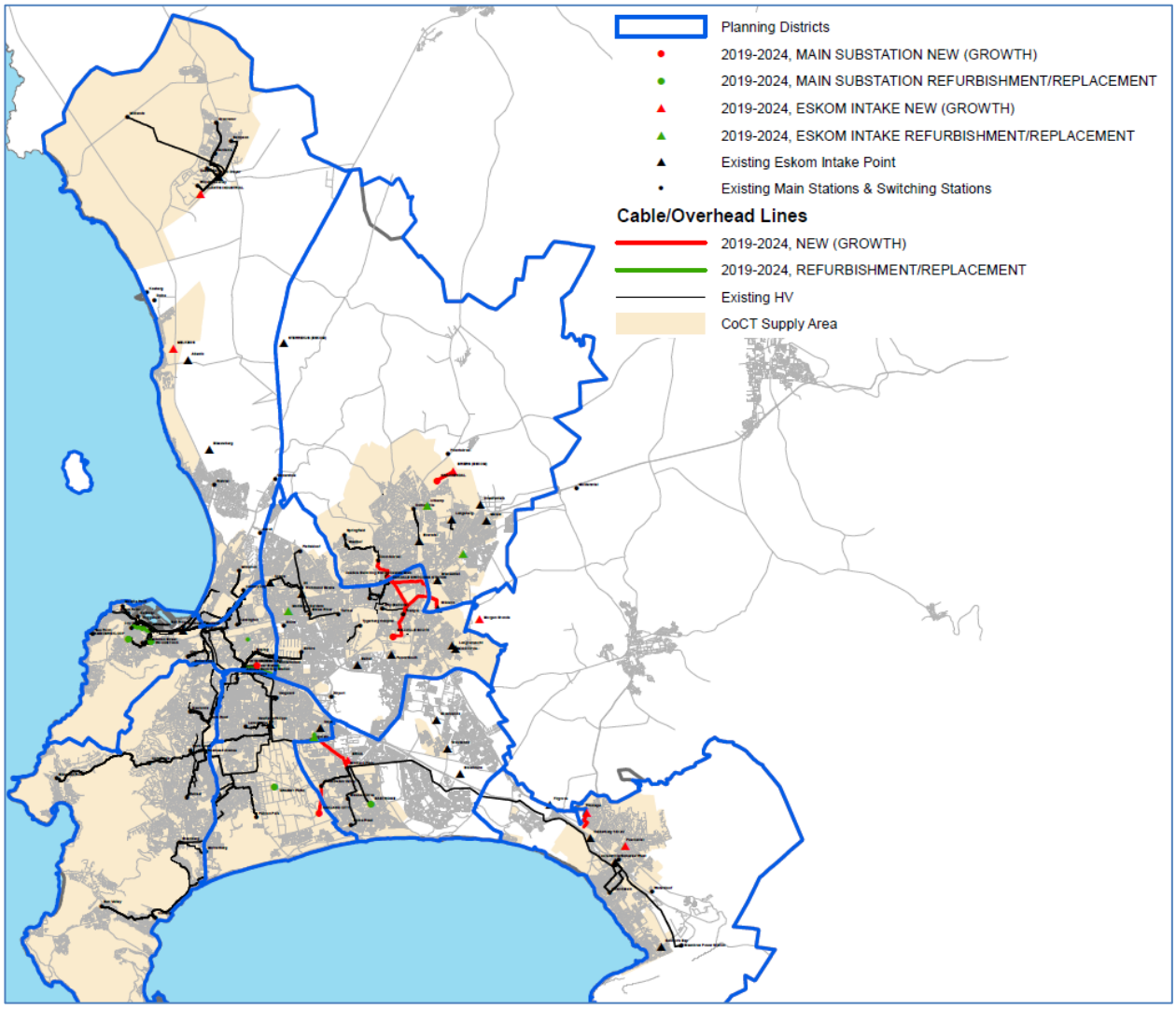


Figure 38: Proposed electricity infrastructure projects

In **Cape Flats district**, no areas have a **severe lack of capacity** and the District has **adequate** or **spare capacity.**

A project to add an additional major Eskom intake point in the area is planned.

6.2 Water

For the purposes of this project bulk water infrastructure included the following:

- Bulk supply system from the water sources to the water treatment works (WTW)
- WTWs
- Supply pipelines from the WTW to reservoirs
- Reservoirs
- Pump stations and rising mains
- Distribution pipes ≥250 mm diameter (nominal)

The information used for this baseline assessment relies on 2011 and 2015 data which was processed for MTIIF. The impacts of the drought in terms of water infrastructure and

Table 19: Definition of water system capacity

Capacity status	Definition
Severe lack of capacity	0 - 15 m residual pressure in the reticulation networks < 36 hours x AADD reservoir storage
Slight lack of capacity	15 - 24 m residual pressure in the reticulation networks 36 - 48 hours x AADD reservoir storage
Adequate capacity	25 - 60 m residual pressure in the reticulation networks 48 – 72 hours x AADD reservoir storage
Spare capacity	> 60 m residual pressure in the reticulation networks > 72 hours x AADD reservoir storage

In the Cape Flats district, **no areas** are experiencing a **lack of capacity**

The following areas have a **slight lack of capacity:**

- Parts of Gugulethu including: Barcelona, Nyanga, New Cross Roads and Zondi
- Vrygrond

The following areas have **adequate** or **spare capacity:**

- The entire sub-district 1(Greater Athlone) has adequate/spare capacity
- Manenberg
- The entire sub-district 4(Philippi Horticulture Area) has adequate/spare capacity
- Zeekoevlei, Lavender Hill and Muizenberg
- The entire sub-district 5(Muizenberg East – Pelikan Park) has adequate/spare capacity

New Water Program. The purpose of the New Water Program is to make the city more resilient to drought by making available water from new and diverse sources including ground water, wastewater reuse and desalination. The current planned augmentation programme will provide between 39 and 59 million cubic metres (Mm^3) of water in 2018/19 (in addition to the current restricted annual allocation to CCT which is 175 Mm^3).

- **Groundwater:** sandy aquifers (Atlantis & Cape Flats) and TMG aquifer capital budget R1.54bn and operating budget R245m. This covers the cost of drilling, connecting infrastructure, electricity and treatment into the water reticulation system as well as operating the system at each site;

- **Water re-use:** budget provision of R872m capital and R122m operational for the year which includes the temporary plant at Zandvliet, design of permanent long-term re-use as well as recharge to Cape Flats aquifer from Borcherd's Quarry, Mitchell's Plain and Cape Flats wastewater treatment plants; and

- **Desalination:** The temporary desalination plants at Strandfontein, Monwabisi and V&A require an operating budget of R646m for the year, with no capital investment.

6.3 Sanitation (Waste Water and Solid Waste)

6.3.1 Waste Water

Waste Water infrastructure includes the following components:

- All wastewater treatment works (WWTWs)
- Pump stations (≥50 ℓ/s duty flow)
- Rising mains (≥250 mm diameter (nominal))
- Gravity pipelines (≥250 mm diameter (nominal))

The information used for this baseline assessment relies on 2011 and 2015 data which was processed for MTIIF.

Table 20: Waste Water capacity definition

Capacity status	Definition
Severe lack of capacity	WWTW: Capacity exceeded (major drainage areas) Gravity mains: < 15 % relative spare capacity
Slight lack of capacity	WWTW: Capacity exceeded (minor drainage areas) PS: Required pump flow 105% - 115% of current capacity Gravity mains: 15% - 30% relative spare capacity
Adequate capacity	WWTW: 95% - 100% of treatment capacity required Gravity mains: 30% to 50% relative spare capacity PS: Required pump flow 95% - 105% of current capacity
Spare capacity	WWTW: < 95% of treatment capacity required PS: Required pump flow < 95% of current capacity

In the Cape Flats district, the following areas have a **severe lack of capacity**:

- Surrey estate, Newfields, Heideveld, Sand Industria, Pelican Park and parts of Athlone, Lansdown, Rondebosch East, Gatseville and Hutton
- The entire sub-district 2(Manenberg / Gugulethu / Nyanga) has a sever lack of capacity
- Parts of Ottery East
- Parts of Muizenberg
- Wavecrest and Strandfontein Village

The following areas have a **slight lack of capacity**:

- Parts of Parkwood
- Parts of Pelican Park
- Pelican Park Heights, Strandfontein and San Remo

The following areas have **adequate** or **spare capacity**:

- Penlyn Estate, Mountview, Hanover Park, Pinati Estate, Belgravia, Belthorn Estate
- Wetton, Ottery, Lotus River and Grassy Park
- Knole Park
- Parts of Pelican Park

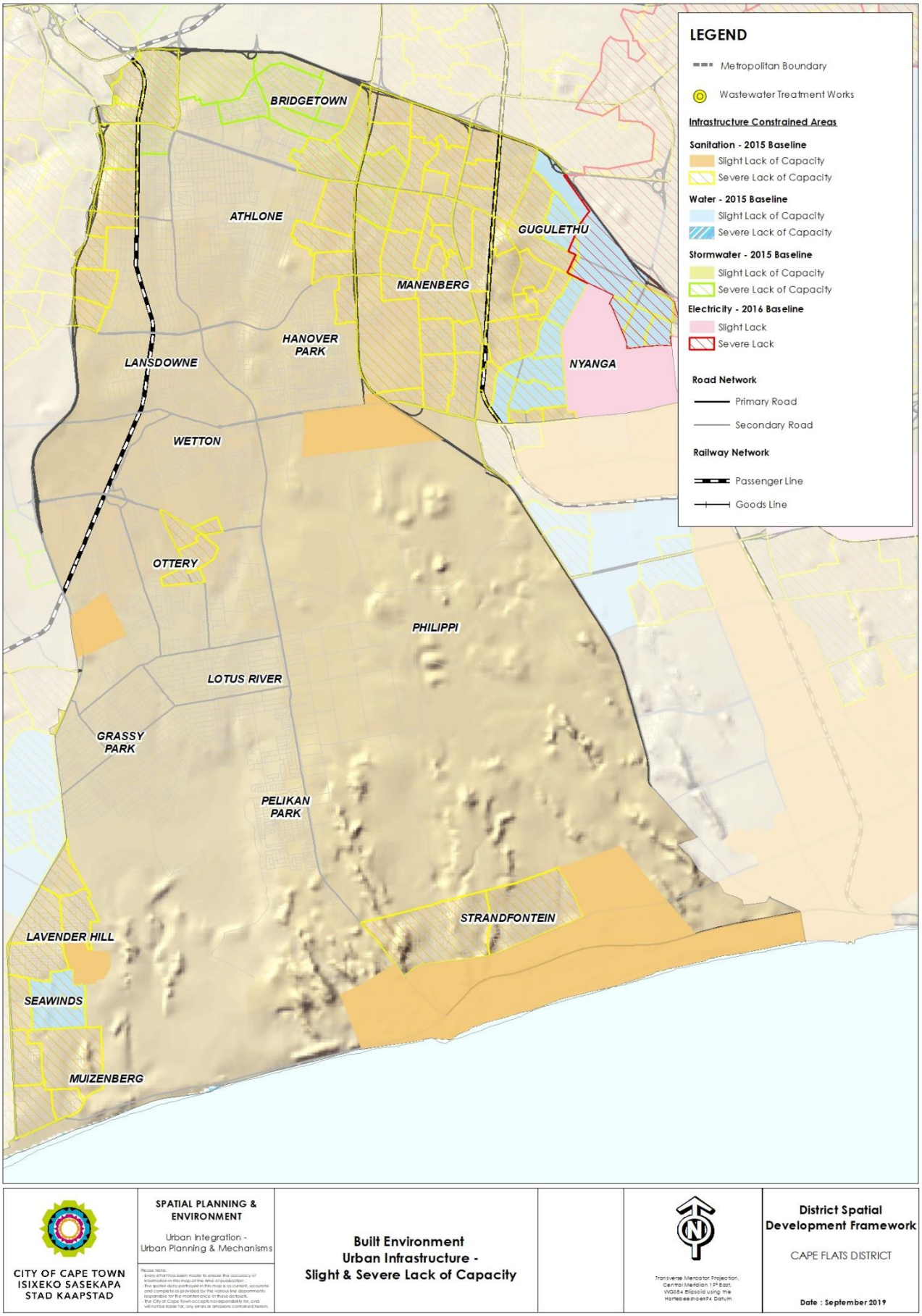


Figure 39: Infrastructure - Areas with slight or severe lack of capacity

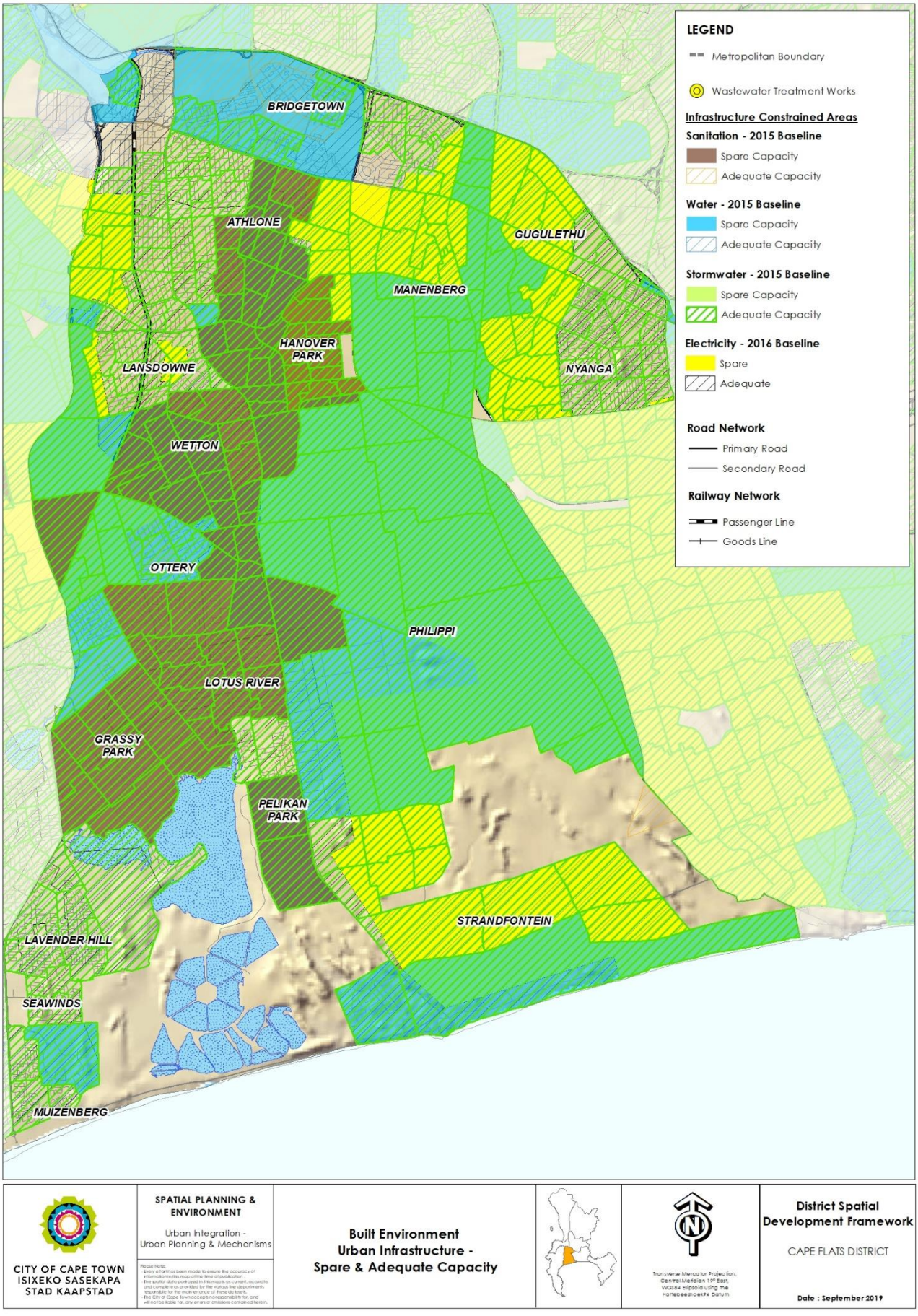


Figure 40: Infrastructure - Areas with adequate or spare capacity

6.3.2 Bulk solid waste

Bulk solid waste infrastructure considered for the purpose of this project consists of the infrastructure required to provide current waste management services to existing and future developments and new infrastructure associated with evolving legislative requirements. This includes:

- Landfills and associated mechanical plant
- Refuse transfer stations
- Drop-off facilities (garage waste, greens, builders rubble, recyclables, household hazardous waste)
- Buy-back centers
- Fleet (Workshop, Collection vehicles, Cleansing vehicles)
- Material recovery facilities
- Alternative treatment technologies

The information is based on data from 2019.

Table 21: Existing bulk solid waste management infrastructure capacity status

Infrastructure type	Capacity status	Comment
Landfills and mechanical plant	The total banked airspace is >10 years in the city, but less than the international benchmark of 15 years. Excludes regional landfill site of which the authority is under consideration.	Landfill sites are not area bound. The city only has 3 operational landfills. Due to Limited capacity at landfills, based on license conditions. All landfills have a limited life, per their specific license, and hence will close as the said conditions are met. Infrastructure, plant and equipment at all landfill sites are sustainable managed and compliant with License Authority regulated audits. The Regional landfill will receive most household/business waste via RTSs.
RTSs	The total transfer capacity available currently meets the demand capacity. Additional RTSs are being planned and included in the SWM IWM Plan. RTSs are primarily designed for the waste compactor fleet servicing household/businesses.	RTSs are strategically located throughout the city and hence do not necessarily coincide with the city area model. TRSs service large catchments, structured in terms of resource economic models. Due to the sensitivity of obtaining land/authority of these type of activities closer to high demand areas, they are in most instances built at landfill sites or on main roads to improve accessibility. More RTSs are however required as existing centralized landfills are closing. At an RTS the waste collected by refuse compactors are downloaded, re-compacted, containerized and then hauled to landfill sites. These new

		required additional RTSs will where practically possible be developed on landfill sites (operational or closed) or be strategically located on city owned land.
Drop-off facilities	Currently the city has adequate capacity in terms of drop-off floor area. The actual number of drop-offs are significantly less than what is required to improve accessibility.	The need for drop-offs closer to communities is a major challenge. The current spread is a drop-off within 7km of each household. Due to many economic and social factors communities find it difficult to effectively utilize these facilities. To improve accessibility and to decrease illegal dumping the planned spread of drop-offs should not be one within 3km of each household, with even a higher density in poorer communities. It is extremely difficult to find suitable land that is compliant with city policies and by-laws, additional to the resistance from adjacent or close-by property owners. Pressure is on SWM to close existing facilities as development is allowed closer to the same.
Buy-back centers / recycling facilities	Nil	There is a huge desire to develop buy-back centers or recycling facilities, to be operated by SMME's, CBO's, NGO's or the city in poorer communities throughout the city. Whilst the land requirement is <1000m², it is difficult to secure city land within communities that are compliant with city policies and bylaws. Support for these type of facilities is increasingly provided by Councilors and lately also from City Urban Renewal and Sub Councils.
Fleet - Collection vehicles	Adequate number of collection compactors	Replace and supplement Collection fleet in accordance with city growth and service requirements (different communities, local conditions, different vehicle types). Ensure collection fleet has an average replacement age of < 7 years
Fleet - Workshop	Adequate capacity	City operates own dedicated workshop for servicing at Hillstar. Emergency repairs & maintenance, tyre services and overhauls are outsourced.
Cleansing vehicles	Lack in capacity of the correct vehicles, heavy plant and equipment	Replace and supplement Cleansing fleet in accordance with city growth and service requirements (different communities, local conditions, different vehicle types). Ensure cleansing fleet has an average

		replacement age of less than the 5 years, 7 years and 12 years respectively. The number of vehicles need to increase significantly, also the type of vehicles in use., such as mechanical cleaning equipment, loaders and tippers.
MRFs	Lack of capacity in the city	Growth in recycling is hampered due to the unavailability of MRFs. The city has developed a MRF in Kraaifontein and 2 more are planned for development, at Coastal Park and at ARTS. The city will supplement these larger MRFs with mini-MRFs to increase capacity, to improve accessibility by all and to create SMME opportunities. Current larger drop-offs are earmarked for this added function.
Alternative treatment technologies	No capacity	In terms of legislative requirements, the city is obliged to meet stringent diversion targets for several waste types. Organic and food waste diversion is a major challenge that falls in this category for alternative treatment technologies. Best technologies, required infrastructure and business requirements are being investigated in an effort to identify the basic requirements. Where practically possible existing land at landfills or RTSs will be used to host the new integrated waste infrasytructure.

6.4 Stormwater

The stormwater system of the CCT consists of a wide range of infrastructure components. The CCT's *Management of Urban Stormwater Impacts Policy* (CCT, 2009) defines the stormwater system as "both the constructed and natural facilities, including pipes, culverts and watercourses, whether over or under public or privately owned land, used or required for the management, collection, conveyance, temporary storage, control, monitoring, treatment, use and disposal of stormwater".

The stormwater infrastructure applicable to this study therefore includes the following:

- Piped networks (excluding provision for minor drainage system associated with road provision)
- Culverts
- Open channels, lined and unlined, including watercourses

- Detention and retention facilities
- Energy dissipation structures
- Water quality management facilities
- Outfalls to watercourses or the sea
- Storm surge and flood protection infrastructure

There are no areas within the Cape Flats district that is experiencing severe lack of capacity in terms of stormwater.

6.5 Key Opportunities and Constraints

In terms of the assessment above, areas that have spare capacity signify opportunities, while those with a severe lack of capacity are the most constrained areas.

The MTIIF information needs to be updated and verified by line departments, which should include new projects to address the existing backlogs in the district.

7 HUMAN SETTLEMENTS

The concept of integrated human settlements goes beyond providing housing, but rather speaks to creating environments that support the social, physical, and economic integration of housing developments into the existing urban fabric and establishing quality living environments that are sustainable. This means that housing is merely one of the basic infrastructure components required to build integrated and resilient communities (see Figure 22 below). Housing must be integrated within areas through housing mix, typologies, design and income, and be close to transport routes supporting transit-oriented development.

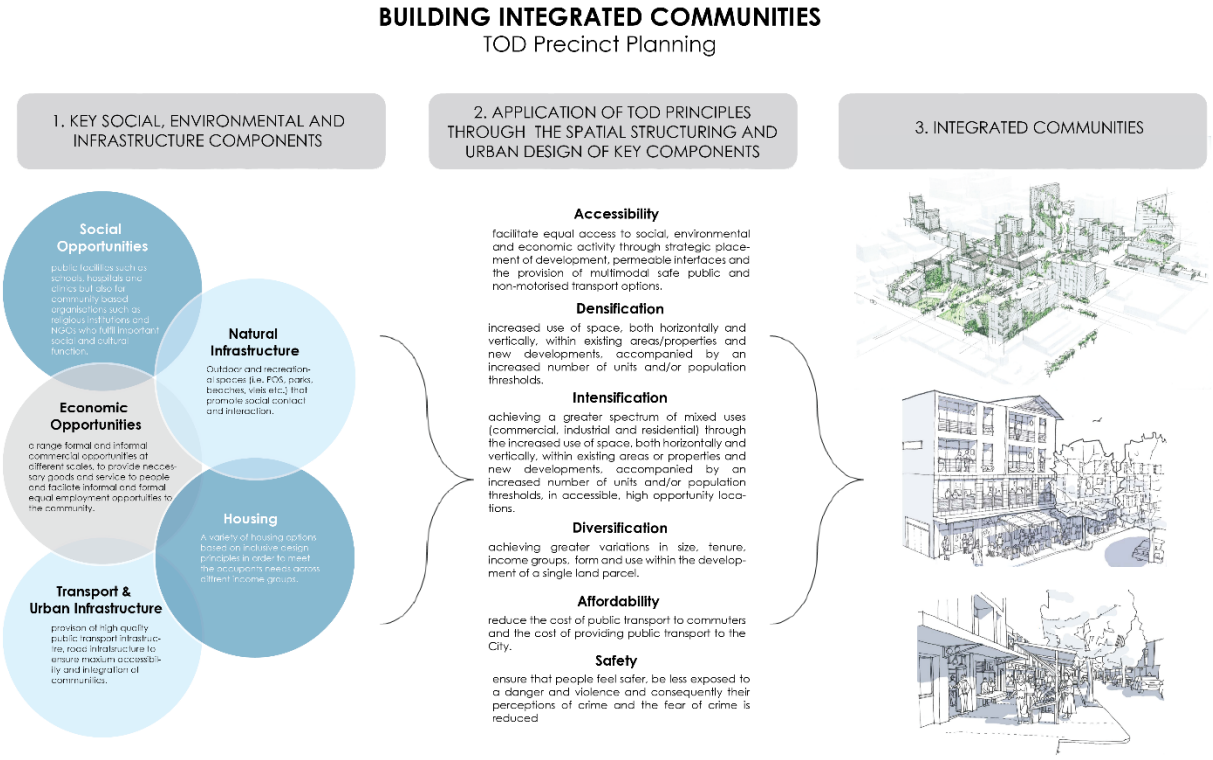


Figure 41: Building Integrated Communities

7.1 Housing Overview

7.1.1 Housing typology

The majority of structures in this district according to the 2011 census were formal dwellings at 58.6%(116 413) compared to 11.6%(27 516) informal dwellings. The latter included both informal backyarders and informal settlements. Flats and freestanding houses made up the majority of the formal housing typologies within the district. The district also has a large number of semi-detached houses (5107-4.8%). See below for a detailed breakdown of dwelling typologies. The spatial distribution of the various formal typologies is shown in Figure 10 below

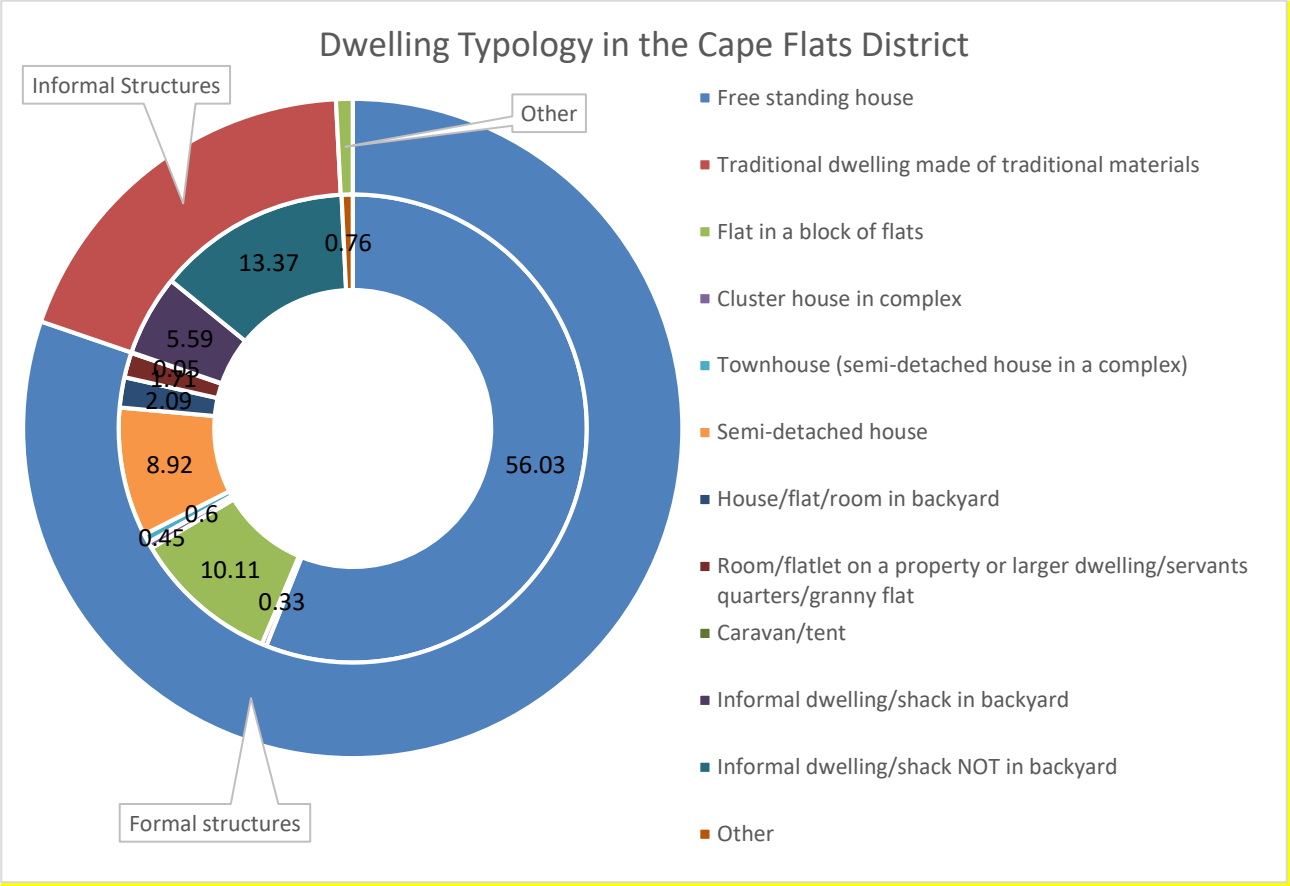


Figure 42: Dwelling typology

The doughnut chart above represents the housing typologies in the Cape Flats District. Each typology is represented in the inner ring. The outer ring groups them as follows:

- **Formal structures** consists of free standing houses, traditional dwellings, flats in a block of flats, cluster houses in a complex, townhouses, semi-detached house, house in backyard and servants quarters/granny flat;
- **Informal Structures** consists of both Informal structures in backyard as well as those not within a backyard (informal settlement); &
- **Other** consists of caravan/tent and other.

*All typologies that make up less than 1% have been omitted from the above pie chart

The dwelling typology distribution map below indicates that free standing houses are the main typology within the district. It can be seen that in Manenberg, Hanover Park and Lavender Hill the dominant housing typologies include flats and semi-detached houses whereas Bridgetown has mostly semi-detached houses. The only area in the district that has a small number of cluster/townhouse type of housing in complexes is closer to the coast in Muizenberg which includes your more recent development such as Costa da Gama.

The residential informal settlements in the Cape Flats District are shown in Figure 10. These are based on the 2017 informal door and roof count. Informality is scattered across the district however there are certain areas where this informality is much higher than others. The map below shows that the majority of informality occurs in Gugulethu / Nyanga in areas including Barcelona, Kanana, Lotus

and Phola Park and Zondi. There is also a concentration of informality within the False Bay Coastal Area in areas such as Vrygrond (informal settlement) and Lavender Hill.

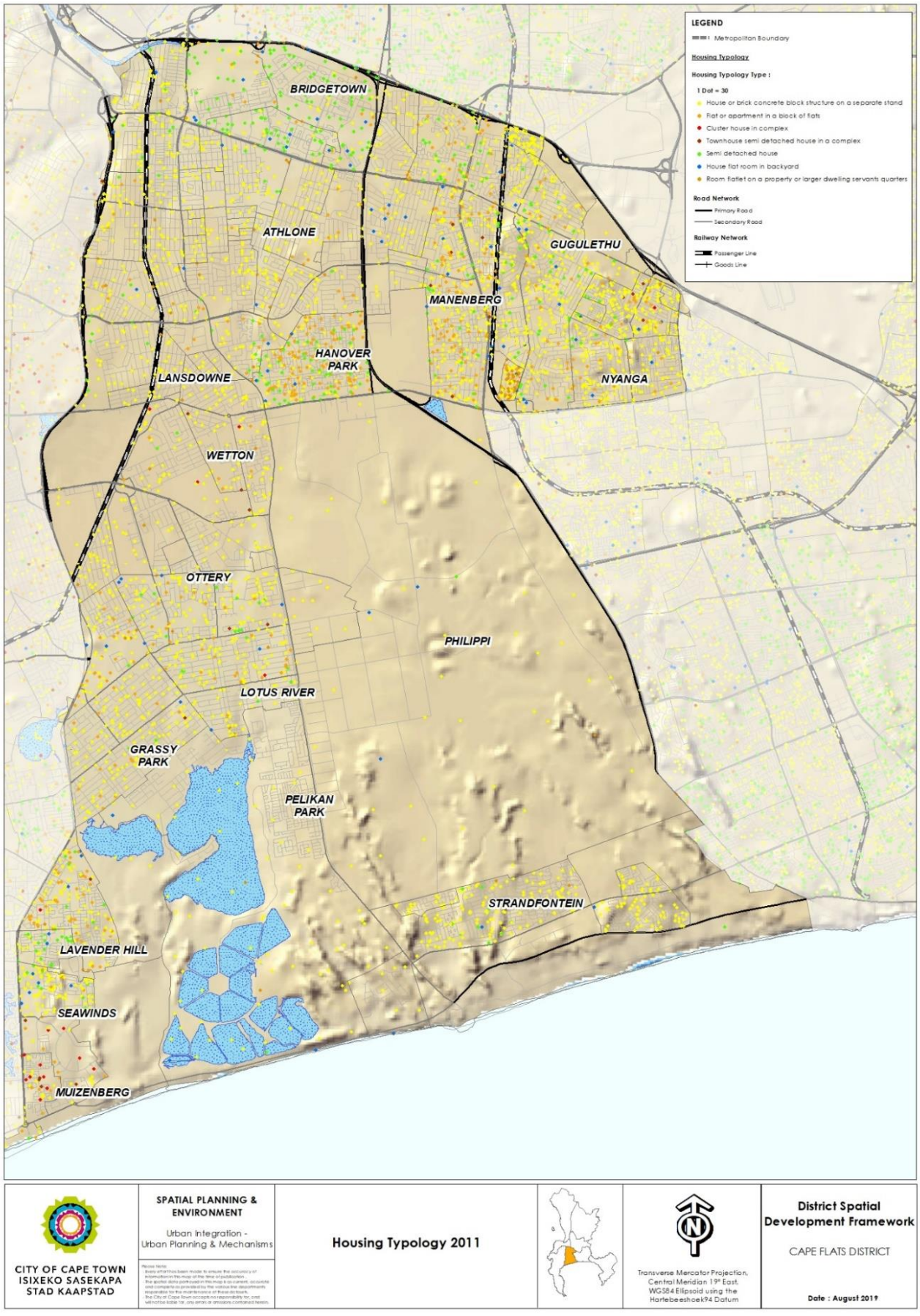


Figure 43: Spatial distribution of dwelling typologies, Cape Flats District

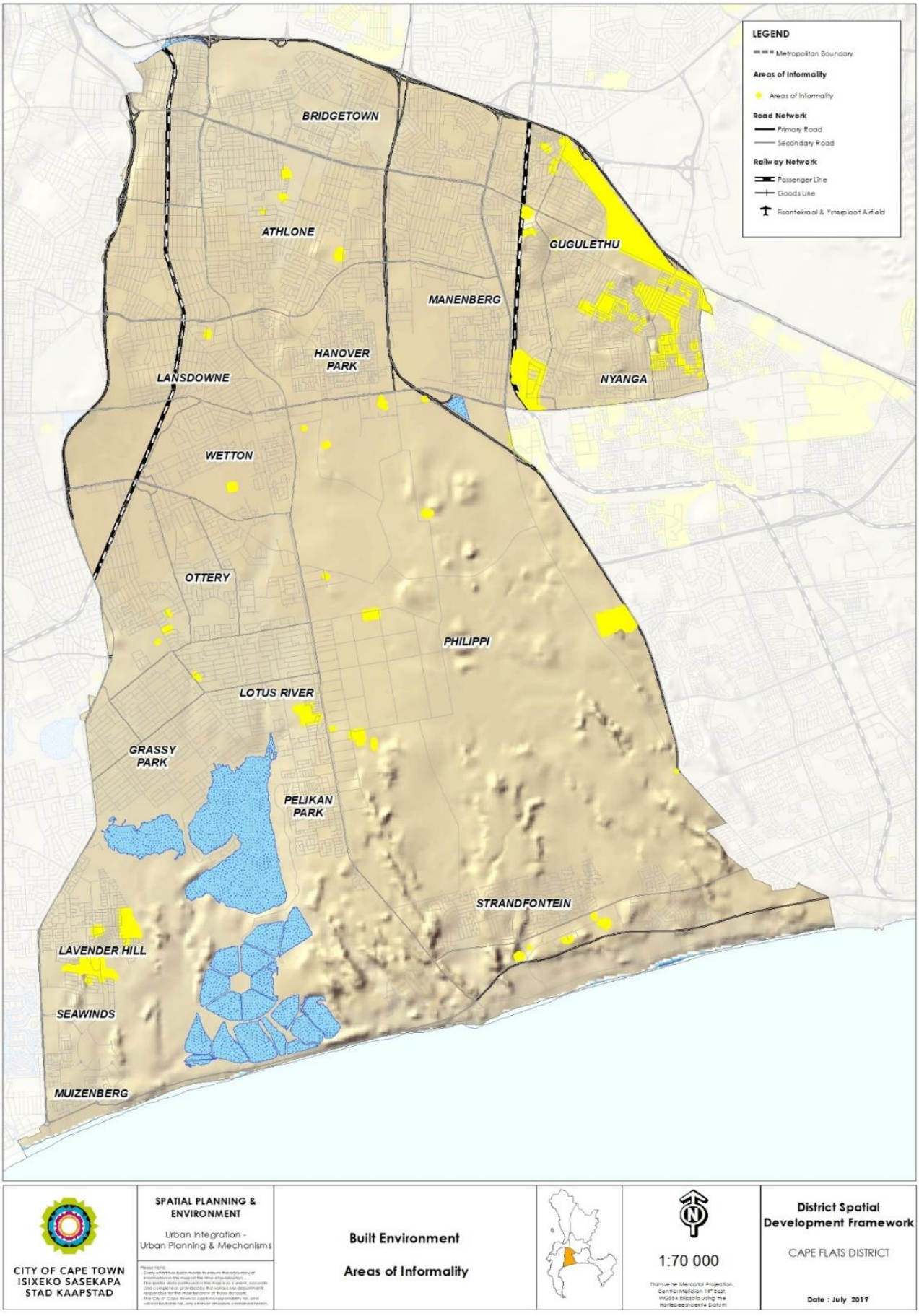


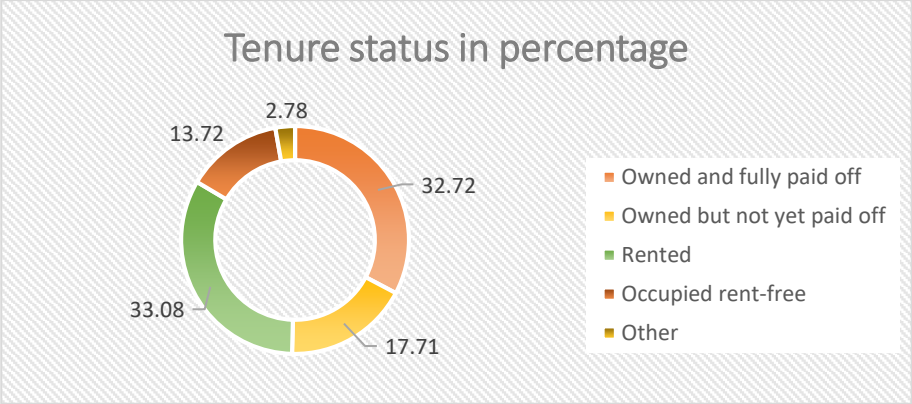
Figure 44: Areas of informality (Informal Structure Count, 2017)

7.1.2 Tenure Status

Based on census 2011 data the majority of the households are being rented (33%), closely followed by the owned and fully paid off (32%) tenure status category. The spatial distribution of tenure status shows that the rented units are prevalent in Manenberg, Hanover Park, Lavender Hill/Seawinds and Parkwood. With the exception of Parkwood these are aligned to the "medium density" housing typologies which are in most instances government housing schemes. Similarly the "occupied rent-free" housing occurs where your informal settlements are located in Barcelona, Europe, Kanana, KTC Informal and Vrygrond.

Furthermore only Strandfontein and Ottery seems to be the suburbs where the majority of the houses are owned but not yet fully paid off.

Table 22: Cape Flats District tenure status



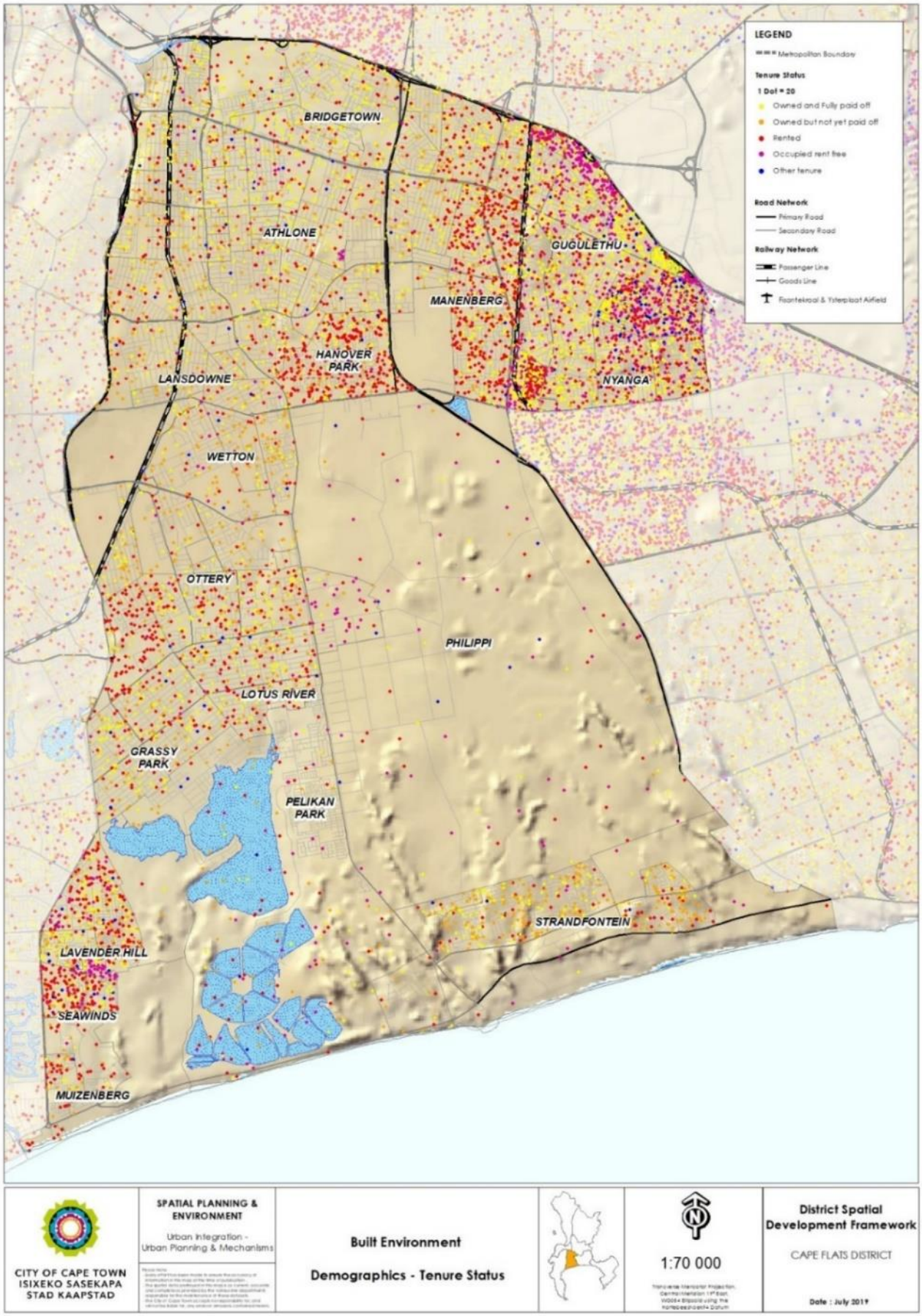


Figure 45: Demographics – Tenure Status, Cap Flats District

7.2 Housing Demand

Housing demand in Cape Flats is assessed using a proxy of the number of informal structures in the District, as well as the number of people that have registered their need for housing on the City's Housing Needs Register. NOTE: People who have registered their need for housing might also be living in informal settlements in the area.

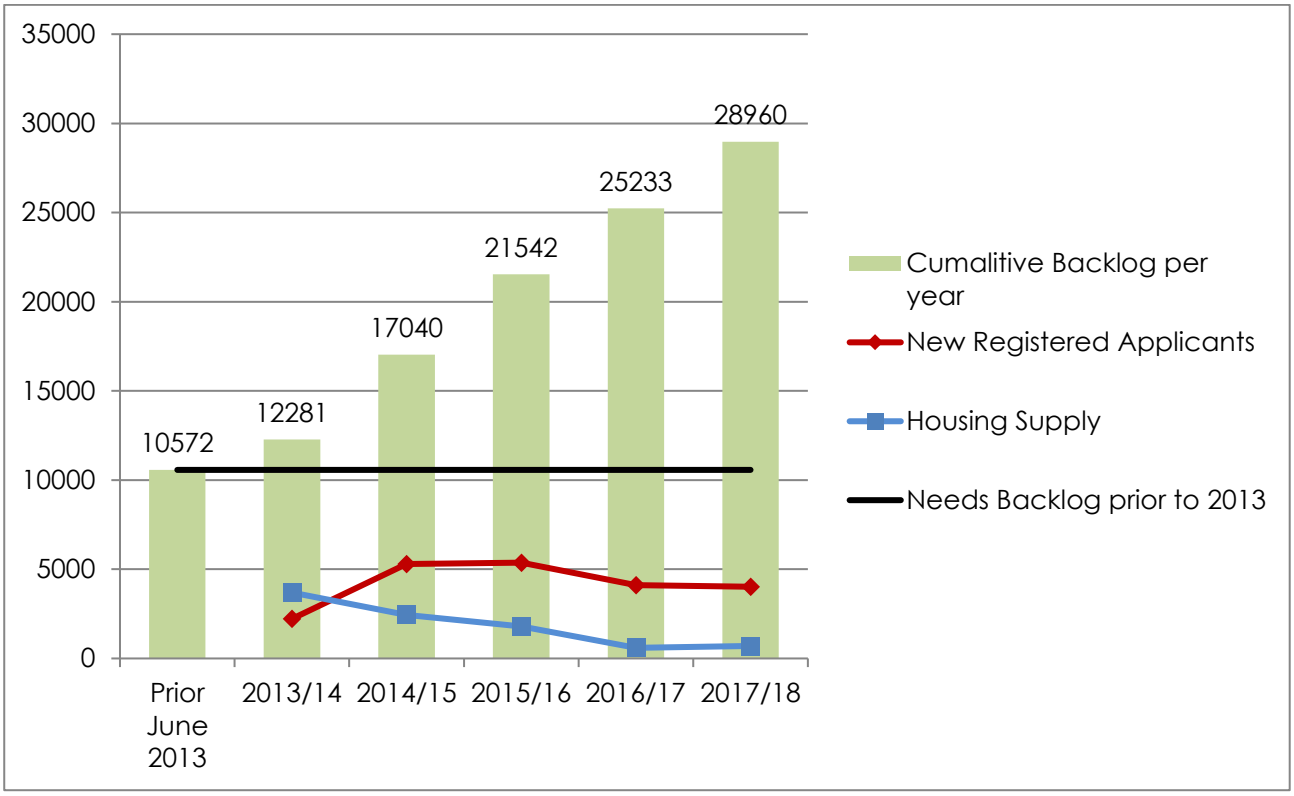


Figure 46: Housing database

Limitation within Housing Demand and Supply data:

Needs Summary:

- Records marked as "Assisted" – this is not a true reflection on supply per financial year as records are not regularly updated. For this reason there is a difference between the figures (per financial year) for "Assisted" records and "Total Supply".
- Furthermore, "Assisted" records primarily refer to the supply of BNG, PHP and CRU housing opportunities as not all housing products supplied are currently captured on the Housing Needs Register.
- Records marked as "Waiting" – this only refers to persons who came forward to express their housing need and not necessarily person who will qualify for a state subsidized housing opportunity. The qualification verification process will only occur once a person is selected for a housing opportunity.

Supply Summary:

- UISP – persons who are beneficiaries within a Upgrading of Informal Settlements Project are not necessarily registered on the City's Housing Needs Register as this is not a mandatory provision as per the prescripts of the National Human Settlements Policy. The idea is to upgrade the identified Informal Settlements regardless of a person's eligibility criteria. A

person's eligibility criteria is however taken into account during the transfer of ownership of a services site and/or top-structure.

- GAP – person who are beneficiaries within the GAP market are not necessarily registered on the City's Housing Needs Register. Eligible persons apply directly to the developer to purchase the property and will apply directly to the Western Cape Department of Human Settlement for the Financed Linked Individual Subsidy Programme (FLISP) subsidy.
- Land Restitution/ Institutional - persons who are beneficiaries within this housing programme are not necessarily registered on the City's Housing Needs Register.
- Social and rent to buy - persons who are beneficiaries within this housing programme are not necessarily registered on the City's Housing Needs Register as this housing programme caters for households with an income up to R15 000 per month. Prospective tenants apply directly to the respective Social Housing Institutions for rental vacancies.

There were 29 508 informal dwellings in the District, according to a 2017/18 roof count by the City of Cape Town. Most informal dwellings were located in Barcelona, Kanana, Philippi SP2, Phola Park and Vrygrond which all have over 2000 structures per settlement with Barcelona having the highest number at 4800. Cape Flats District has the second highest number of informal dwellings after the Khayelitsha-Mitchells Plain-Greater Blue Downs District (95 549). This works out to 16% of the total number of informal dwellings in the City.

By the end of 2018, 28960 people had registered their need for housing on the City's Housing Needs Registry. This accounted for 14% of all people who have registered their need across the City. NOTE: Anyone is able to register their need for housing on the Housing Needs Register, however many of the people registered might not qualify for housing, or their circumstances may have changed over time, thus the data needs to be treated with caution. A background check of beneficiaries registered on the database is only done at project inception.

The high population growth and increase in households experienced in Cape Flats suggest that housing demand will continue to grow in the area. This is particularly the case as Philippi SP2, Zondi and Barcelona informal settlements with large numbers of informal dwellings have seen high increases in population growth.

Of concern is the decrease in the monthly household incomes across all income brackets between 2001 and 2011 except the R1 – R1600 income band. This gives an indication that people are earning less per household which would also impact on the ability to be able to afford a house. Thus the likelihood of people relying on the state to provide formal housing would steadily increase.

7.3 Housing Supply

7.3.1 Constructed/Delivered

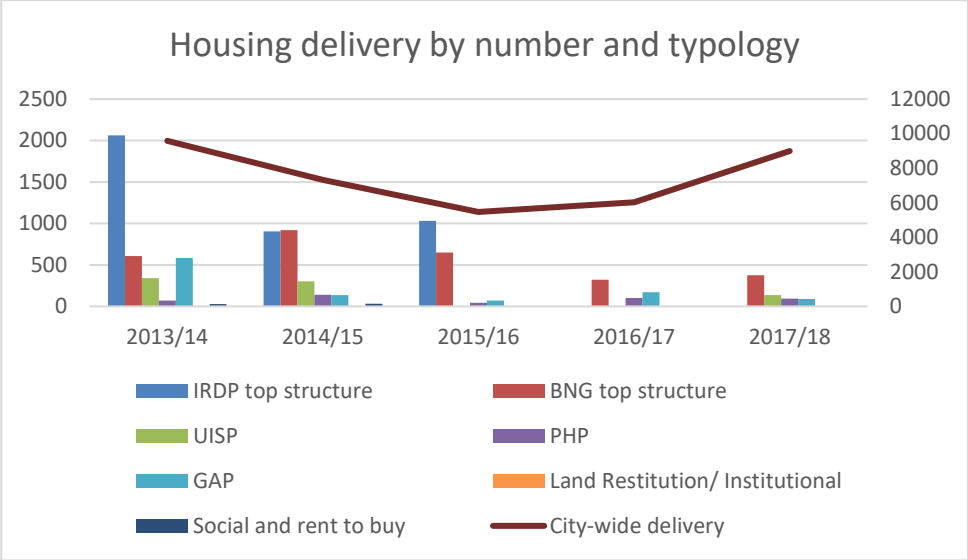


Figure 47: City's Human Settlements delivery data, 2013/2014 - 2017/2018

Over 2013/14 to 2017/18, 9218 housing opportunities were created in the Cape Flats District mostly occurring in Nyanga, Manenberg, Heideveld, Pelikan Park and Lavender Hill as per Figure 46. This accounts for 24.6% of the total opportunities provided in the City over this time period. This included 2880 Breaking New Ground (earn less than R3500)houses and 3999 ISRDP (earn less than R7000) top structures built in Pelikan Park, Gugulethu infill and Manenberg and transferred to housing beneficiaries on the City's Housing Needs Register. In Nyanga and Tambo Square 777 households were assisted as part of the Upgrading of Informal Settlements Programme. Over the same period, 448 top structures were developed for households as part of the People's Housing Process, in Iqhayiylethu, KTC, Lavender Hill, Manenber, Rondevlei and Vrygrond. This programme allows households to be actively involved in decision-making around the housing process and product, and caters for households earning R3500 and below. A total of 1054 GAP housing units were developed in Pelikan Park which catered to households earning R15 000 and below. This income bracket has since been increased to R22 000.

The district is also the only example of where land restitution has happened by providing 2 opportunities on Erf 3053 Lotus River. In terms of social housing which refers to affordable rental housing 58 opportunities were provided in the district. Prior to September 2017 the income band for this housing programme was R1500 – R7500. After September 2017 the income band was changed to R1500 – R15 000.

While government is a key provider of housing households earning lower incomes – particularly those who earn below R3500 – the private sector plays a crucial role in the provision of housing at all income levels. It can be seen that the majority of the housing typology provided in the district includes BNG followed by GAP housing.

7.3.2 Pipelined, Planned and in Construction

While the data above outlines the housing delivery, the Figure 49 below outlines human settlements projects that are in construction, planned (meaning budget has been allocated to them), or pipelined (future developments that will be planned next).

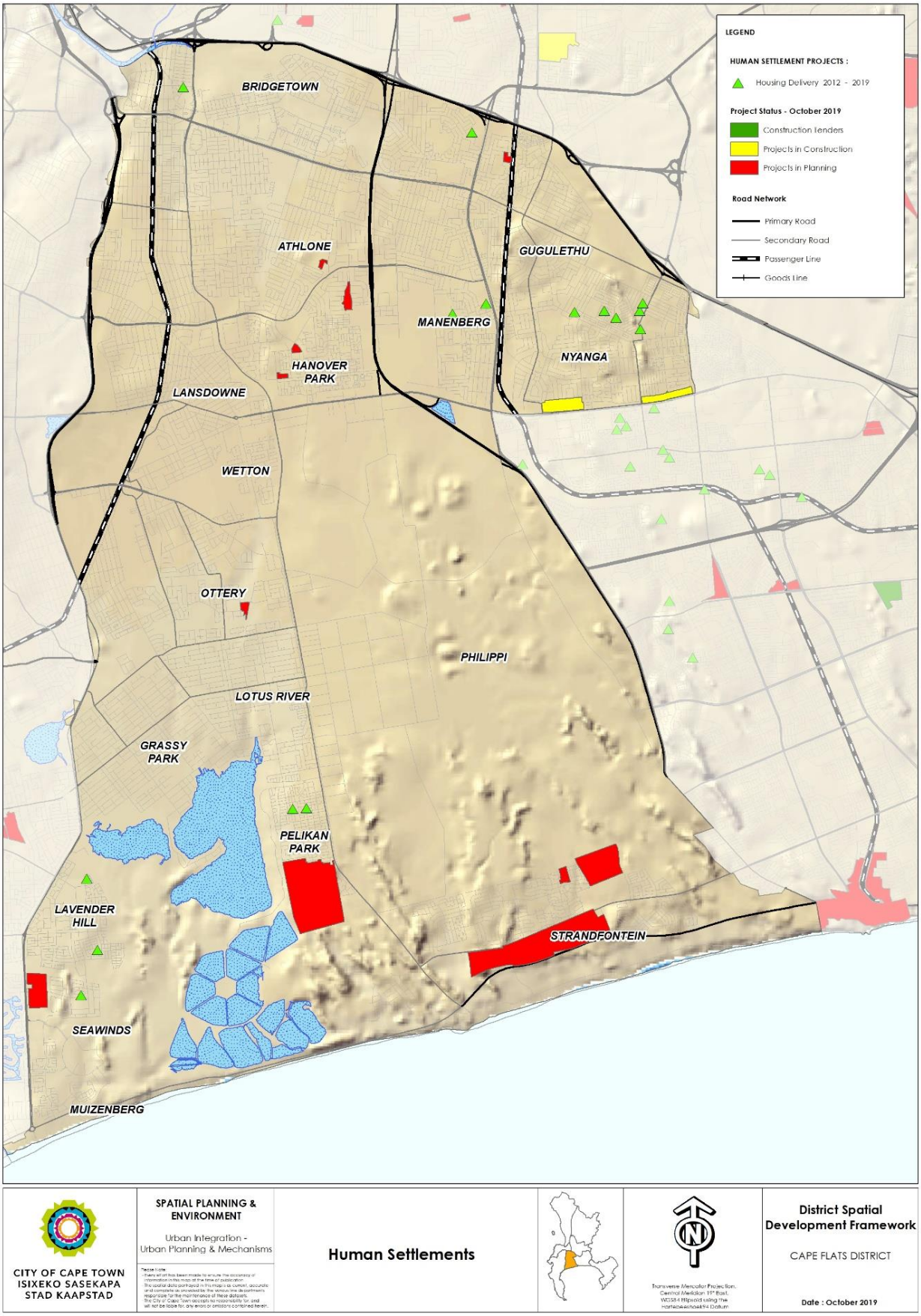


Figure 48: Status of Human Settlement projects

Further to the above the projects that have been identified in planning or construction are located in Nyanga/Gugulethu, Manenberg, Wetton, Parkwood, Ottery and Pelikan Park. Land that has been reserved for housing and is subject to further investigations are located mostly in Strandfontein, Lavender Hill and Hanover Park.

The Southern Corridor Human Settlement Programme would focus on the implementation of the N2 Phase 1 and 2 projects and upgrading of 27 linked informal settlements in the vicinity which would benefit more than 50,000 households. The intention of the programme is that it is a joint initiative between the province and the City of Cape Town which would include approximately 24 principal projects. Figure 50 below indicates the locations of proposed projects that form part of the Southern Corridor Programme in relation to the location of informal settlements.

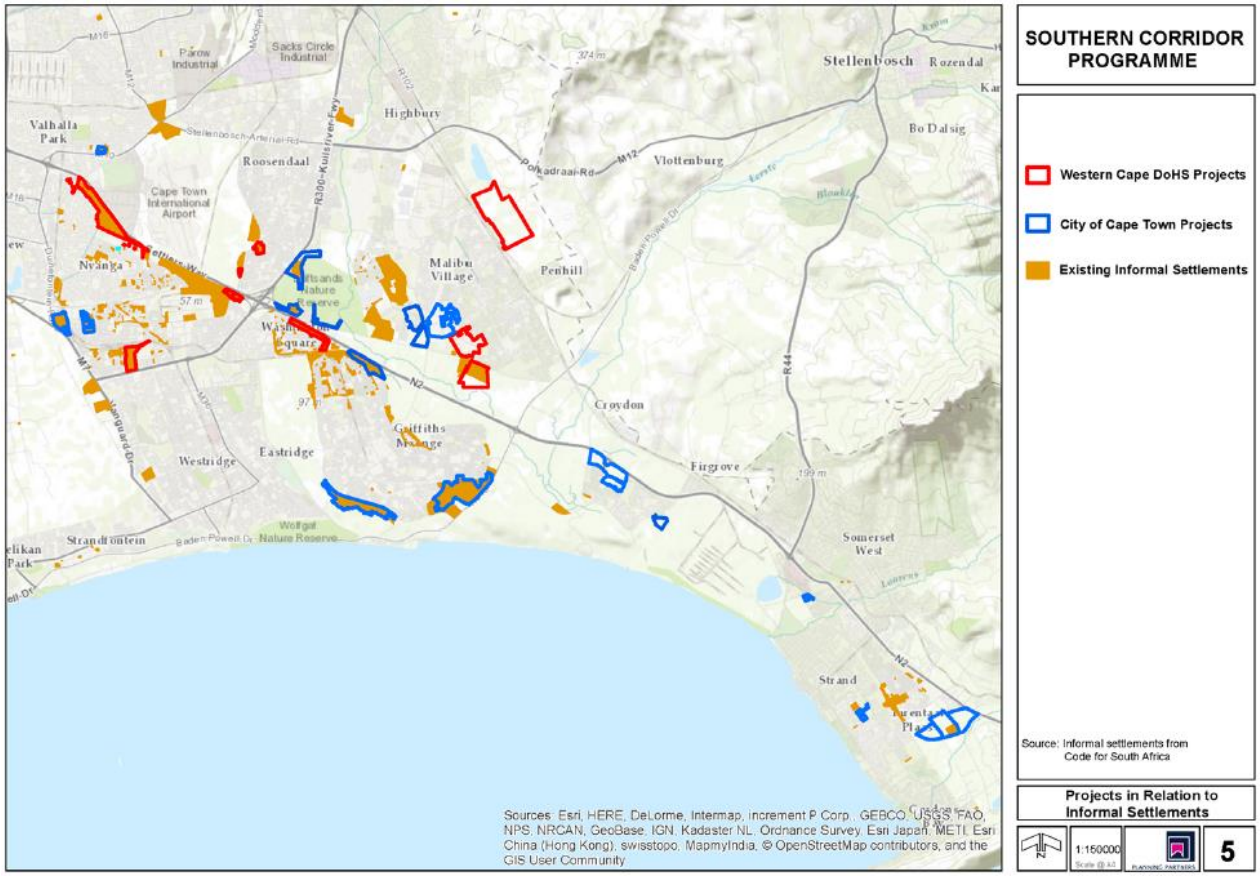


Figure 49: Southern Corridor Human Settlement Programme

7.4 Key Opportunities and Constraints

7.4.1 Generic constraints:

A key constraint with human settlements implementation across the City, has been a lack of integrated planning of budget cycles, which impacts on the prioritisation of projects by City Directorates. This has undermined the attempt to create integrated communities in some areas of the City.

The development of integrated human settlements requires the use of well-located land for government subsidised housing. Well-located land is expensive, in short supply, and often more appropriate for infill development than the large-scale BNG developments that are often on cheaper land.

Most of the government subsidised housing programmes implemented by the City are nationally funded programmes, which come with strict conditions and legal parameters. These human settlements programme parameters constrain the development of affordable housing that meets the spatial goals of the City – particularly the densification and diversification of typologies.

Capacity constraints regarding the social facilitation of human settlements developments can impact negatively on the outcomes of projects.

Land invasion has increased, and represents a significant challenge to the City. Land invasion sterilises land which was otherwise earmarked for human settlements, or other social or economic activity. It represents a challenge to the City's human settlements project pipeline through redirecting resources. It also results in community conflict between those who have invaded land, and those who are waiting for long periods of time on the Housing Needs Register.

In situ upgrading of information settlements is a challenge, as firstly the land might not be suitable for development (e.g. area that is prone to flooding, environmentally sensitive areas etc.), and secondly, some areas of the City might be too dense so that de-densification becomes necessary in order to enable formalisation of areas.

7.4.2 Local constraints and opportunities:

Constraints

- Housing demand in Cape Flats is outstripping supply, as is evidenced by the increase in those living in informal settlements in Cape Flats. This trend, together with a proportional increase in household numbers, as well as an increase in households earning no income suggest that government housing interventions need to be targeted.
- The population of the district is relatively young with many of the young adults which would want to enter the housing market within the medium to longer terms.
- The high unemployment rate in this district is putting further pressure on the government to provide "free" housing to the poorer communities and much denser populated areas.
- Population growth is experienced in the informal settlements of Barcelona, Europe and Kanana. These areas are incredibly dense, which makes utilising in situ upgrading through the Upgrading of Informal Settlement Programme a challenge
- There is an existing threat of land invasion and encroachment into the PHA area due to high demand.. The City should therefore concentrate on enabling formalisation by the local community, and encourage the development of an affordable property market in the area.

- Social housing company's general appetite and capacity ; They can only create a certain amount each year and are also only interested in certain areas.

Opportunities

- Medium and higher density housing typologies should be encouraged
- Mixed land uses with opportunities for employment creation should be encouraged.

8 PUBLIC FACILITIES

8.1 Introduction

The following analysis and proposals on Community Facilities are informed by the updated Community Facility Guidelines and Standards for Facility Provision reviewed in 2020. Each facility has a set of planning standards for providing facilities which have been articulated by line departments, work-shopped and agreed to with key stakeholders. The facilities guidelines and standards were incorporated into a modelling exercise that sought to understand sufficiency or insufficiency in the distribution of community facilities and build a hierarchy of civic clusters (a network of nodes with community facilities) across the City illustrated in Figure 1.

The results from the modelling exercise should be used as a data driven support tool to inform strategic planning, budgeting, decision making and implementation as such they do not replace the facilities identified and prioritized by line departments and the Community Services and Health Infrastructure Plan.

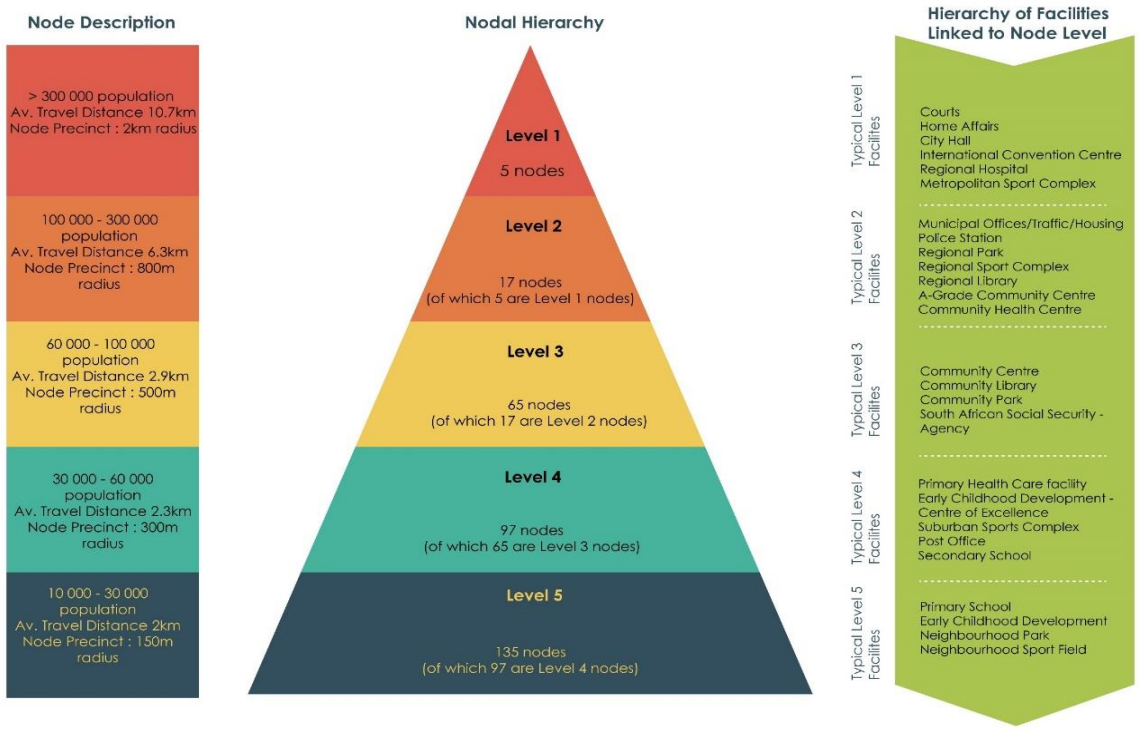


Figure 50: Conceptual Hierarchy of Community Facility Nodes/Civic Clusters

8.1.1 Analysis

The Figure below illustrates the distribution of existing facilities and highlights sufficiency/insufficiency in the form of a heat map, neighborhoods that fall within areas shaded red, orange are the most underserved areas in the district. The Cape Flats district is one of the fastest-growing districts with a high demand for housing and infrastructure but with very limited access to public transport. The district has a growing population and historically lags behind in terms of investment in community facilities, as such the available facilities are overburdened. There is limited land available for community facilities as land is under pressure from development and land invasion which makes planning and providing the required community facilities extremely difficult. It is clear from this figure,

that the greater Nyanga, Gugulethu, Victoria Mxenge and Crossroads, as well as Hanover Park, Manenberg and Lavender Hill/Seawinds are the areas of greatest need in the district.

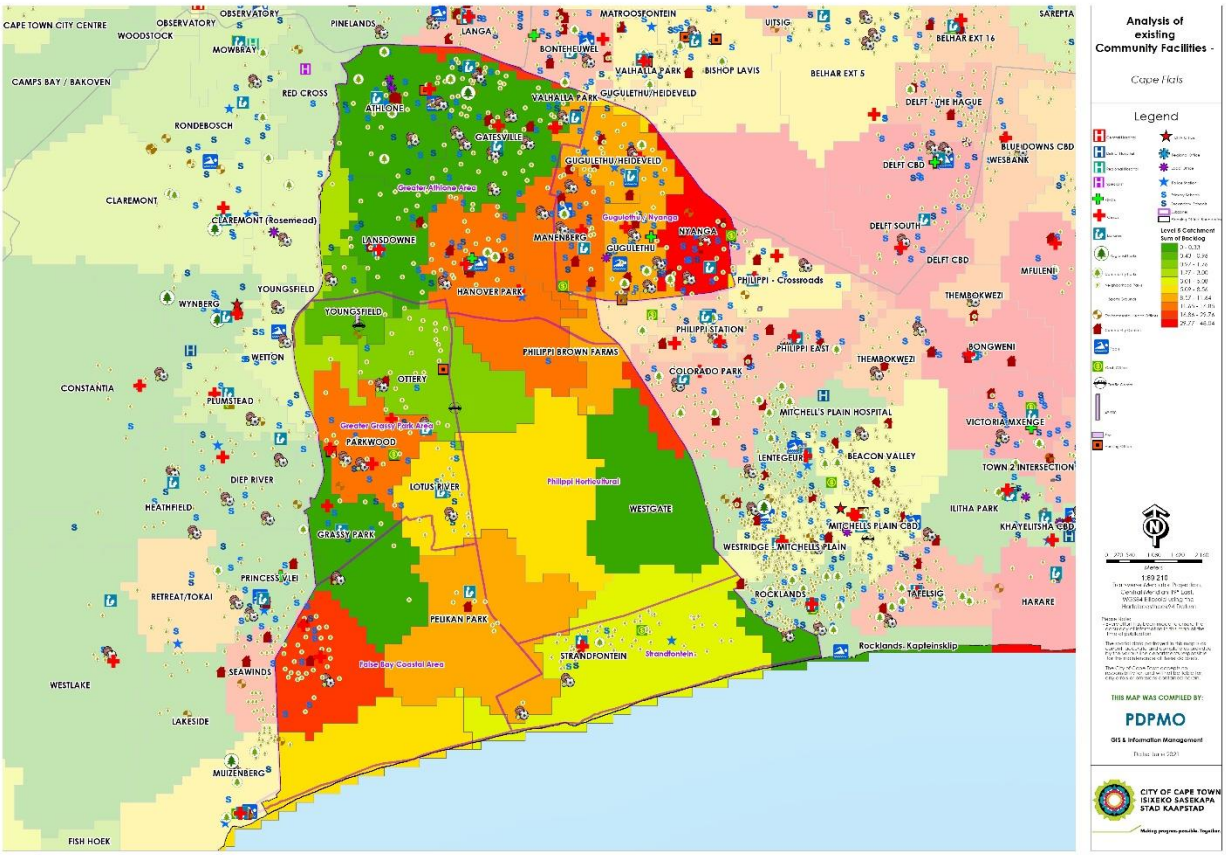


Figure 51: Distribution of Community Facilities in the Cape Flats District

Table 23 and 24 shows results generated from a modelling exercise that was undertaken to identify nodes/ service catchment areas of need and the type of facilities required in the district in order to meet the needs of the population in 2020 and 2040 taking into account sector specific assumptions, guidelines and standards for facility provision.

Table 23: 2020 Top Areas of Need Cape Flats District

Facility Type	Node/Area	Population Demand	Facilities Required - Equivalent to No. of Facilities/ No. of unserved population/ha of land required
Community Centres	• Victoria Mxenge	585 967	0.0
Education	**Primary School**	85142	-15 730 (Primary School learners)

	• Seawinds **Secondary School** • Seawinds • Nyanga • Hanover Park • Manenberg	50 109	-24142 (Secondary School Learners)
Community Libraries	**Community Libraries** • Victoria Mxenge • Gugulethu **Regional Libraries** • Gugulethu	585 967 710 814	3.0 2.4
Primary Health	**Clinic** • Victoria Mxenge	572 378	-94 655
Parks	**Neighborhood Parks** • Nyanga • Victoria Mxenge **Community Parks** • Nyanga • Gugulethu/Heideveld **Region Parks** • Gugulethu	560 390 585 967 704 383	-47.9 ha -33.0 ha -20.6 ha
Sports			

Table 24: 2040 Top Areas of Need Cape Flats District

Facility Type	Node/Area	Population Demand	Insufficient Supply - Equivalent No. of Facilities

Community Centres	• Victoria Mxenge	729 975	0
Education	**PS** • Seawinds **HS** •Seawinds • Bonteheuwel	113117 65224	-39 761 -38 465
Community Libraries	**Community Libraries** • Victoria Mxenge (CL) **Regional Libraries** • Gugulethu (RL)	729 978 879 236	5.1 3.2
Primary Health	**Clinics** • Victoria Mxenge	 739 332	 -192 510 (2.0)
Parks	**Neighborhood Parks** • Nyanga **Community Parks** • Nyanga **Regional Parks** • Gugulethu	778 315 729 975 879 236	-89.6 -46 -26.6
*PS- Primary School *SS- Secondary School *Positive values indicate an over provision; Negative values indicate a shortfall relative to the standards			

Figure 53 unpacks the detail related to insufficiency, specifically reflecting facility insufficiency or need in relation to the nodal hierarchy. It should be noted that this is based on the modelling and interpretation of data (supply of facilities, population, facility standards, distance) specifically for the following facilities: Community Parks, Regional Parks, Community Library, Regional Library, Primary Health Care, Sports Grounds.

Hanover Park is one of the top ten areas of need not only within the district but Citywide. Hanover Park and Nyanga have been highlighted as areas with the highest population density and among some of the top spatially unjust areas in the greater City of Cape Town. Table 24 lists the top areas of need in the Cape Flats district and indicates the facilities that are needed based on the modelling exercise. It should be noted that the node identified as an area of need represents not only the name of the area/suburb but a larger catchment which includes other suburbs.

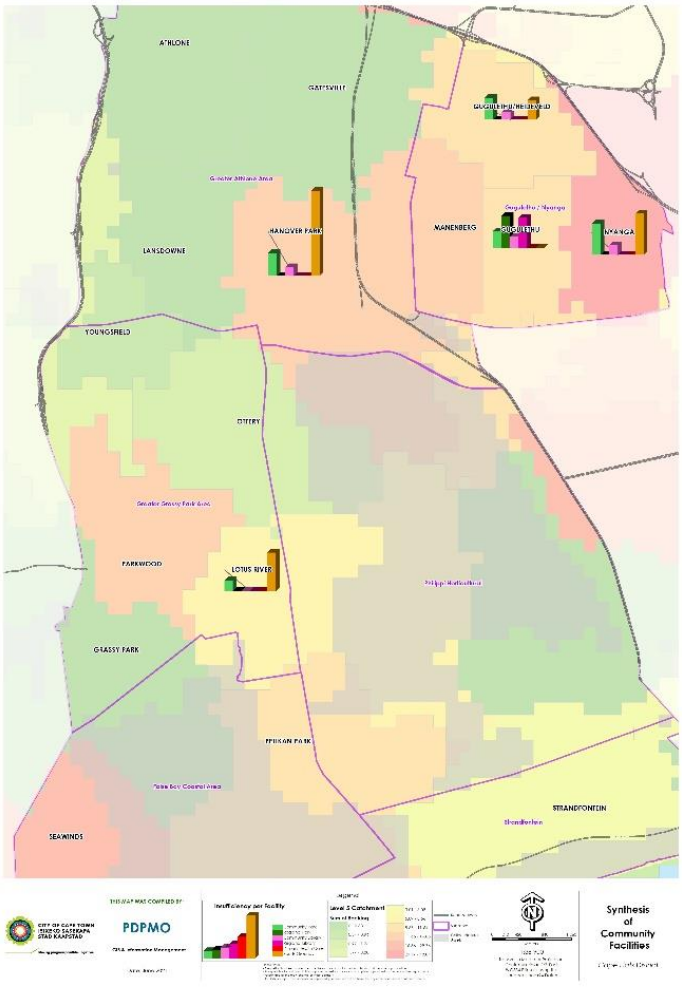


Figure 52: Facility need in relation to the nodal hierarchy

8.2 Key Observations

The majority of the facilities within these lower income areas such as Nyanga and Gugulethu are generally oversubscribed and poorly maintained, with open spaces and sports fields within these areas under pressure from settlement encroachment. Higher order facilities such as Community Health are also required to service these communities.

Furthermore, the rapid growth of populations between 2011 -2018 coupled with the anticipated delivery of Human Settlements in Strandfontein, Gugulethu, Pelikan Park and Lavender Hill, more community and recreation facilities will be required. In particular, there is a lack of district scale facilities to serve the broader community, resulting in existing facilities of this scale being oversubscribed in the broader area.

The upgrade and rationalisation of open spaces is needed to improve the functioning of the overall open space system.

8.3 Key Opportunities and Constraints

8.3.1 Constraints

- Residential developments are implemented without all the required social facilities

- Limited vacant land available

8.3.2 Opportunities

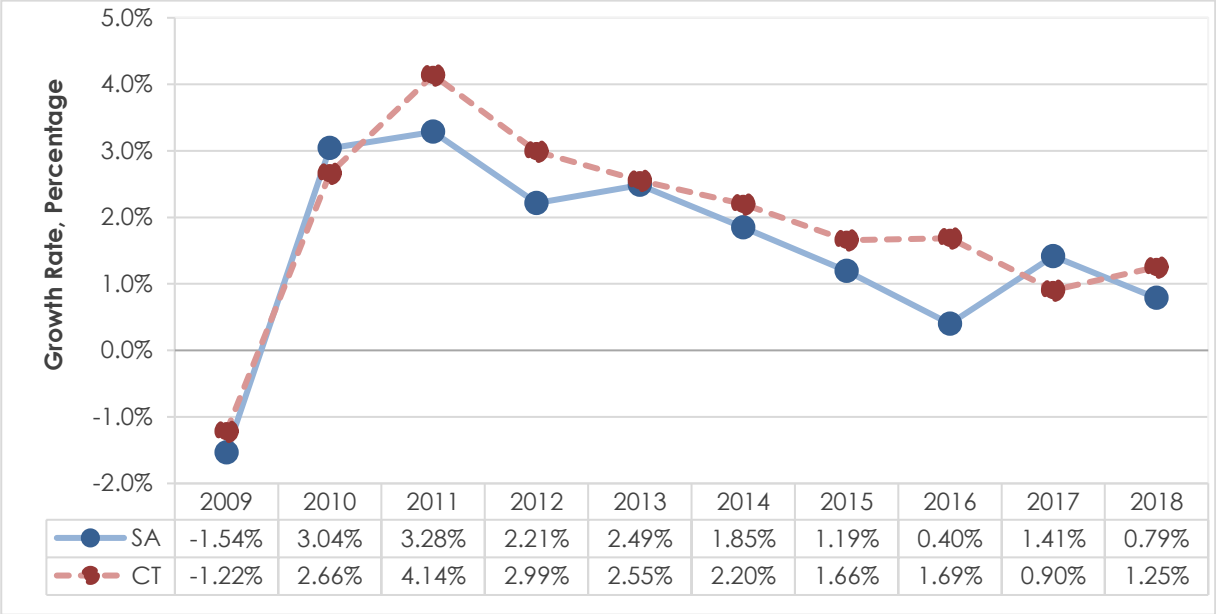
Opportunity to research the optimization of existing social facilities, where possible, such as sport complexes, libraries etcetera.

9 THE ECONOMY

9.1 Macro-Economy

9.1.1 Macro-Economic Factors

2018, Cape Town's real GDP growth averaged 2.1%, outperforming South Africa's average Real GDP growth of 1,67%, however both still reflecting an overall downward trend.



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
SA	-1.54%	3.04%	3.28%	2.21%	2.49%	1.85%	1.19%	0.40%	1.41%	0.79%
CT	-1.22%	2.66%	4.14%	2.99%	2.55%	2.20%	1.66%	1.69%	0.90%	1.25%

Figure 53: Average annual Gross Domestic Product (GDP) growth, South Africa vs. Cape Town for 2009 to 2018 (Source: IHS Markit, 2019).

Economic activity in Cape Town largely mirrors trends at the national level though often exceeding the national GDP. Deviations in these trends are observed since 2016; which may be attributable to the recent drought conditions faced in the region. Between the year 2009 and Cape Town's appealing lifestyle and skilled labour makes it an attractive financial and business service hub for global and national organisations. As a result, the finance and business services sector has been the largest contributor to the growth of Cape Town's economy in the past ten years. This is likely to result in increasing demand for office space.

Although Cape Town's office vacancy rate has remained the lowest among the five largest municipalities[5] (SAPOA, 2018) over the past five years, the negative effects of recent political and economic events have, nevertheless, damaged consumer and investor confidence. This has impacted negatively on an otherwise resilient office vacancy rate and caused a moderate decline in the city's rental growth rate.

[5] The five largest municipalities being; City of Johannesburg, eThekwini, Nelson Mandela Bay, City of Tshwane and City of Cape Town

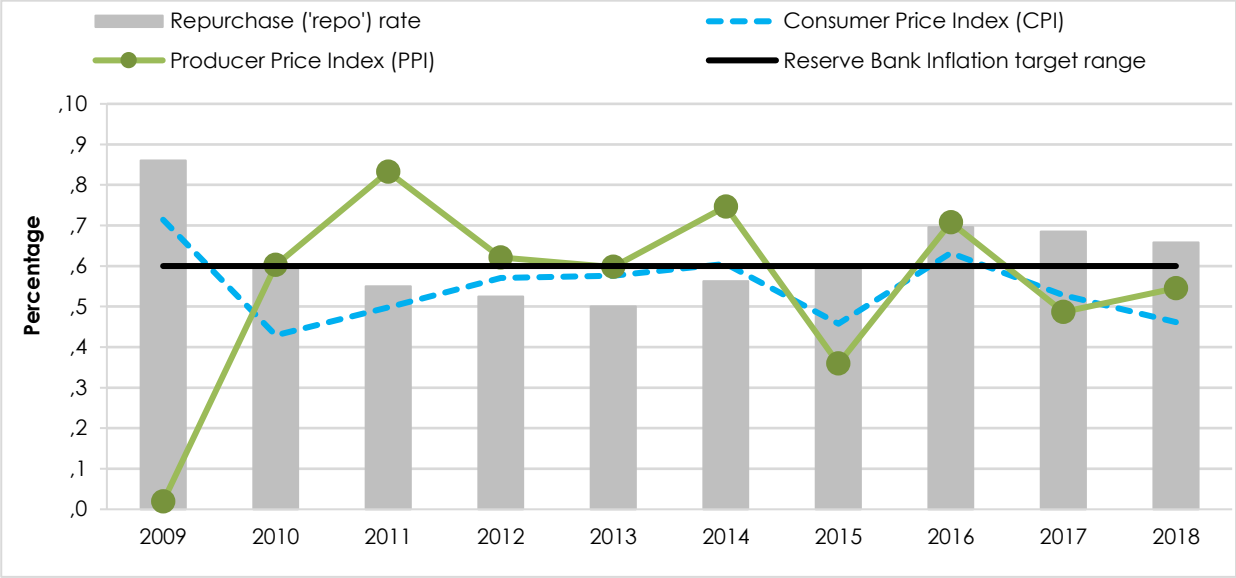


Figure 54: CPI and PPI trends in South Africa, 2009 to 2018 (Source: CPI and PPI extracted from Statistics South Africa, 2018-2019, and repurchase rate extracted from SARB, 2018-2019).

The consumer price index (CPI), inflation rate, and the producer price index (PPI) measure the price fluctuations of goods and services in the economy. Within the ten-year period observed above, the CPI and the PPI varied slightly around the reserve bank upper inflation target rate of 6%.

In figure 55 above, it can be observed that inflation (6,33%) exceeded the upper limit of the target in 2016. This upward trend could largely be explained by the price increases in housing rentals, recreation and cultural activities. In response to the increase in inflation in 2016, the Reserve Bank increased the repo rate to 7%. While the rate has been adjusted downward since 2016, in response to lower levels of inflation, the repo rate (and, by extension, the prime lending rate) has remained significantly higher than in the 2010 -2015 period. As a result, property buyers have found it more costly to take out mortgage bonds between 2016 and 2018 than in the five year period preceding that. Together with low levels of consumer confidence, this has resulted in dampened activity in the property market.

Another factor impacting on the level of property market investment was South Africa's credit rating downgrade at the beginning of 2017, which led to big international fund managers selling out of South African bonds. This increased bond yields and continued to discourage consumer spending. During this time, it appears that building developers began losing confidence in South Africa's property market.

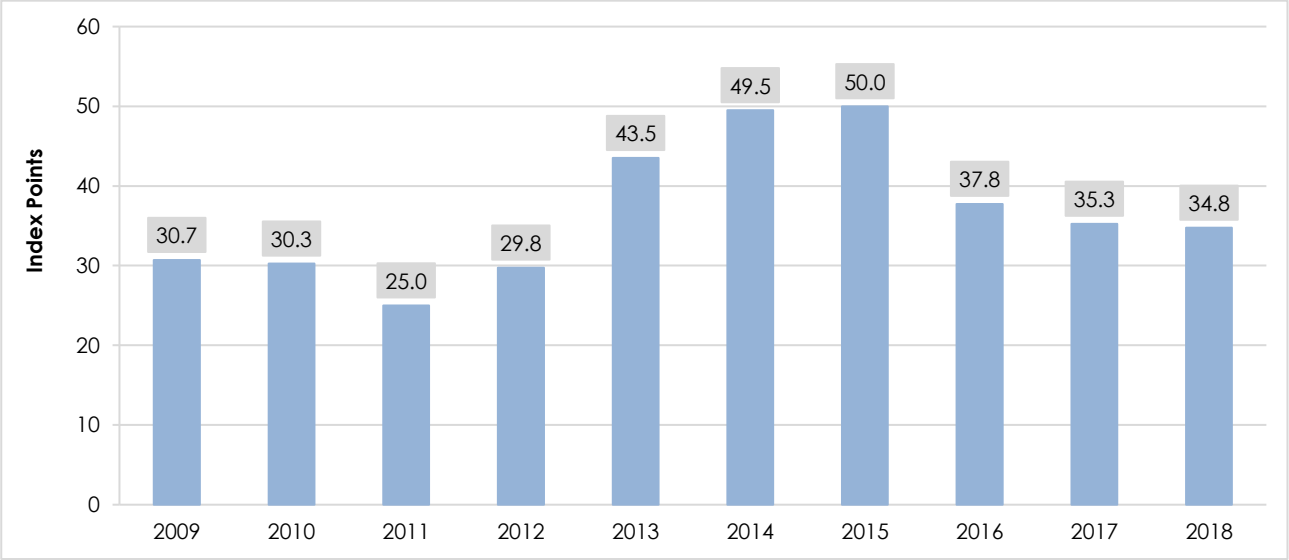


Figure 55: Building Confidence Index (BCI), 2009 to 2018

Source: Bureau for Economic Research (BER), 2018, FNB/BER Building Confidence Index, 2018.

Figure 56 shows the First National Bank (FNB)/BER composite building confidence index for the 10-year period from 2009 to 2018. The Building confidence index records the percentage of architects, quantity surveyors, and contractors and manufacturers of building material, who are either satisfied with or wary of the prevailing business conditions (BER, 2018).

The First National Bank (FNB)/BER composite Building Confidence Index (BCI) declined by 15,3 points from 2015, where it peaked at 50,0 index points, to reach 34,8 index points in 2018. This decline in 2018 can be attributed to the weakened confidence of architects and quantity surveyors, as a result of an unstable economic environment characterised by relatively high office and retail vacancy rates, high interest and inflation rates as well as slow GDP growth (FNB, 2018).

Although the building confidence index has dropped significantly since 2015, Cape Town has continued to see stable growth in building supply with the conversion of older office buildings to residential use cushioning the level of vacancies (Baker street properties, 2018). The weak economic growth is, however, eventually likely to aggravate the weak employment growth which could, in turn, see demand for building or office space declining (JLL, 2018).

9.2 Property Market Performance

Figure 57 below, displays the total floor area of new office building space and new industrial building space added to building stock, against the observed variations in the office and industrial vacancy rates, from 2015 to 2018. There is generally, although not exclusively, a positive relationship between building completions and vacancy rates.

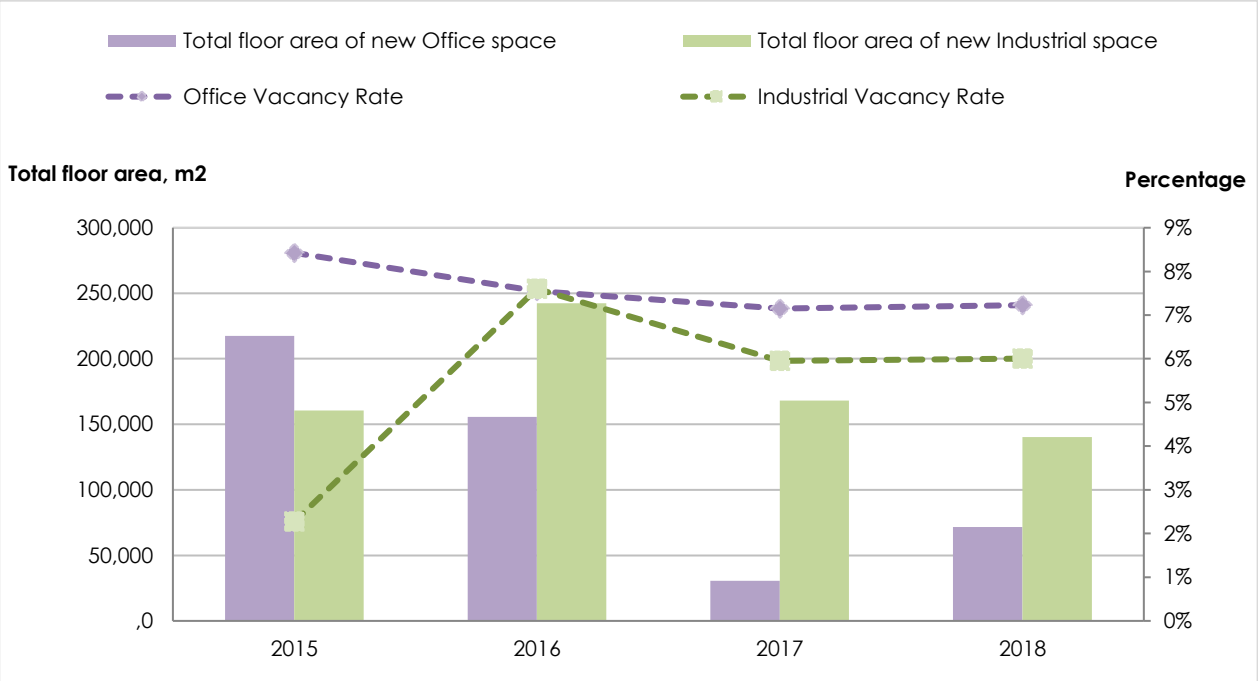


Figure 56: Cape Town's new building completions and vacancy rates for Office and Industrial space, 2009 to 2018

Source: Transport Business Support Department; South African Property Owners Association (SAPOA), 2019.

The total floor area of new Industrial space increased by 51% to reach a high of 242 394 m² in 2016, most likely to address the high demand for industrial space, reflected in the low vacancy rate in the previous year.

Cape Town's office vacancy rate remains the lowest among the five largest municipalities[6] (SAPOA, 2018), however the slowdown in the office-to-residential conversion, which has assisted in reducing office vacancies in Cape Town may reveal the weak demand for office space (JLL, 2018). The figure above shows that the vacancy rate begins to decline as new office building completions decreased (with 2018 as the exception). A significant drop in building completions (80%) was recorded for 2017; which may be largely attributed to the negative effects of the drought, as the water prices spiked making construction of buildings more expensive.

[6] The five largest municipalities being; City of Johannesburg, eThekwini, Nelson Mandela Bay, City of Tshwane and City of Cape Town.

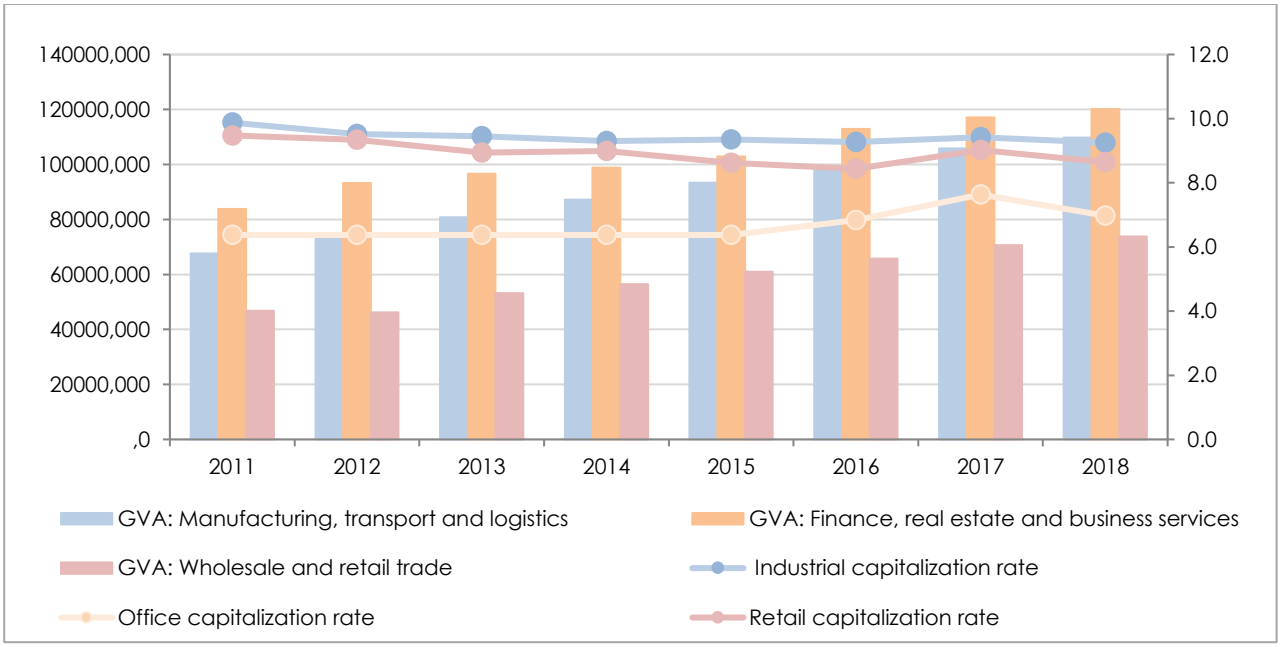


Figure 57: Cape Town's Gross Value Added (GVA) and Capitalisation rate , 2011 to 2018

Source: IHS Markit, 2019; South African Property Owners Association (SAPOA), 2019.

Figure 58 shows the industrial, office and retail capitalization rates as well as the Gross Value Added (GVA) for the finance and business services sector; manufacturing, logistics and transport as well as whole sale and retail trade. The Gross Value Added (GVA) for industrial, office and retail space all followed a steady, though decelerating, upward trend from 2011 to 2018.

A cap rate is one type of measurement used in evaluating an investment, indicating **risk** and the **potential rate of return** for a prospective property. A low cap rates imply lower risk, higher value and a high cap rates imply higher risk, lower value. In Figure 58 the capitalisation rates for office, industrial and retail property in Cape Town follow a similar trend between 2011-2015. From 2016 – 2017 the cap rates for all sub-segments increased despite a momentary upturn in 2017. The increase in 2017 may largely be explained by stagnating property prices, a consequence of Cape Town's water crises and the credit ratings downgrade.

9.3 District Analysis

9.3.1 Economic Characteristics

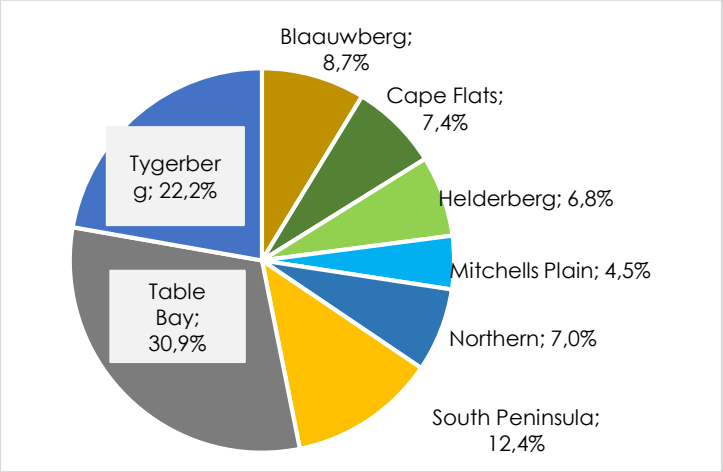


Figure 58: Gross geographic product (GGP) contributions at current prices in 2018 (IHS Markit, 2019).

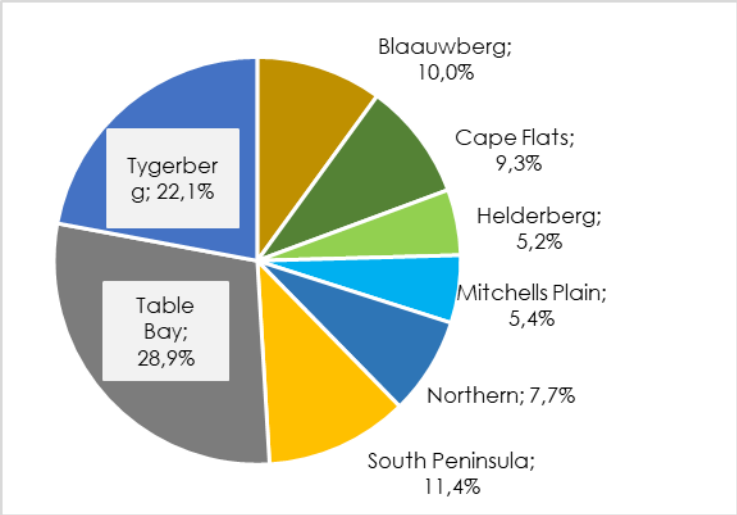


Figure 59: Employment contributions in 2018 (IHS Markit, 2019).

The largest contributor to the gross geographic product (GGP) at current prices for Cape Town in 2018 was the Table Bay district (28,9%), an area characterized by the intense concentration of business and commercial activities. This area also comprises of the main tourist areas of the city such as the CBD, the City Bowl and the Atlantic Seaboard as well as the significant economic infrastructure of the port, the Cape Town International Convention Centre and the V&A Waterfront. Tygerberg district, with a share of 22,1%, was the second largest district economy in 2018 and is largely dominated by finance, insurance, real estate and business services.

The top three districts in terms of employment are Table Bay (30,9%), Tygerberg (22,2%), followed by South Peninsula (12,4%). However, the Mitchells Plain district had the lowest

employment share at 4,5% (71 800 jobs) in 2018. This higlights the lack of employment opportunities as a result of low economic activity occuring within the district, although there is a growing labour force living within this area.

9.3.1.1 *Economic Performance*

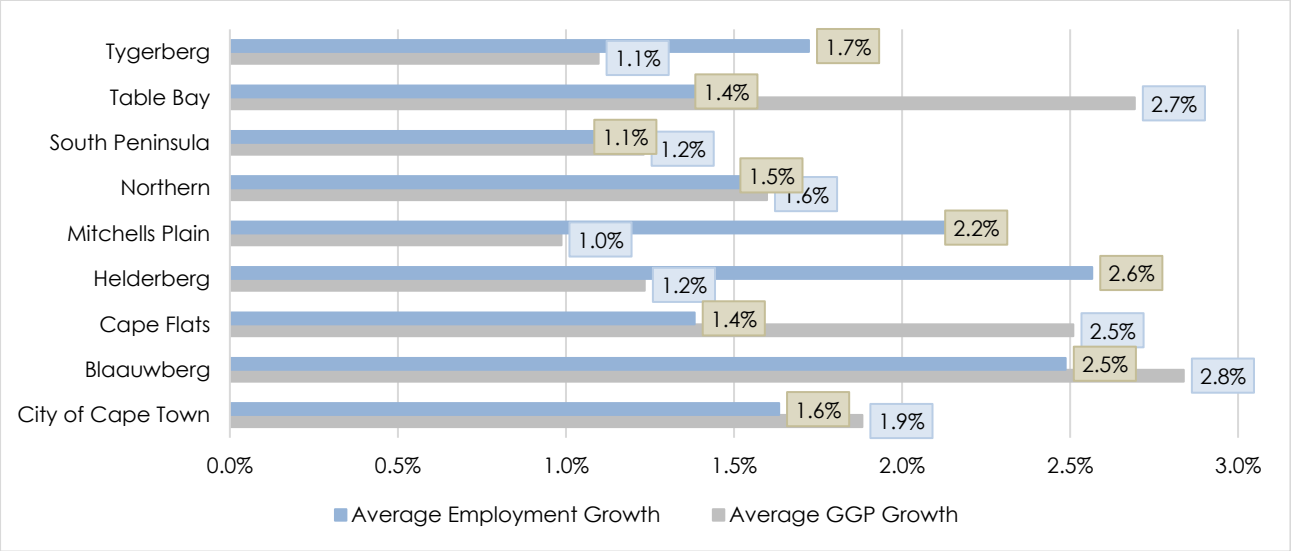


Figure 60: Average annual economic growth rates, 2009 to 2018 (source: IHS Markit, 2019).

Despite being one of the smallest contributors to GGP, the area which recorded the fastest rate of economic growth in Cape Town between 2009 and 2018 was the Blaauwberg district (2,8%) - higher than the Metro's average growth rate of 1,9%. This can be attributed to the increasing commercial and property development in the area, particularly in the industrial market. The South Peninsula reported GGP growth of 1,2% over the ten-year period, lower that the Metro average. The Helderberg district had the highest employment growth at 2,6%, closely followed by Blaauwberg at 2,5%, both areas surpassing the Metro's average employment growth rate of 1,6% over the ten-year period.

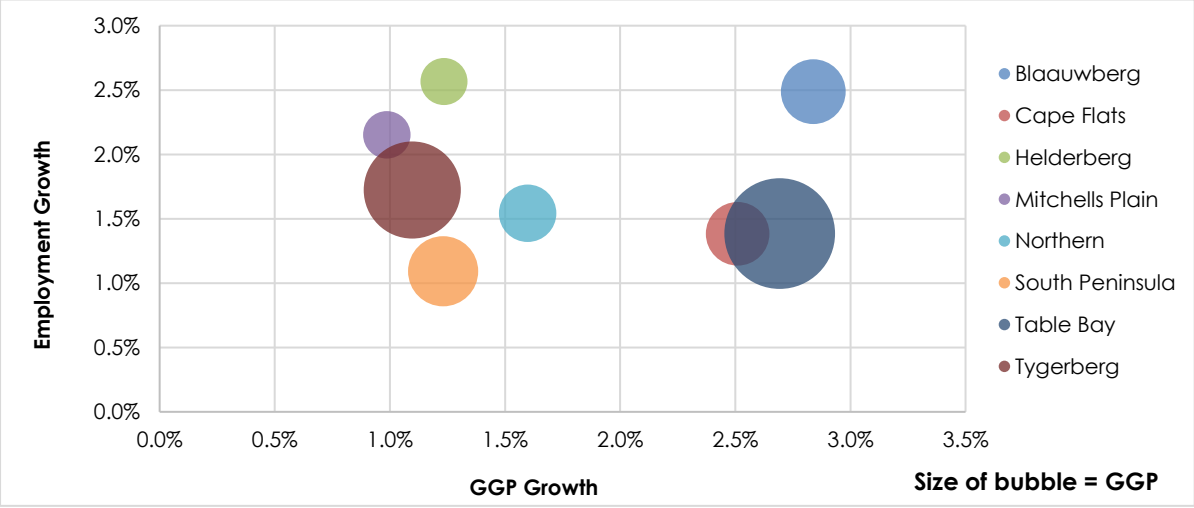


Figure 61: Performance comparison, 2018 (source: IHS Markit, 2019).

Figure 63 plots the average economic growth on the horizontal axis and average employment growth on the vertical axis. The size of the bubble is the relative size of the economy as measured by gross geographic product in 2018. The Blaauwberg district grew relatively faster than Table Bay in terms of both GGP and employment over the ten-year period, despite the relatively smaller size of its output and employment levels when compared to Table Bay.

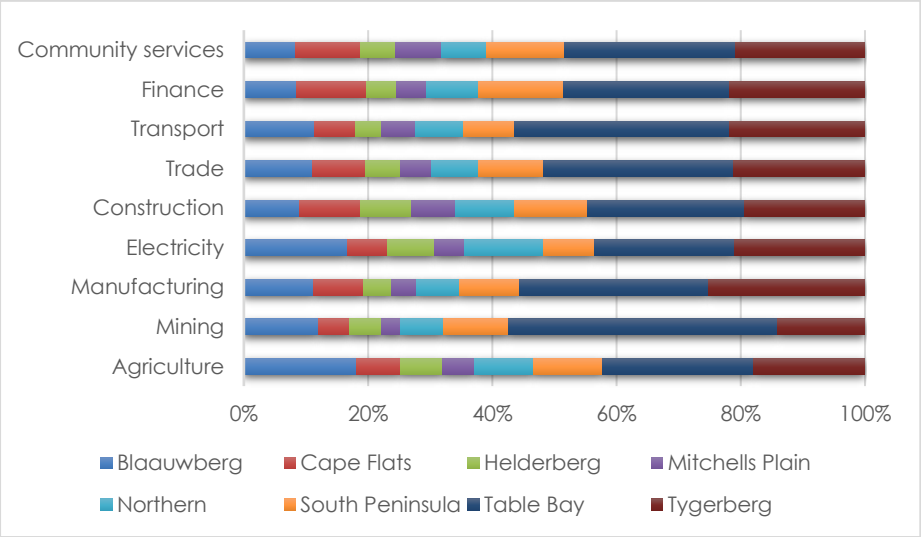


Figure 62: Employment contribution to Cape Town in 2018 (IHS Markit, 2019).

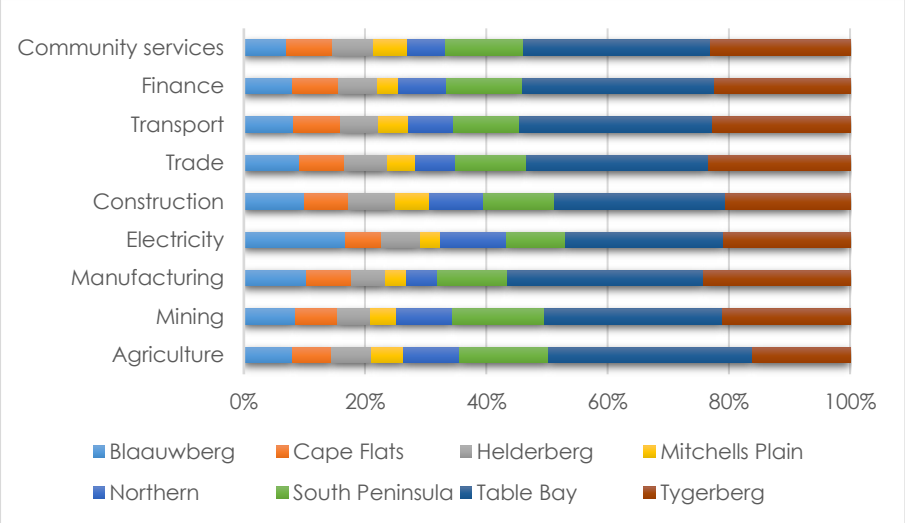


Figure 63: Gross Value Added (GVA) contribution by sector in 2018 (IHS Markit, 2019).

9.3.1.2 Sectoral trends

From the figures above, it is clear that Table Bay district is the main contributor to the total gross value added (GVA) of most sectors in Cape Town, followed by Tygerberg district. Table Bay district's contribution is especially pronounced in the transport (34,7%) and trade sectors (30,6%) – this is as a result of the district containing the city's port and also because it functions

as the main retail hub in the city.[7] While Table Bay is the largest contributor to agricultural output (including fishing) in the city (possibly due to the head office effect), Blaauwberg is also a strong contributor to agricultural output within the city.

Employment trends, for the most part mirror the output trends, although Tygerberg district is seemingly more labour intensive (contributing more to employment than GVA) than Table Bay district. Mitchells Plain showed the lowest contribution to Cape Town's GVA across most sectors, largely attributable to this area's economy being highly reliant on the community services sector (public sector).

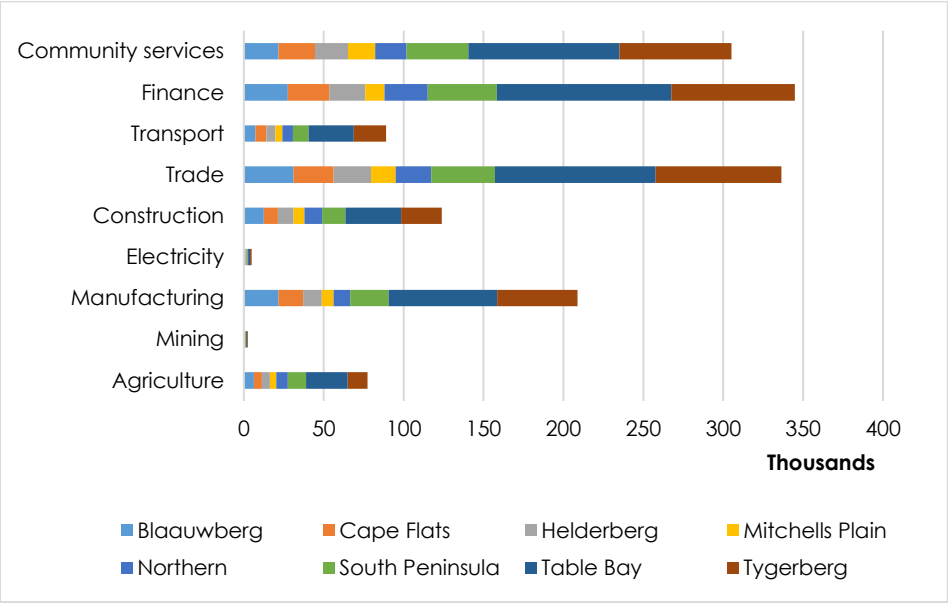


Figure 64: Gross Value Added (GVA) size by sector in 2018 (IHS Markit, 2019)

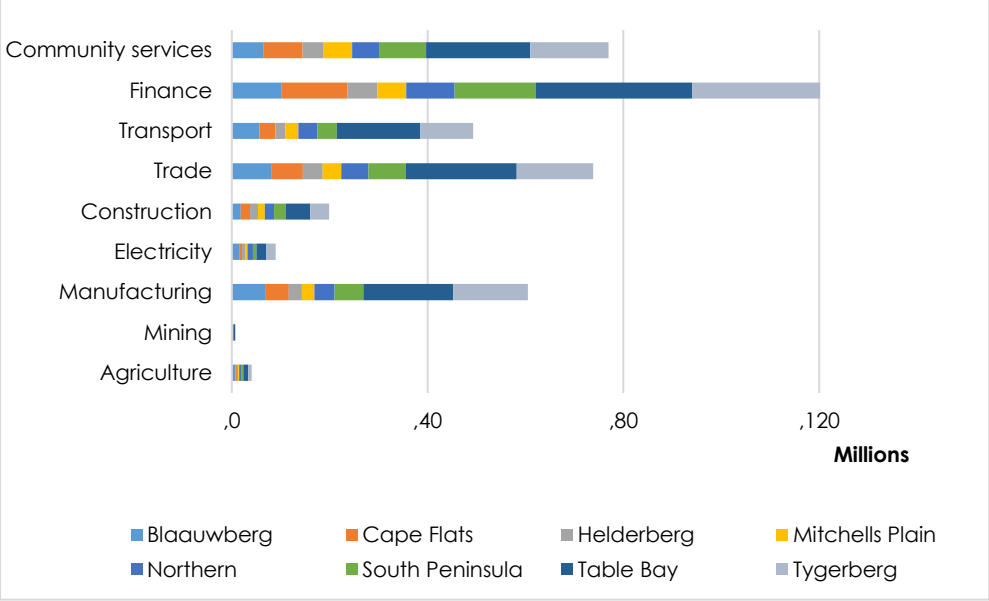
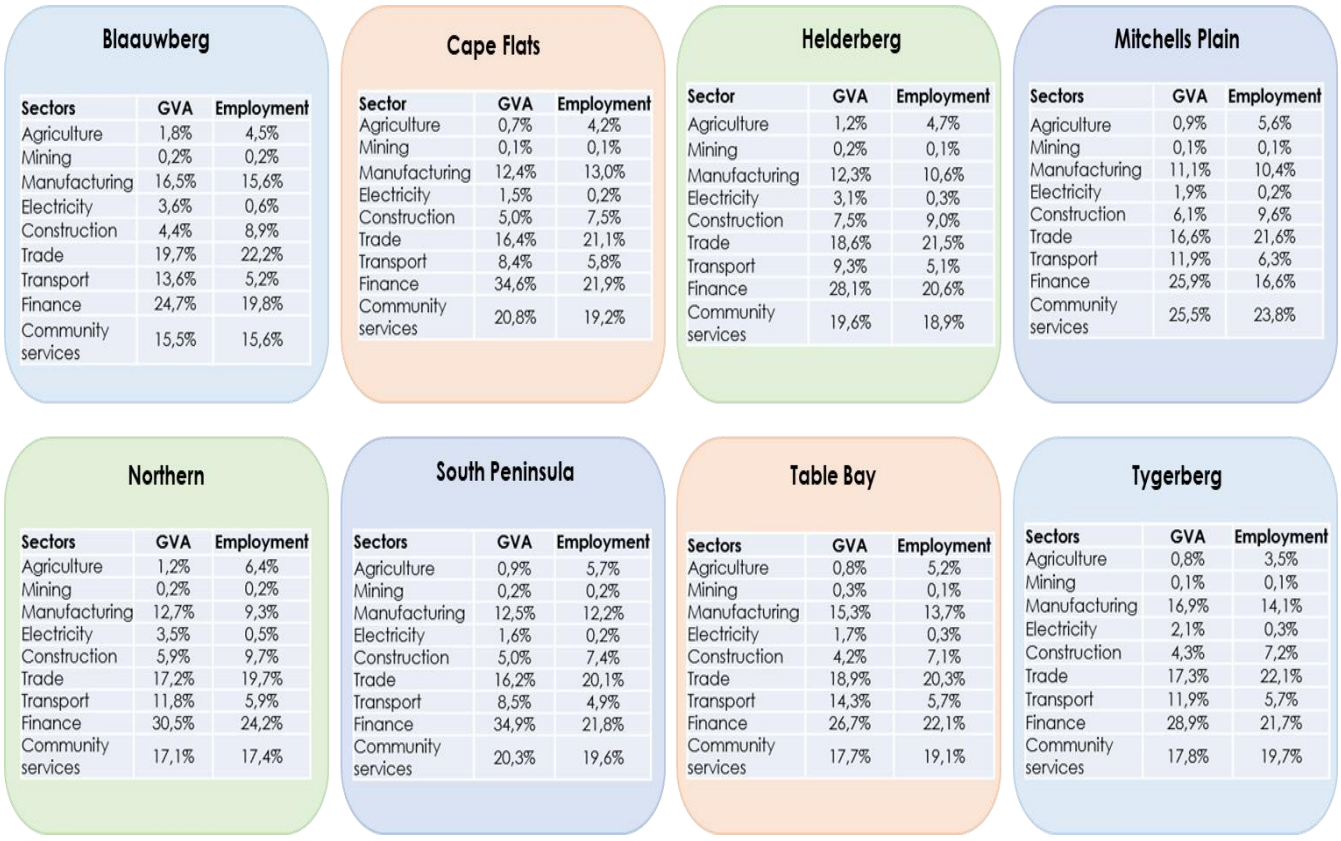


Figure 65: Total employment by sector in 2018 (IHS Markit, 2019)

[7] The mining figures are for all districts are almost insignificant.

The Figures above demonstrate the output sizes as well as total employment (number of people employed) across all sectors by each planning district. As observed from the figures, mining's output and employment in the city is negligible. Whilst agriculture recorded a small output size across all planning districts in 2018, it contributed significantly more to employment. As shown by output size and total employment - finance, community services, trade and manufacturing are significant contributors across all planning districts at different scales.



Blaauwberg

Sectors	GVA	Employment
Agriculture	1,8%	4,5%
Mining	0,2%	0,2%
Manufacturing	16,5%	15,6%
Electricity	3,6%	0,6%
Construction	4,4%	8,9%
Trade	19,7%	22,2%
Transport	13,6%	5,2%
Finance	24,7%	19,8%
Community services	15,5%	15,6%

Cape Flats

Sector	GVA	Employment
Agriculture	0,7%	4,2%
Mining	0,1%	0,1%
Manufacturing	12,4%	13,0%
Electricity	1,5%	0,2%
Construction	5,0%	7,5%
Trade	16,4%	21,1%
Transport	8,4%	5,8%
Finance	34,6%	21,9%
Community services	20,8%	19,2%

Helderberg

Sector	GVA	Employment
Agriculture	1,2%	4,7%
Mining	0,2%	0,1%
Manufacturing	12,3%	10,6%
Electricity	3,1%	0,3%
Construction	7,5%	9,0%
Trade	18,6%	21,5%
Transport	9,3%	5,1%
Finance	28,1%	20,6%
Community services	19,6%	18,9%

Mitchells Plain

Sectors	GVA	Employment
Agriculture	0,9%	5,6%
Mining	0,1%	0,1%
Manufacturing	11,1%	10,4%
Electricity	1,9%	0,2%
Construction	6,1%	9,6%
Trade	16,6%	21,6%
Transport	11,9%	6,3%
Finance	25,9%	16,6%
Community services	25,5%	23,8%

Northern

Sectors	GVA	Employment
Agriculture	1,2%	6,4%
Mining	0,2%	0,2%
Manufacturing	12,7%	9,3%
Electricity	3,5%	0,5%
Construction	5,9%	9,7%
Trade	17,2%	19,7%
Transport	11,8%	5,9%
Finance	30,5%	24,2%
Community services	17,1%	17,4%

South Peninsula

Sectors	GVA	Employment
Agriculture	0,9%	5,7%
Mining	0,2%	0,2%
Manufacturing	12,5%	12,2%
Electricity	1,6%	0,2%
Construction	5,0%	7,4%
Trade	16,2%	20,1%
Transport	8,5%	4,9%
Finance	34,9%	21,8%
Community services	20,3%	19,6%

Table Bay

Sectors	GVA	Employment
Agriculture	0,8%	5,2%
Mining	0,3%	0,1%
Manufacturing	15,3%	13,7%
Electricity	1,7%	0,3%
Construction	4,2%	7,1%
Trade	18,9%	20,3%
Transport	14,3%	5,7%
Finance	26,7%	22,1%
Community services	17,7%	19,1%

Tygerberg

Sectors	GVA	Employment
Agriculture	0,8%	3,5%
Mining	0,1%	0,1%
Manufacturing	16,9%	14,1%
Electricity	2,1%	0,3%
Construction	4,3%	7,2%
Trade	17,3%	22,1%
Transport	11,9%	5,7%
Finance	28,9%	21,7%
Community services	17,8%	19,7%

Figure 66: Gross Value Added (GVA) and Employment contributions in 2018 (IHS Markit, 2019)

The figure above illustrates the sectoral gross value added (GVA) and employment shares within each of the planning districts. It is apparent from the figures presented that the smaller district economies (Cape Flats, Mitchell's Plain) tend to be less diversified than the larger district economies: with proportionally less contribution from the manufacturing sector and greater reliance on community services[8] Among the productive sectors, manufacturing is relatively more important to Tygerberg district's economy while Agriculture is relatively more important to Blaauwberg economy, compared to other districts.

[8] Community services includes education; public administration and defence activities; health and social work and other service activities.

Table 25: Top Five sectors by location quotient in each district (detailed SIC) , 2018

Planning District	Rank	Sector	Location Quotient
Blaauwberg	1	Fishing, operation of fish farms	2,08
	2	Electricity, gas, steam and hot water supply	1,71
	3	Transport equipment	1,44
	4	Hotels and restaurants	1,24
	5	Fuel, petroleum, chemical and rubber products	1,22
Cape Flats	1	Education	1,33
	2	Other business activities	1,26
	3	Real estate activities	1,23
	4	Other service activities	1,16
	5	Finance and Insurance	1,12
Helderberg	1	Construction	1,56
	2	Electricity, gas, steam and hot water supply	1,44
	3	Hotels and restaurants	1,22
	4	Fuel, petroleum, chemical and rubber products	1,20
	5	Sale and repairs of motor vehicles, sale of fuel	1,20
Mitchells Plain	1	Education	2,02
	2	Public administration and defence activities	1,31
	3	Construction	1,27
	4	Real estate activities	1,25
	5	Health and social work	1,19
Northern	1	Electricity, gas, steam and hot water supply	1,63
	2	Construction	1,22
	3	Finance and Insurance	1,13
	4	Metal products, machinery and household appliances	1,13
	5	Sale and repairs of motor vehicles, sale of fuel	1,10
South Peninsula	1	Real estate activities	1,61
	2	Public administration and defence activities	1,16
	3	Education	1,12
	4	Other service activities	1,11
	5	Fishing, operation of fish farms	1,11
Table Bay	1	Air transport and transport supporting activities	1,28
	2	Land and Water transport	1,20
	3	Hotels and restaurants	1,18
	4	Wood and wood products	1,18
	5	Wholesale and commission trade	1,15
Tygerberg	1	Metal products, machinery and household appliances	1,27
	2	Finance and Insurance	1,24
	3	Furniture and other items NEC and recycling	1,21
	4	Food, beverages and tobacco products	1,21
	5	Textiles, clothing and leather goods	1,18

While Table Bay district is the largest contributor to all of the city's sectors, the different districts still have unique comparative advantages. By comparing the relative share constituted by an industry in the respective district economies to its share in the city-wide economy, location quotient analysis provides an indication of a region's comparative industry advantages.

A location quotient value greater than one generally reflects a comparative advantage industry for that district. The table ranks the top five industries by location quotient and below is the top comparative advantage industry in each district:

- Blaauwberg: Fishing, operation of fish farms (2,08)
- Cape Flats: Education (1,33)
- Helderberg: Construction (1,56)
- Mitchells Plain: Education (2,02)
- Northern: Electricity, gas, steam and hot water supply (1,63)
- South Peninsula: Real estate activities (1,61)
- Table Bay: Air transport and transport supporting activities (1,28)
- Tygerberg: Metal products, machinery and household appliances (1,27)

It is important to note that a location quotient depends on the relative GVA share of the sector within a district compared to that of overall Metro. As such, despite being the largest industry in most districts, the finance and insurance industry does not appear as the top comparative advantage of any of the districts. This is not to underplay the industry's importance as it is one of the metro's comparative advantage industries and is also ranked 2nd in Tygerberg, with a location quotient of 1,24; 3rd in the Northern district where it is ranked with a location quotient of 1,13 and 5th in the Cape Flats with a location quotient of 1,12.

9.3.2 Development Indicators

Table 2: Human Development Index (HDI)[9] - 2009, 2014 and 2018

Planning District	Human Development Index (HDI)		
	2009	2014	2018
Blaauwberg	0,75	0,78	0,79
Cape Flats	0,66	0,70	0,71
Helderberg	0,72	0,75	0,76
Mitchells Plain	0,61	0,65	0,66
Northern	0,76	0,79	0,80
South Peninsula	0,78	0,80	0,81
Table Bay	0,77	0,80	0,81
Tygerberg	0,70	0,73	0,74

Source: IHS Markit, 2019.

The HDI is a composite indicator reflecting education levels, health, and income. The HDI ranges from 0 (no human development) to 1 (high level of human development) (United Nations, 2018). In 2018, the South Peninsula (0,81), Table Play (0,81) and the Northern district (0,80) had "very high human development". Mitchells Plain was the only district with a medium human development, indexing at 0,66. This demonstrates the unequal access to education, health, employment as well as other resources within the Metro, largely due to income gaps and location which limits access to opportunities.

[9] According to the United Nations (2018), there are four human development groups which are very high human development (0,800 and above); high human development (0,700 – 0,799); medium human development (0,550 – 0,699) and low human development (below 0,550).

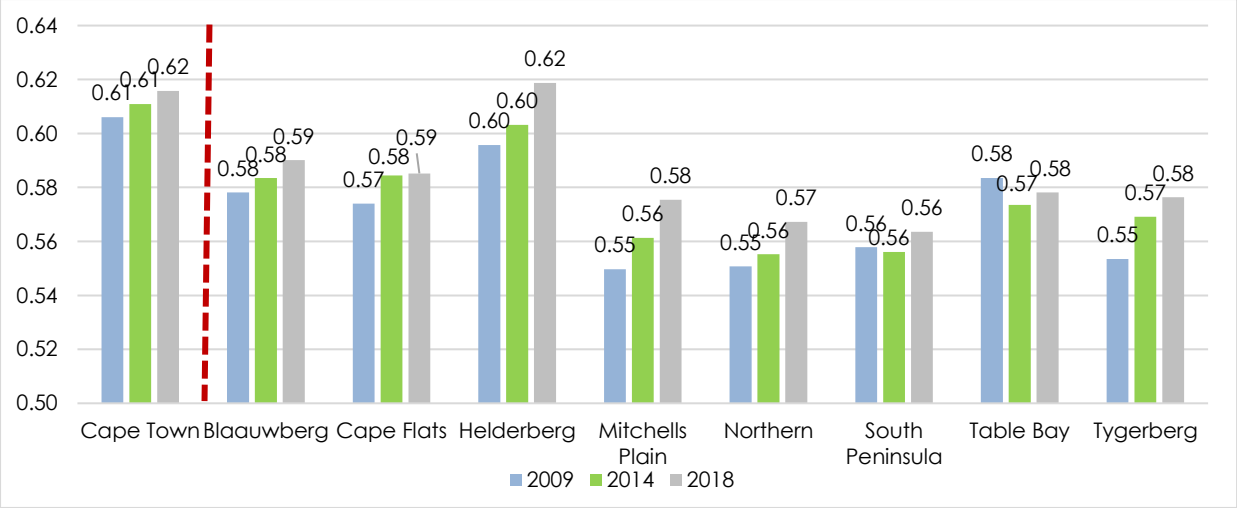


Figure 67: Gini coefficient - 2009, 2014 and 2018 (Source: IHS Markit, 2019)

Source: IHS Markit, 2019.

The Gini coefficient is an income inequality measure. The coefficient ranges from 0, which represents "absolute equality", to 1, which represents "absolute inequality" (Statistics South Africa, 2014). Out of all the districts, the South Peninsula had the lowest measure at 0,56 and Helderberg had the highest at 0,62. However, it is concerning to observe an increase in income inequality throughout the districts, mirroring the Metro's trend. This shows that income inequality is still a major challenge within the City of Cape Town.

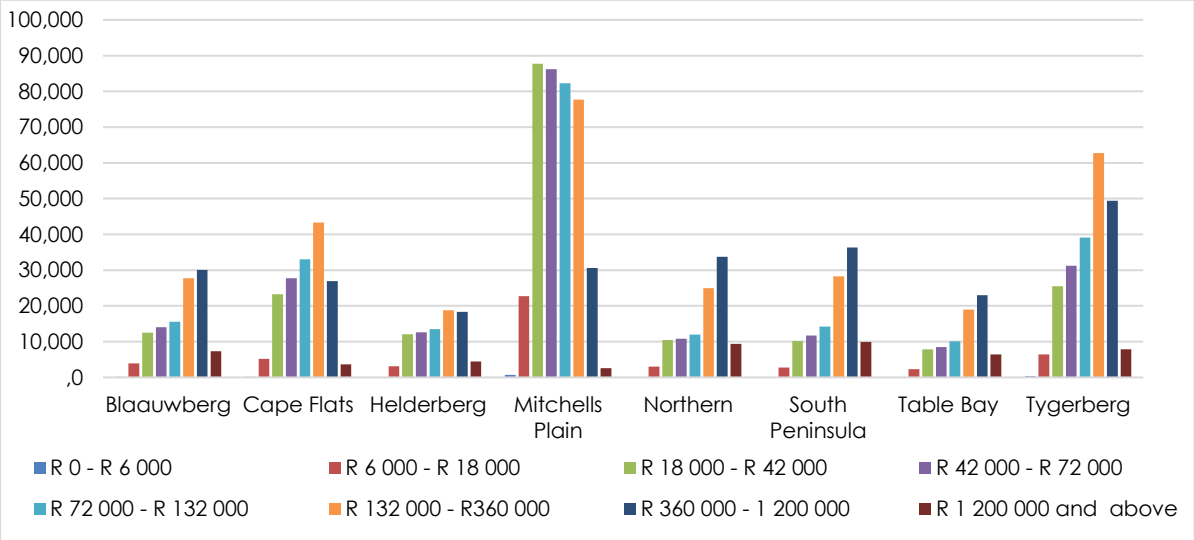


Figure 68: Number of households by income category, 2018 (Source: IHS Markit, 2019)

In total, there are 1 266 109 households in Cape Town and a majority of them are situated in Mitchells Plain (390 727 households) followed by Tygerberg (222 535 households). Mitchells Plain, Khayelitsha and Blue Downs is predominantly formal and informal residential areas; thus it is no surprise it has the highest number of households. A majority of the population in this district has an annual household income between R18 000 and R42 000 (22,5%), whilst other districts recorded a higher number of households in upper income percentiles (R132 000 and above). Tygerberg has the largest share of households (28,2%) with an annual income between R132 000 and R360 000, while Blaauwberg, Northern, Table Bay and South Peninsula districts all had their highest share of households in the R360 000 to R1 200 000 category.

9.4 The Informal Economy

The 'informal sector' commonly refers to the unregulated, non-formal portion of the market economy. Statistics South Africa uses an employment based definition for the sector, defining it broadly as comprising of employees working in establishments employing less than 5 employees who do not pay income tax, as well as own account workers whose businesses are not registered for either income tax or value-added tax. The term 'informal economy' is preferred to 'informal sector' as it reflects the broader scope of economic activities that take place informally.

The relatively low entry barriers in the informal economy, and its strong penetration in impoverished areas, means that it has the potential to increase economic inclusivity by of otherwise marginalised members of society.

9.4.1 Size of Informal Economy

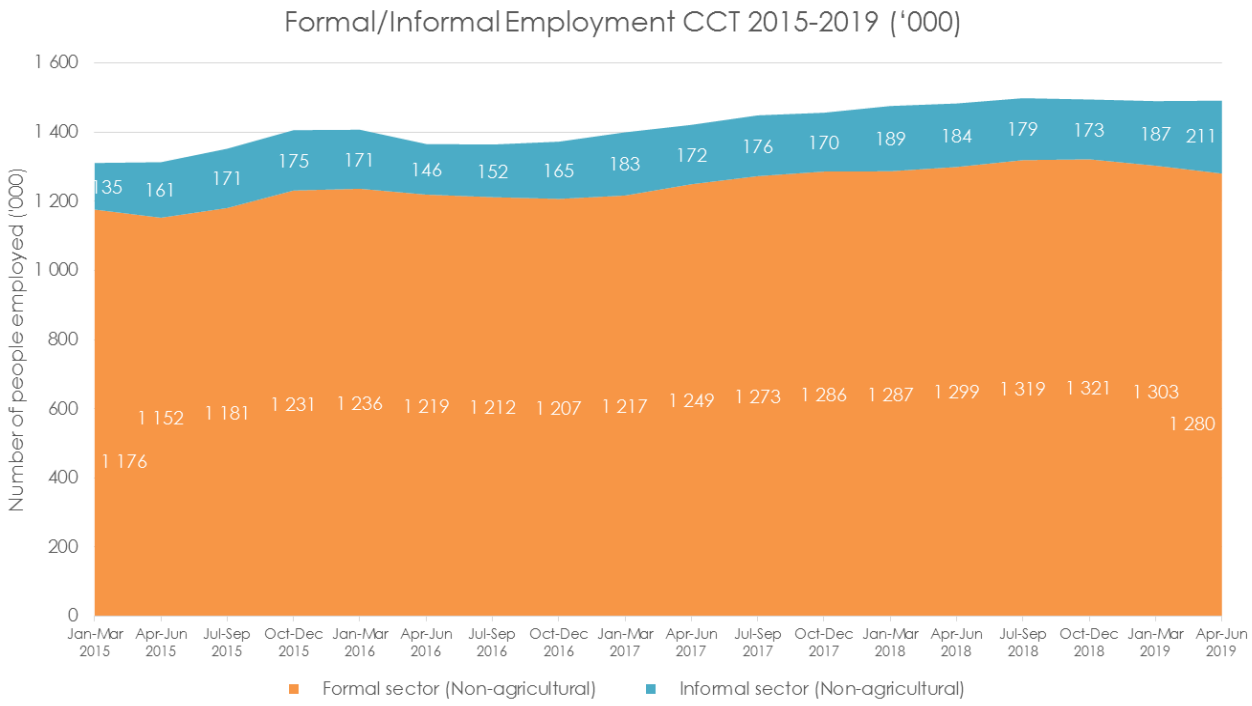


Figure 69: Formal and informal employment sectors

Statistics South Africa estimates that 220 000 people were employed in the informal sector in Cape Town in the second quarter of 2019. This constituted 13.3 % of Cape Town's workforce, a significant amount.[10] Importantly, the benefit of the sector is predominantly in low-income communities, and it accounts for an estimated 5 percentage point reduction in the poverty rate.[11] The graph shows that the number of jobs in the informal economy has grown from 2015 to 2019, as has the share of jobs which are informal.

[10] StatsSA, 2019, Quarterly Labour Force Survey

[11] G 10%

9.4.2 Employment Distribution

There is informal economic activity in almost all sectors, and particularly present in trade, transport services, community services, recycling, construction and manufacturing.

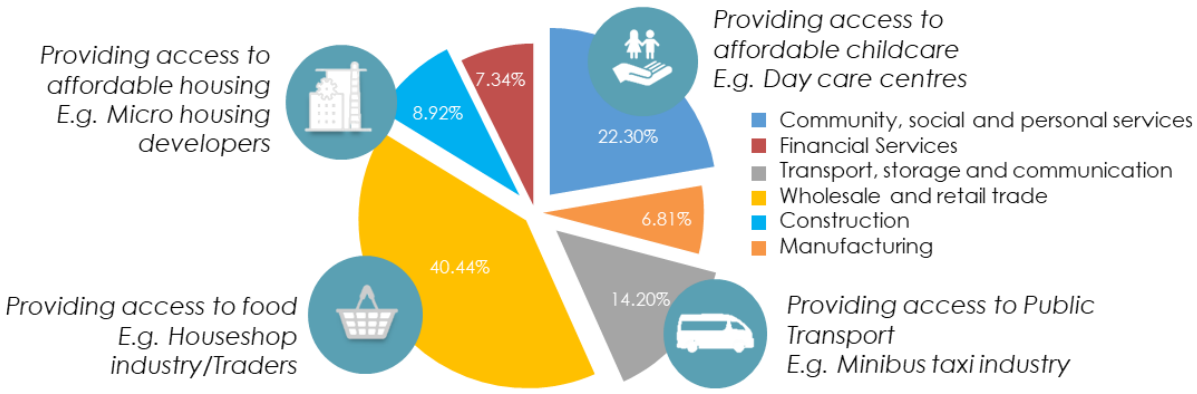


Figure 70: Industry distribution of informal sector employees in Cape Town (Source: Stats SA, QLFS Q2, 2019)

9.4.3 Opportunities and Constraints

As long as the population of Cape Town grows, through births and in-migration, at a higher rate than formal jobs are created, the informal sector will be an important avenue for generating livelihoods and reducing poverty. This is particularly true in a scenario where the bulk of new arrivals to the city or young residents entering the workforce in the city are low or semi-skilled. The informal economy has the potential to provide transitional employment for new arrivals to the city or new entrants to the labour market, and in some cases to provide sustained livelihoods. But there is a risk that many informal economy participants get stuck in low productivity, survivalist activities.

Cape Town's informal economy is comparatively small by emerging country standards, particularly in the context of high levels of unemployment in the formal sector. This presents an opportunity for economic growth.

As with the formal sector, a *lack of skills*, particularly relating to the operating of a business, is a key constraint to the growth of informal sector enterprises. Most informal businesses *battle to access growth markets and the capital* required to diversify and scale up their activities, and as a result are left to compete fiercely for market share at the local level servicing lower-income consumers, leading to low and precarious profit margins[12]. There is an opportunity for business support to be improved.

The conditions in which informal economy actors operate are often characterised by *low-quality urban spaces* with limited amenities and services such as bathrooms, shelter and storage facilities. Informal businesses are generally more affected by *crime and insecurity*, and the unregulated nature of the informal economy also increases opportunities for exploitation. The *regulations governing business licencing and other regulatory requirements*, such as land use and building approvals are designed for formal businesses and often are not relevant to

[12] Human Science Research Council (HSRC), 2018, *Township Economies Workshop Notes*

the realities of the informal sector. The costs associated with regulatory compliance represent a disincentive to formalisation, which may severely hamper the growth of informal enterprises.

A key challenge for the City in supporting informal sector development is the *scarcity of data* about the size, location and activities of the informal economy. Lack of information about the lived reality of those working informally and their priority needs is also a challenge

10 PROPERTY MARKET

10.1 Market Performance

Figure 71 below depicts the average capitalisation ("cap") rate, a measurement used in evaluating an investment based on **risk** and the **potential rate of return** for a prospective property. The cap rate is the ratio of stabilised annual net operating income to purchase price. Thus, it measures income after deducting operating expenses and normal vacancy, but before deducting financing charges and income taxes (*Ambrose and Nourse, 1993:221*). A low cap rates implies lower risk and higher value associated with the property; and a high cap rate implies higher risk and lower value associated with the property.

The following endogenous and exogenous factors influence the cap rate:

- **Market Value:** the estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in an arm's length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently and without compulsion (Blackledge, 2009).
- **Gross rental income:** the total amount collected in rent and any related rental property income before any expenses are deducted (may include rent for parking and other factors).
- **Net operating income (NOI):** the annual income generated by an income-producing property after deducting all operating expenses.
- **Operating expenses:** the necessary expenses to successfully operate the property, which includes property taxes, rental property insurance, management fees, repairs, maintenance and miscellaneous things like accounting and legal fees.
- **Occupancy rate:** the ratio of rented space to the total amount of available space (typically used in multi-unit properties).
- **Growth** in sales
- **Supply vs. demand:** number of properties available for occupation in the area (where there is lower inventory (supply) and high demand, cap rates tend to be lower).
- **Property type/asset class:** the type of property, such as multi-family apartment building, industrial or commercial property (typically, residential properties have lower cap rates than commercial properties, because commercial properties tend to have higher rents)
- **Rents that are above or below market**
- **Length of the lease term**
- **Financial strength/credit rating of the tenant**

Taking the above into account, the cap rate is considered to be a good indicator to assess property market performance.

The following tables and graphs show the average cap rates, as well as average operating costs, market rental and vacancy rates for Cape Flats District. This gives an indication of how strong different property market segments have performed. A lower cap rate indicates there was less risk associated with investing in that property segment. An analysis and explanation of the data follows in the next section.

Table 26: Cape Flats District Property Market (Mean) Indicators (City of Cape Town Non-Res Market Research: 2018)

Market Segment	Year	Average Cap Rate (%)	Average Operating costs (R/m²/month)	Average Gross market rental (R/m²/month)	Average Vacancy Rate (%)
Industrial	**2012**	10.1%	R 5.90	R 31.39	3.5%
	2015	9.8%	R 6.76	R 35.23	5.8%
	2018	9.4%	R 8.21	R 54.81	4.2%
Retail	**2012**	11.4%	R 10.31	R 52.55	3.5%
	2015	10.2%	R 13.72	R 59.34	5.0%
	2018	11.5%	R 19.56	R 127.42	4.8%
Office	**2012**	11.5%	R 14.14	R 56.53	5.0%
	2015	11.0%	R 15.82	R 67.90	9.4%
	2018	11.2%	R 20.22	R 122.18	7.0%

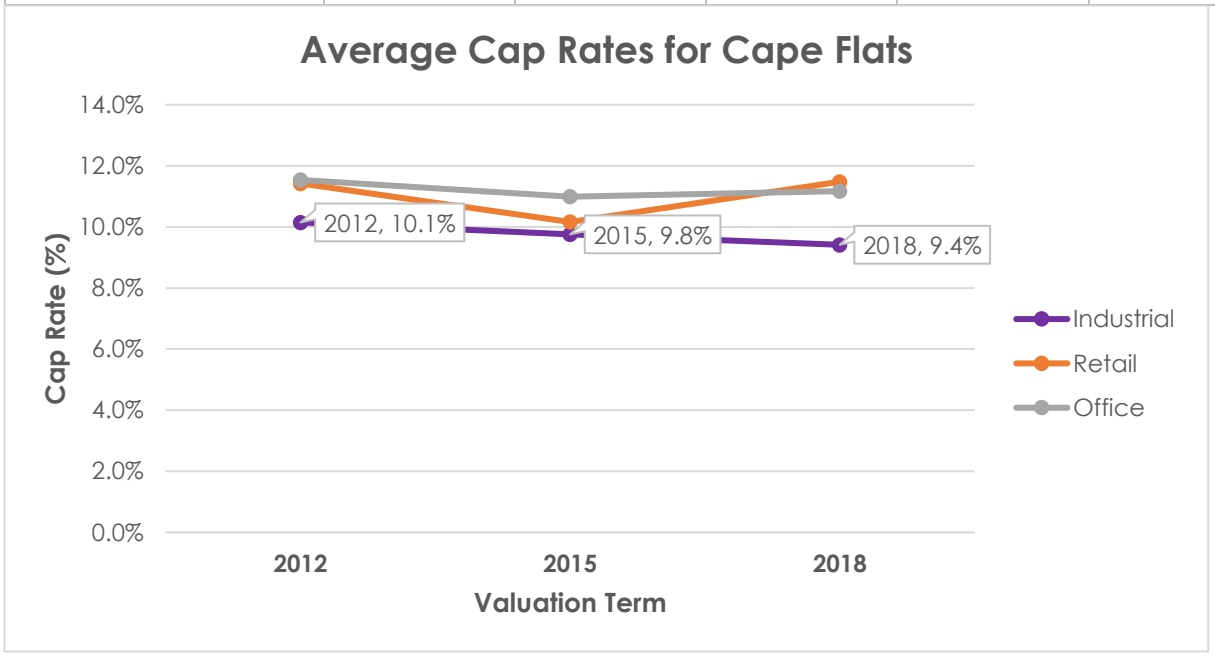


Figure 71: Average capitalisation rates per non-residential market segment (City of Cape Town Non-Residential Market Research, 2018)

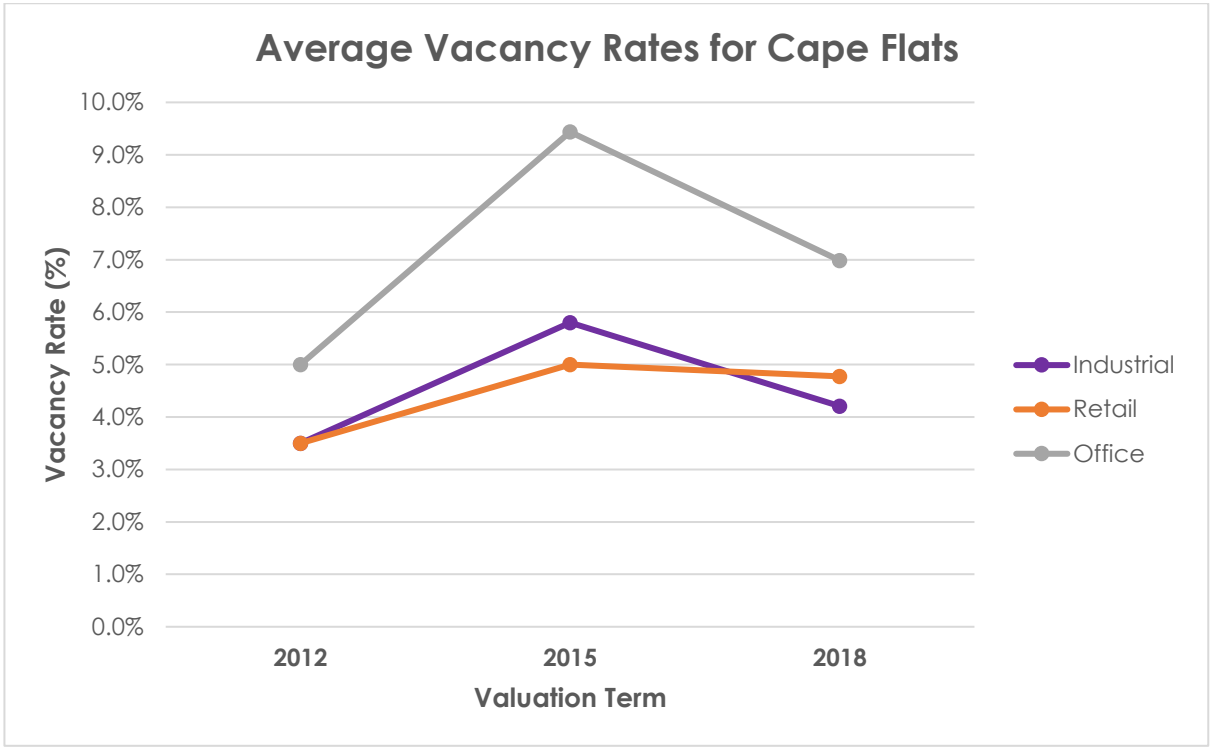


Figure 72: Average vacancy rates per non-residential market segment (City of Cape Town Non-Res Market Research, 2018)

10.1.2 Key Observations and Trends

10.1.2.1 Non-residential

a. Industrial:

The industrial sector in the Cape Flats district is currently performing better than the retail and office market segments. The average capitalisation rate for industrial properties steadily decreased over the last three valuation terms reaching a low of 9.4% in 2018. The vacancy rate dropped between 2015 and 2018 which indicates the industrial sector strengthened over this period. However, within the cape Flats District certain industrial nodes performed better than others. Key observations from the 2018 average cap rates include:

- Ottery Industrial Park, which focuses on light industry, and the Ottery East Business Park both had relatively low cap rates for the district in the region of 8 – 9%.
- Sheffield Business Park area had a relatively low cap rate and a high average value change for non-residential property between 2012 and 2018.
- Hanover Park had the poorest performing industrial properties wiith a cap rates averaging 12 – 12.5 %. This may be linked to urban management issues such as crime. It should also be noted that the properties which make up the industrial portion are in the town centre and smaller scaled retail and service businesses, as opposed to the larger industrial parks. The non-residential properties in Hanover Park town centre had negative value changes between 2012 and 2018. However the residential property values did show moderate value increases.
- Newfields and Lansdowne Industrial performed slightly worse than the Otttey industrial nodes. Newfields is an older area, and includes the Consol Sand processing.
- Capricorn Park is a relatively new industrial park. The average cap rates for it are varied, which may be correlated to the timing of development. The average increase in value over 2012 – 2018 has been close to 100% which is common for vacant land being developed.

b. Street Front Retail:

Street front retail is generally performing slightly worse than the industrial sector. The average cap rates are consistently higher than the industrial sector. However, the vacancy rates have been more stable than the industrial sectors. Across the district the average cap rates are in the range of 10% - 12%, with a few exceptions. In Sheffield, along Govan Mbeki Rd the data shows a well performing strip of retail. This is categorised as street front retail, however it is inside a light industrial/business park. Other areas which have lower average cap rates includes around Wetton station, parts of Nyanga centre and parts of Athlone CBD.

It should furthermore be noted that this section does not account for other larger scale retail typologies such as neighbourhood and regional shopping centres, which has a significant impact on the cumulative retail property market performance..

c. Office:

The office sector has been more consistent in comparison to the retail sector in terms of average cap rates however the average vacancy rate has fluctuated more. The maps indicate that office and industrial activity are often located in the same area as many industrial businesses require an office component too, from an operational perspective. The best performing office areas by the average cap rates in the district were in Capricorn Park – which is also an industrial Park, in Lansdowne Industrial Park and along Klipfontein Road. The map depicts an area in the middle of the Philipps Horticultural Area with the lowest office cap rate. The activities here are linked to agriculture.

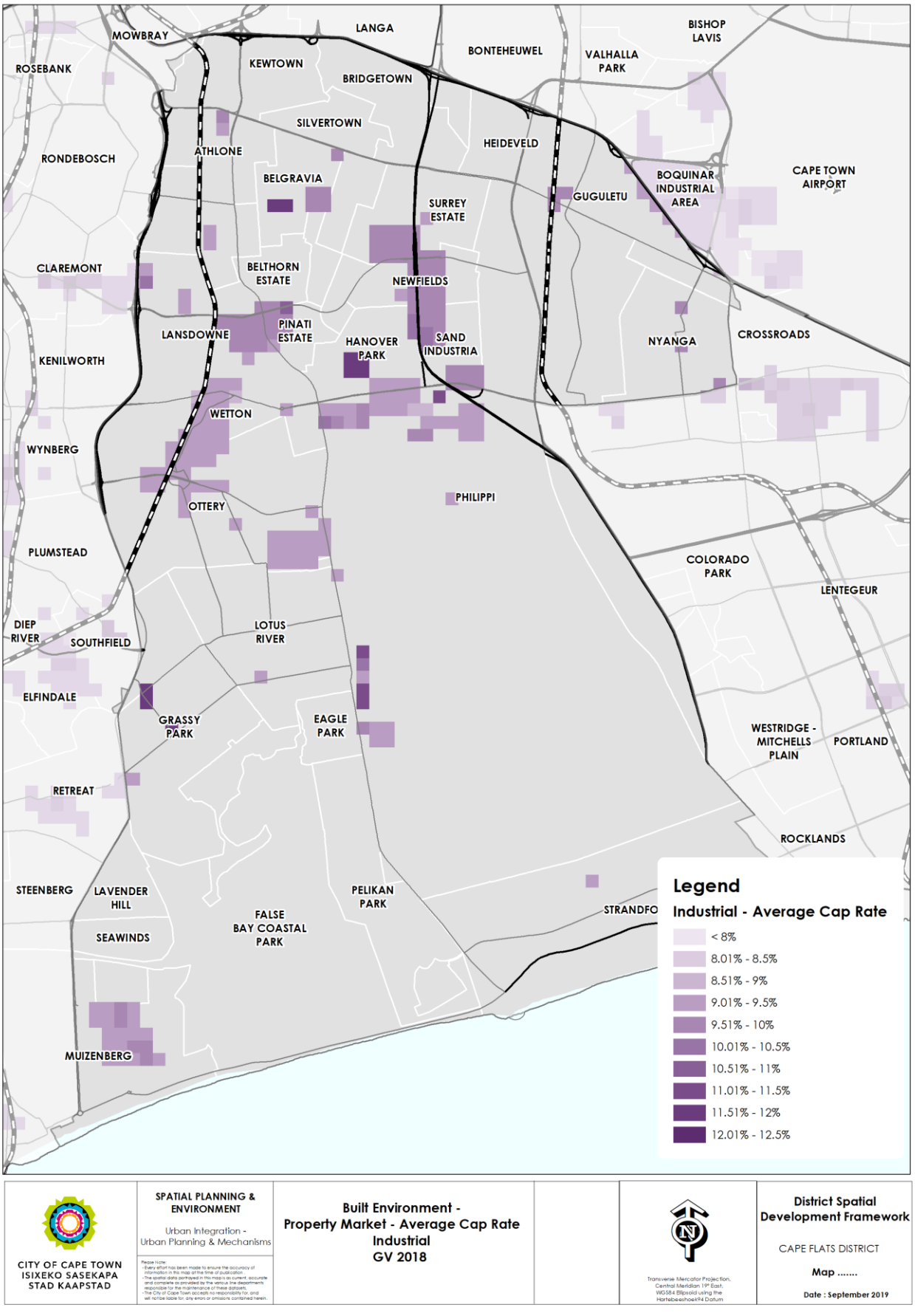


Figure 73: Average cap rates per 4ha: industrial property market

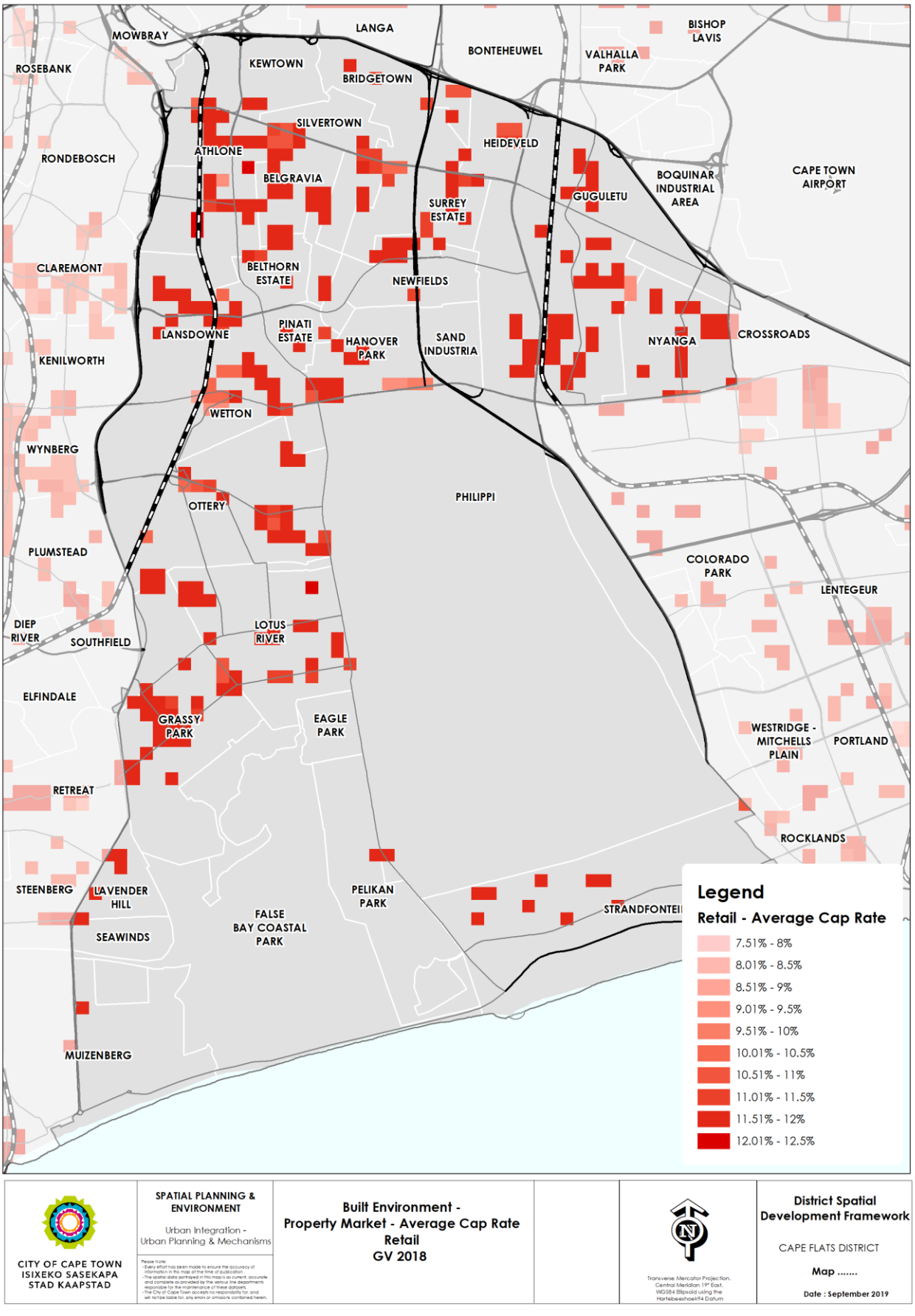


Figure 74: Average cap rates per 4ha: street-front retail property market

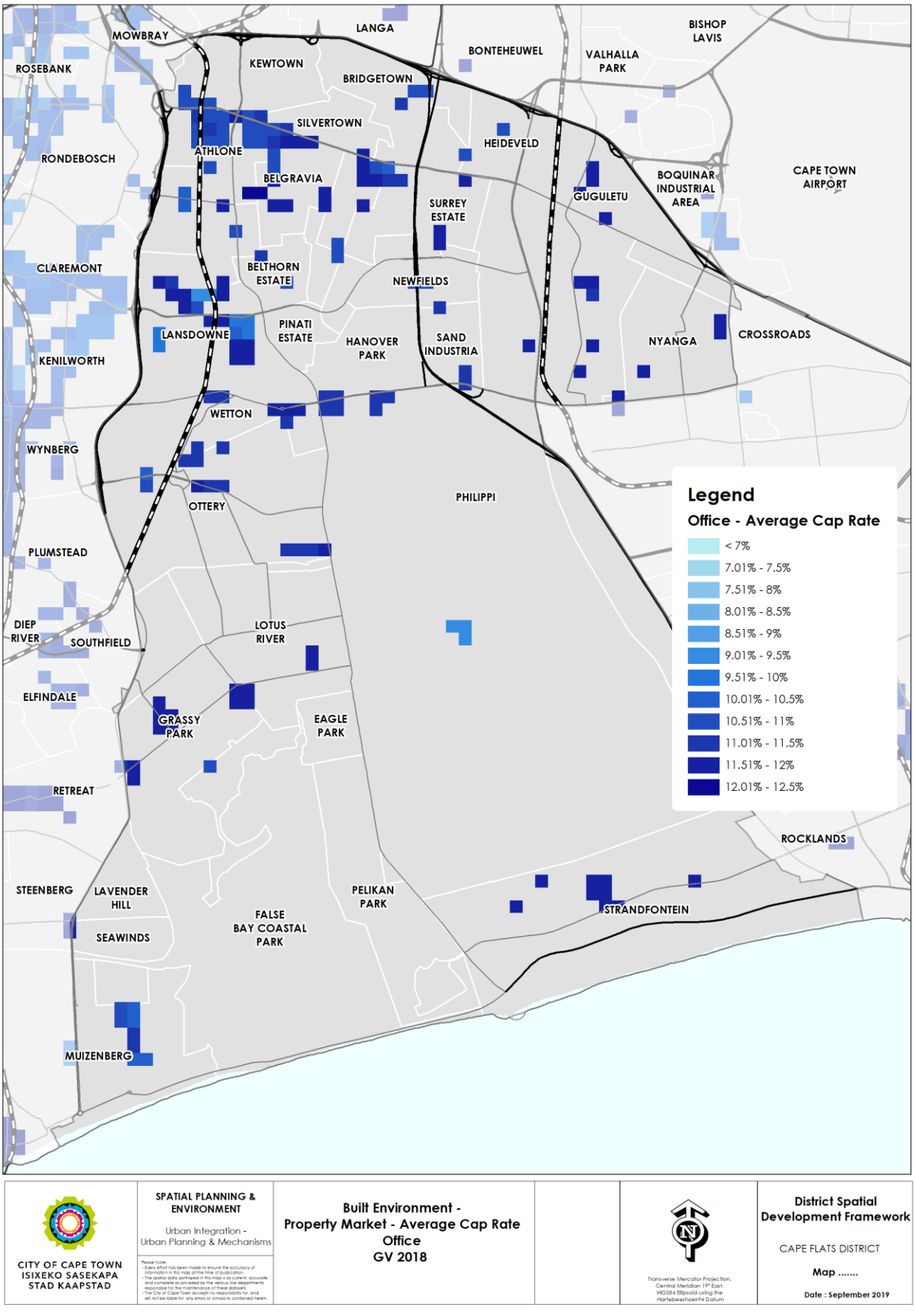


Figure 75: Average cap rates per 4ha: office property market

10.1.2.2 Residential

a. Sales

Figure 77 shows suburbs where the most property sales have occurred between 2012 and 2018. Muizenberg, Pelikan Park, Philippi and Strandfontein have the highest volume of residential sales. The increase in sales volume in all four of these areas is largely due to the take-up of new (Greenfield) residential development over the past 10 years. In Philippi there has been infill development in Schaapkraal. The development of Costa de Gama has been notable in terms of increased sales volume and change in value for the Muizenberg areas. This indicates that there is a high demand for residential properties in these areas. However, the types of housing supplied are varied.

Note that the data depicted in these figures does not include informal sales transactions (i.e. transactions that are not registered in the Deeds Office).

The average sales price data indicates that three of the four areas which have had the highest sales volume – all except Muizenberg – fall within the formal 'affordable housing' residential market segment. The 'Affordable housing' segment refers to households earning a monthly income between R18,000 and R22,000. Table 27: Monthly income bands and the corresponding bond amount below depict the total amount these household incomes are likely to obtain from end-user financing.

Table 27: Monthly income bands and the corresponding bond amount

Household Monthly Income	**Affordability** (assuming a bond on a 13% interest rate)
R22 000	**R560 000**.
R20 000	**R510 000**.
R18 000	**R460 000**

The residential sales data reveals that there are options in the District for households earning R18 000 – R22 000 per month as residential properties tend to have sales prices within this affordability threshold.

Figure 78 depicts the average value per square metre of land in Cape Town. It is calculated by dividing the sales price by the erf extent, and aggregating the result to 4ha grid cells. This map indicates the concentration of properties with the highest value in the district. Athlone, Rondebosch East, Crawford, Gatesville, Costa de Gama and Pelikan Park currently contain properties with the highest value per m². This map illustrates that the traditional bid rent theory [13]does apply generally to the Cape Flats, with the majority of higher valued property being located closer to the city centre. However, Costa de Gama, Strandfontein and Pelikan Park challenge this theory. This indicates that an array of factors influence property value, in addition to proximity and access.

b. Growth in Value

Figure 79 and Figure 80 below depict the City's growth in value per 4ha grid area over time, by calculating the percentage difference in value between the three City of Cape Town's municipal

[13] The bid rent theory is a geographical economic theory that refers to how the price and demand for real estate change as the distance from the central business district (CBD) increases. It states that different land users will compete with one another for land close to the city centre. Users are willing to pay more for land close to the CBD and less for land further away from this area.

valuation terms (per property). All values were adjusted/deflated to 2016 Rands using the CPI (consumer price index), to approximate real growth in value.

Most residential property values in the Cape Flats district grew between 50-80%. The increase in value could be attributed to varying factors in different areas including improvements in the urban realm, access to new economic opportunities – such as the development of Capricorn Park, and infill new development over time. Areas experiencing the highest growth include Costa de Gama, Schaapkraal, Vrygrond, Lansdowne and most of Heideveld/Manenberg. Costa de Gama, and Heideveld/Manenberg are areas which had large greenfield developments. Only two small areas showed a negative change in value – a small part of Capricorn and Eagle Park.

In terms of non-residential or commercial properties, value growth has been scattered throughout the district and varies widely from negative growth to value increases of 100%. Lavender Hill, Hanover Park, Manenberg, Phola Park, Gugulethu and Nyanga have experienced negative value change in non-residential properties. On the other side of the spectrum, properties in the areas of Capricorn Park, Sheffield, Lansdowne Industrial, Bridgetown and Gugulethu have grown in value by over 100%.

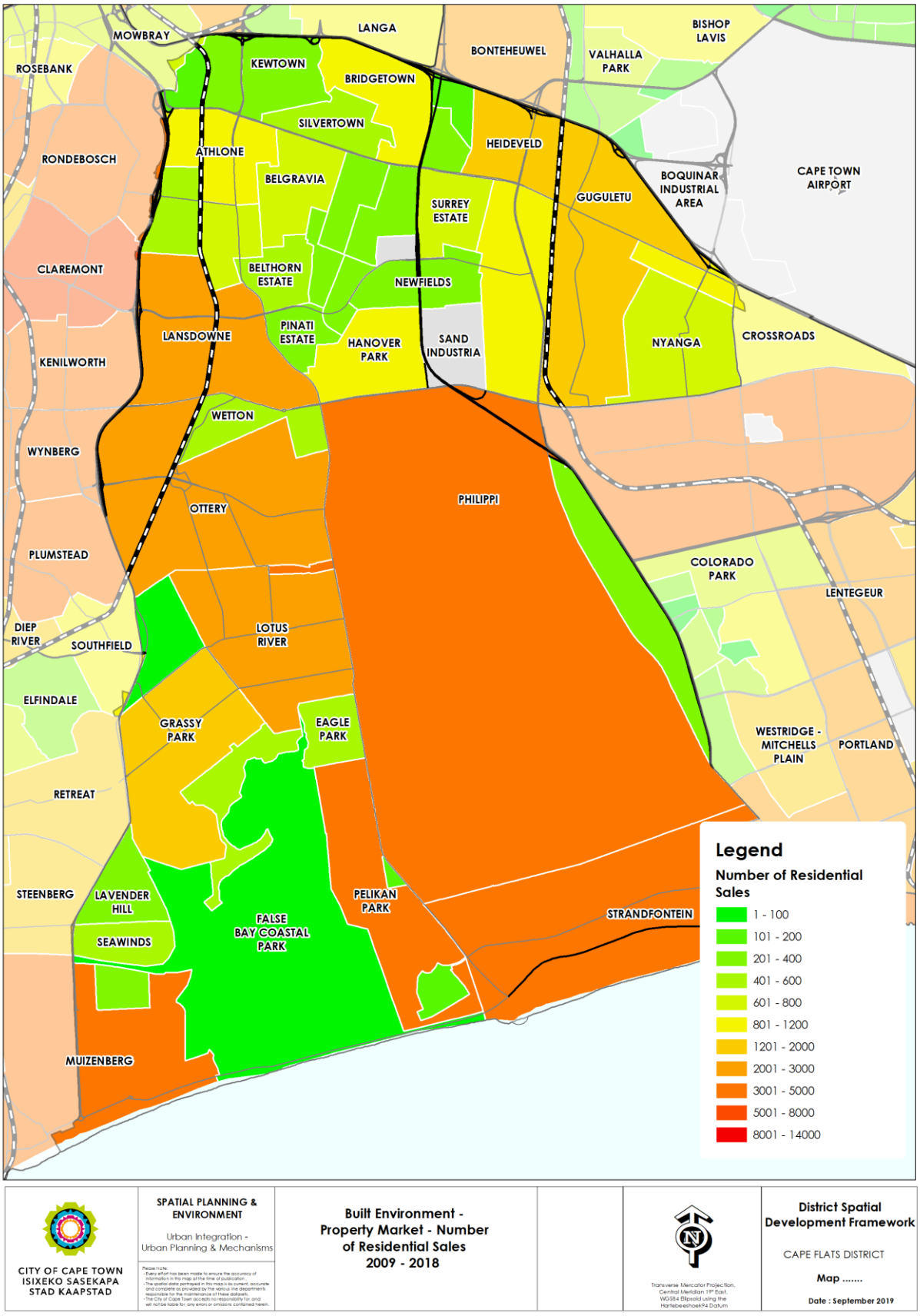


Figure 76: Number of Residential Sales per Suburb (2009-2018

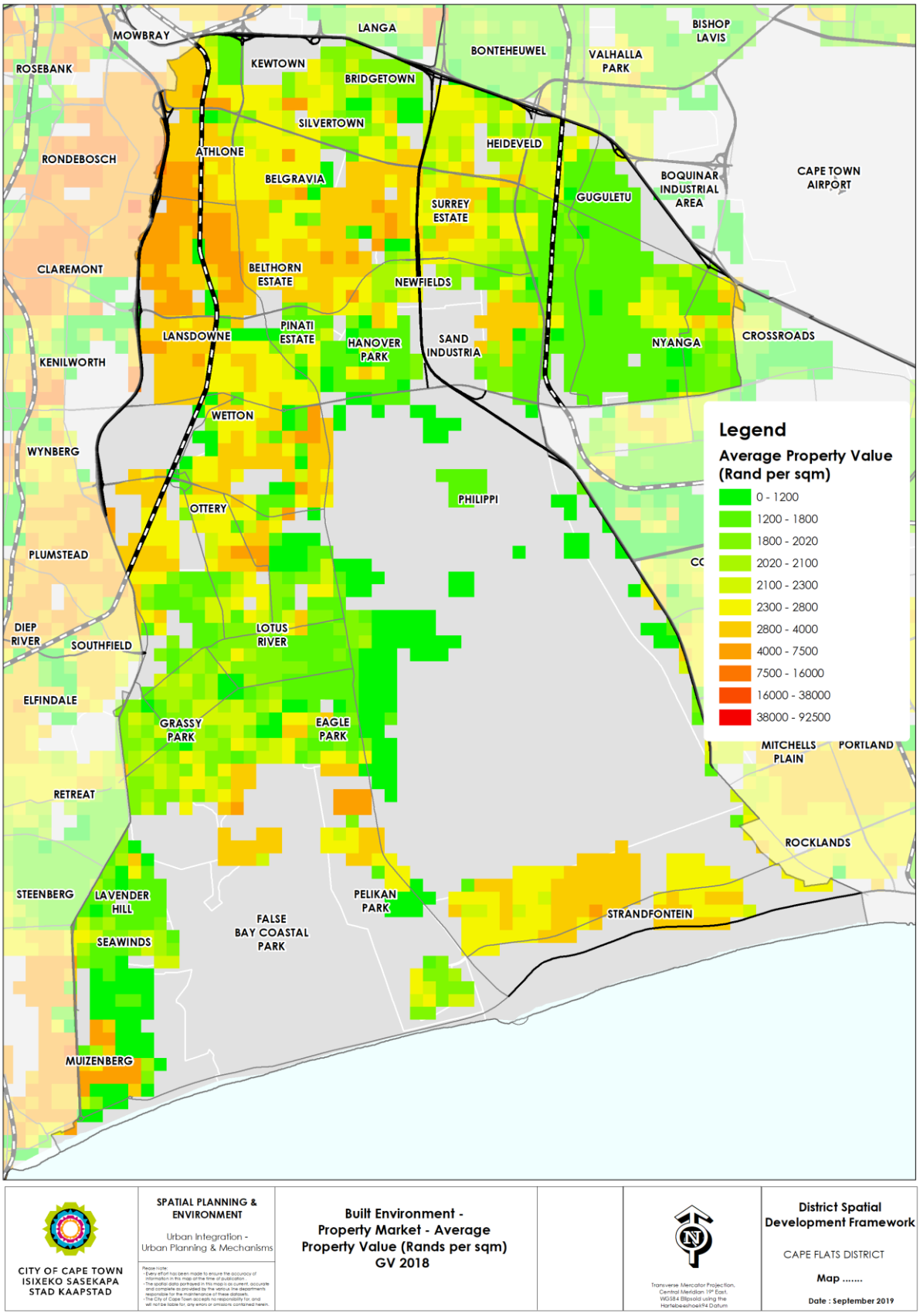


Figure 77: Value (R) per m²

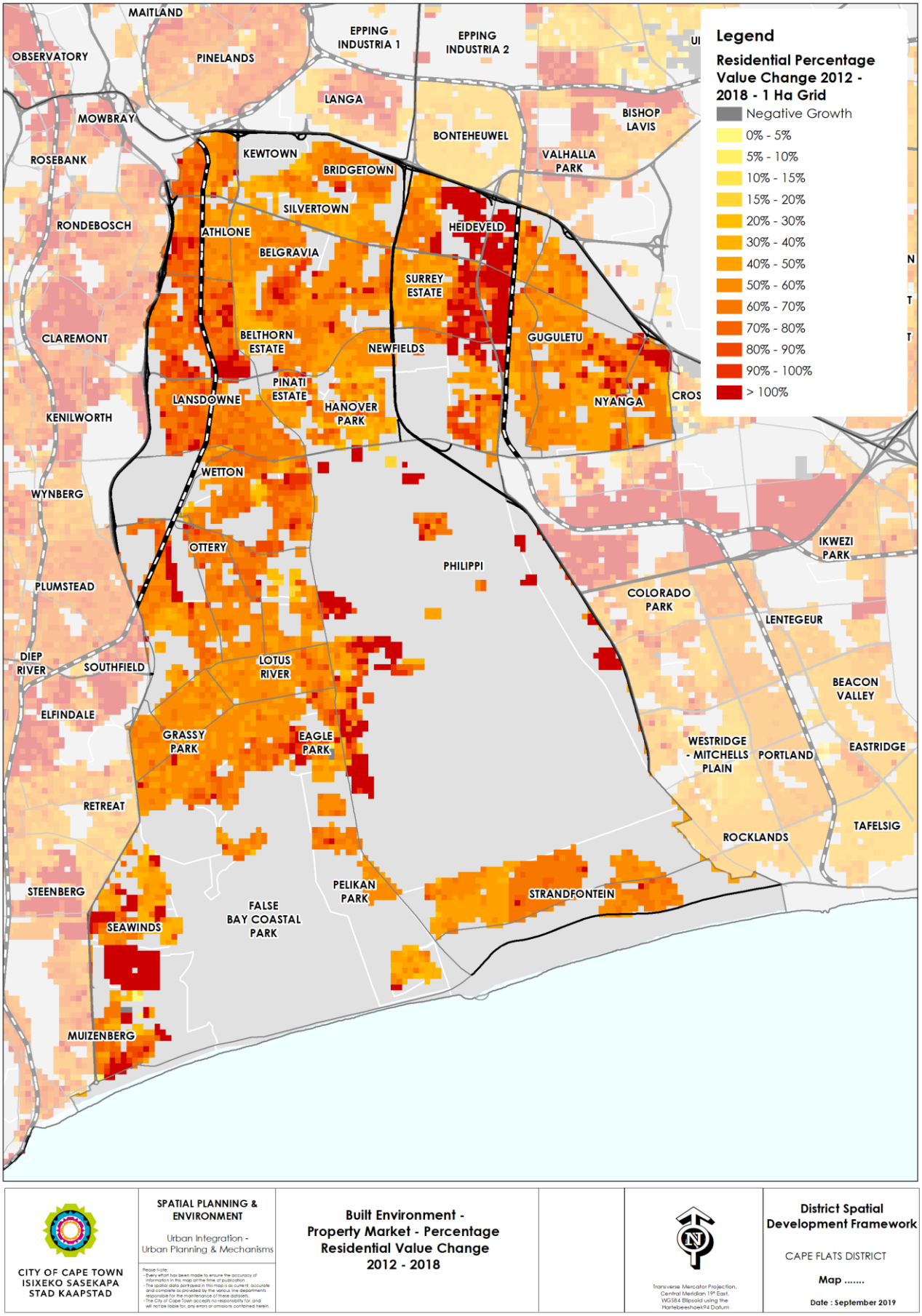


Figure 78: Percentage Value Change for Non-Residential Properties between 2012-2018

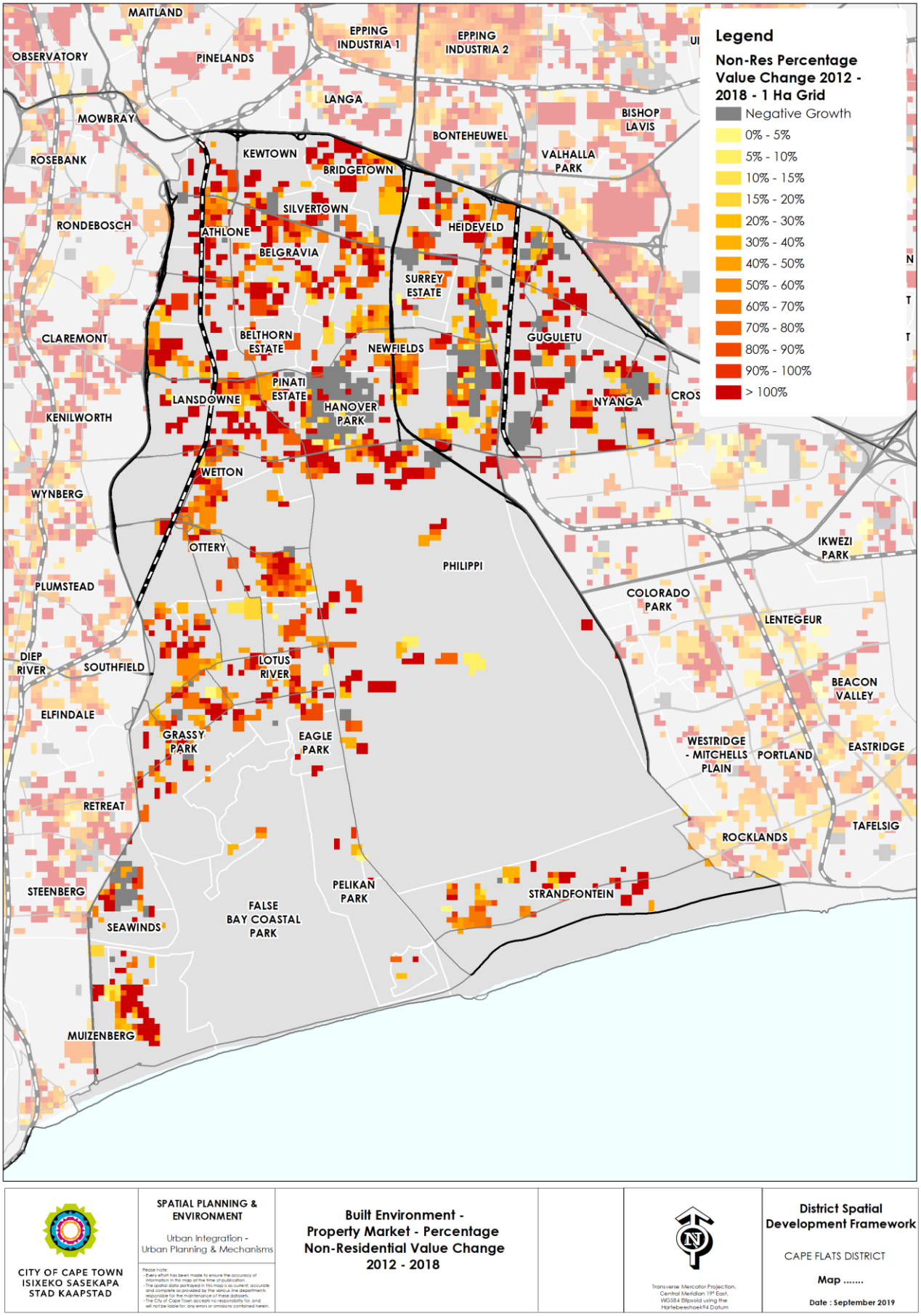


Figure 79: Percentage Value Change for Residential Properties between 2012-2018

10.2 Key Opportunities and Constraints

10.2.1 Opportunities:

- The Cape Flats District has a large supply of affordable housing in terms of residential values and average sales prices.
- There is a large industrial sector, which has been expanding over the past 10 years. There is also variety within this sector in the District – heavy and light industry and distribution/warehousing.
- The Consol Sand industrial activity has specific locational requirements which are provided in the District. This offers a locational advantage.
- The street-front retail sector is dispersed throughout the District which offers opportunities for strengthening fine grained local economic development.
- On average residential properties have increased by 50-80% between 2012-2018.

10.2.2 Constraints:

- The office sector has performed relatively poorly, according to average cap rate for the district.
- Industrial land, in particular the logistic and warehousing sub-sectors, are land extensive/low density and low trip attracting land users. While this has contributed to job-creation, it does not support the City's approach to compact and dense development. To this end, opportunities for integration with other forms of compatible non-residential and residential land uses should be considered where contextually appropriate, to maximise space and intensify the existing built footprint.
- Areas of negative property value change constrain property owners flexibility to sell their property – whether to move to different areas or different types of property.
- Urban Management and crime factors, among others, seem to impact property values. This reflects larger concerns regarding safety and social issues, which are difficult to address and require social development actions and plans.

11 RISKS

Urban developments are subject to a certain amount of risk, for example construction faults, traffic accidents or exposure to hazardous substances. In the context of the District plan, the focus is on avoiding, mitigating or reducing the risk of disaster, by guiding development away from known hazards or in a way that the risk of being exposed to disasters[14] is lessened.

This chapter outlines the current and future risks to the Cape Flats District and their associated levels of impact **on the intensity and location of future urban development** in the area.

11.1 Guiding Policy on Risk and Risk Management:

The IDP focus area "The Safety Priority" reflects on the management of disasters and risks. The City emphasises integrated planning and governance in disaster risk management, and the need to build the City's resilience to risks (i.e. the ability to recover from disastrous events).

The City's Disaster Risk Management Plan, embedded in the IDP, considers the City's response to disaster impacts, relief, rehabilitation, reconstruction, and preparedness.

The City's Resilience Strategy (2019) notes that chronic stresses such as unemployment, congestion and poverty weaken the City's ability to cope with shocks. All communities of the city have a degree of vulnerability to risk, the Disaster Risk Management Plan identifies 70 hazards and risks that the City must respond to. Approximately 25 of these risks could occur across the City, for example drought and rainfall reduction, service disruptions, traffic accidents, the transportation of hazardous substances, terrorism or construction faults.

Stresses which increase vulnerability are disproportionately experienced by communities experiencing inadequate shelter, poverty and unemployment and especially the urban poor living in informal settlements. The servicing, disaster response and development of vulnerable areas and informal settlements is a priority across the City for building resilience.

Spatial planning must ensure that new developments both avoid and do not exacerbate risk and where historic urban development is exposed to risk and hazard, it is mitigated. Similarly, the direction of spatial planning under a high-resilience framework ensures that the built environment is developed to bring about low-carbon opportunities, and meaningfully mitigate against climate change and buffer against increasing costs of fossil fuels. Doing so in the immediate future reduces the cost of implementing climate adaptation measures in the long-term.

Risk Strategy Extracted from MSDF 2023

Sub-Strategy Appropriately Protect the Citizens of Cape Town from Risk Areas	
Policy Statement	What this Means/Requires
Policy 15 **Enable resource-efficient development**	The City can guide spatial development in a way that encourages the public and private sector to utilise sustainable practices and technologies that assist in reducing carbon emissions, reduce energy and water demand,

[14] The definition of a **disaster** is: "a progressive or sudden, widespread or localised, natural phenomena or human-caused occurrence which –
(a) causes or threatens to cause -
(i) death, injury or disease;
(ii) damage to property, infrastructure or the environment; or
(iii) disruption of a community; and
(b) is of a magnitude that exceeds the ability of those affected by the disaster to cope with its effects using only their own resources" (Disaster Management Act, 57 of 2002)

	promote public transport, non-motorised transport and support the recycling of water and waste materials.
Policy 16 **Direct urban growth away from risk areas**	Hazardous areas are either already determined through proclamations/ law or specialist studies, or will be determined as part of the EIA processes or pre-submission consultations processes, where appropriate.
Policy17 **Discourage urban growth in areas at risk from natural hazards/coastal processes which are expected to be amplified by climate change impacts.**	Areas vulnerable to climate change and natural hazards and risks have broadly defined through specialist studies or will be determined by future specialist studies.

Extract from MSDF 2018. The Disaster Risk Management Plan for Cape Town evaluates known hazards in terms of the following[15]:

Measurement Criteria for each Hazard Assessed	**Criteria's Assessment Rating**	**Integration of factors to determine the Relative Priority**	**Hazards Relative Priority Rating**
Probability of Occurrence	Very Likely		
	Likely		
	Possible		
	Unlikely		
Maximum impact/ Severity & Consequences	Extreme		Very High Priority
	Moderate		High Priority
	Insignificant		Medium Priority
Vulnerability of Community and/or Environment and/or Economy	Very Vulnerable		Lower Priority
	Vulnerable		
	Small Vulnerability		
Manageability/Coping Capacity by Responders to offset Hazards Impact and Vulnerabilities	Good		
	Adequate		
	Basic		
	Poor		

11.2 Risks in Cape Flats

Taking the aforementioned guiding policy into the account the following section identifies the types of risk (see figure x below) and the level of exposure to risks at the district scale, **referencing those risks that impact on the permissible intensity and location of future urban development (see tables below)**. The hazard evaluation above is referenced where possible. In addition, the relevant principles that apply when considering the allocation of development rights and possible exceptions are identified.

[15] Further description of the methodology and ratings prescribed is contained in the City of Cape Town Disaster Risk Management Plan

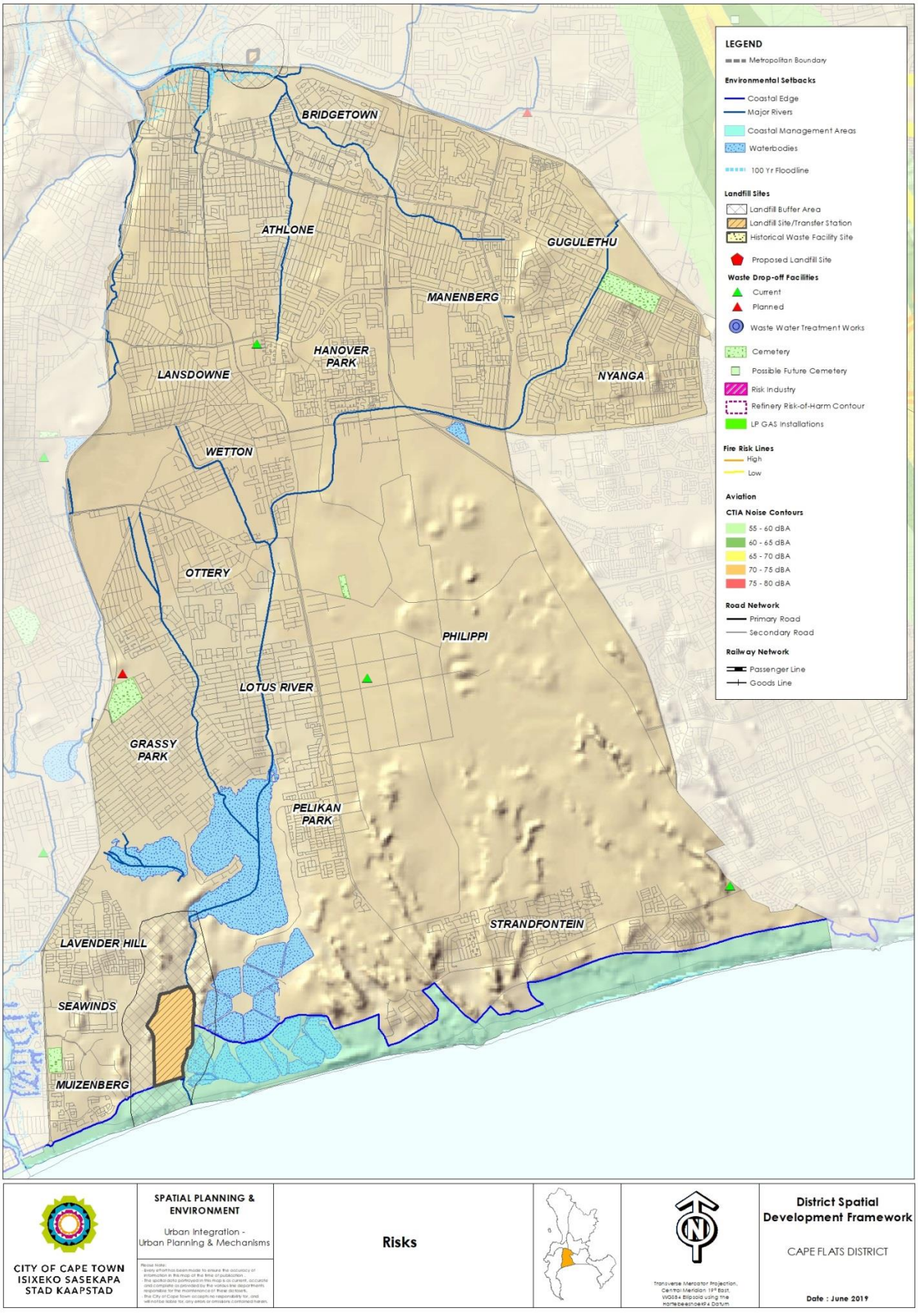


Figure 80: Risks, Cape Flats District

11.2.1 Natural Risks

11.2.1.1 Sand Dune Migration

The False Bay coast is exposed to harsh conditions, strong winds and salt water spray. This is anticipated to become more severe over time due to increases in wind-speed caused by climate change.

Sand dune migration poses a risk to urban development and coastal infrastructure in the District, impacting the use and maintenance of coastal infrastructure and properties.

Baden Powell drive is frequently rendered unusable by wind-blown sand, to the extent that realignment of beach access must be considered. Sunrise Circle is also affected as is Lukannon drive between Strandfontein and Bluewater resorts.

Table 28: Sand Dune Migration, Cape Flats District

Rating of Probability	Rating of Maximum Impact	Vulnerability Rating	Coping Capacity	DRM Priority Rating	Development Principles and Exceptions
Likely	Moderate	Vulnerable	Adequate	High	Development of coastal economic and social opportunities must be undertaken in a manner that does not reduce, harm or degrade our coastal environment or its ability to cope with climate risks in the future. For existing property in risk areas initiatives that enable adaptation and reduce risk must be encouraged. Alternative service delivery mechanisms in risk areas should be investigated in order to reduce the impacts of known hazards.

11.2.1.2 Coastal Erosion

The disruption of natural sand movements caused by historic development has led to exposure to risk from coastal erosion processes, the entire stretch of False Bay is at risk. This is anticipated to become more severe over time due to changes in coastal dynamics and sea level rise caused by climate change.

Table 29: Coastal Erosion, Cape Flats District

Rating of Probability	Rating of Maximum Impact	Vulnerability Rating	Coping Capacity	DRM Priority Rating	Development Principles and Exceptions
Very Likely	Moderate	Vulnerable	Adequate	High	Development of coastal economic and social opportunities must be undertaken in a manner that does not reduce, harm or degrade our coastal environment or its ability to cope with climate risks in the future. For existing property in risk areas initiatives that enable adaptation and reduce risk must be encouraged. Alternative service delivery mechanisms in risk areas should be investigated in order to reduce the impacts of known hazards.

11.2.1.3 Flood Risk

The presence of waterbodies 1:100 year flood lines and indicative sea level rise modelling reveal the areas with higher probability for flood and coastal inundation occur. The Diep River corridor and Rietvlei wetland areas are areas of concern as well as points along the coast vulnerable to storm surges. NB The Coastal Management line doesn't indicate all the properties that are exposed to coastal risks.

In addition relative elevation reveals areas where the flow of water will speed up or where water will collect. This indicates more need for storm water management and precautionary development principles.

The entire District is low lying, with several major rivers cutting across. The relatively flat topography and high water table means drainage is an ongoing challenge.

11.2.1.4 Storm Surges

Coastal resorts and development in low lying areas flood zones are vulnerable to the effects of storm surges. This is anticipated to become more severe over time due to sea level rise caused by climate change.

Table 30: Impact of storm surges

Rating of Probability	Rating of Maximum Impact	Vulnerability Rating	Coping Capacity	DRM Priority Rating	Development Principles and Exceptions
Very Likely	Moderate	Vulnerable	Adequate	High	Development of coastal economic and social opportunities must be undertaken in a manner that does not reduce, harm or degrade our coastal environment or its ability to cope with climate risks in the future. For existing property in risk areas initiatives that enable adaptation and reduce risk must be encouraged. Alternative service delivery mechanisms in risk areas should be investigated in order to reduce the impacts of known hazards.

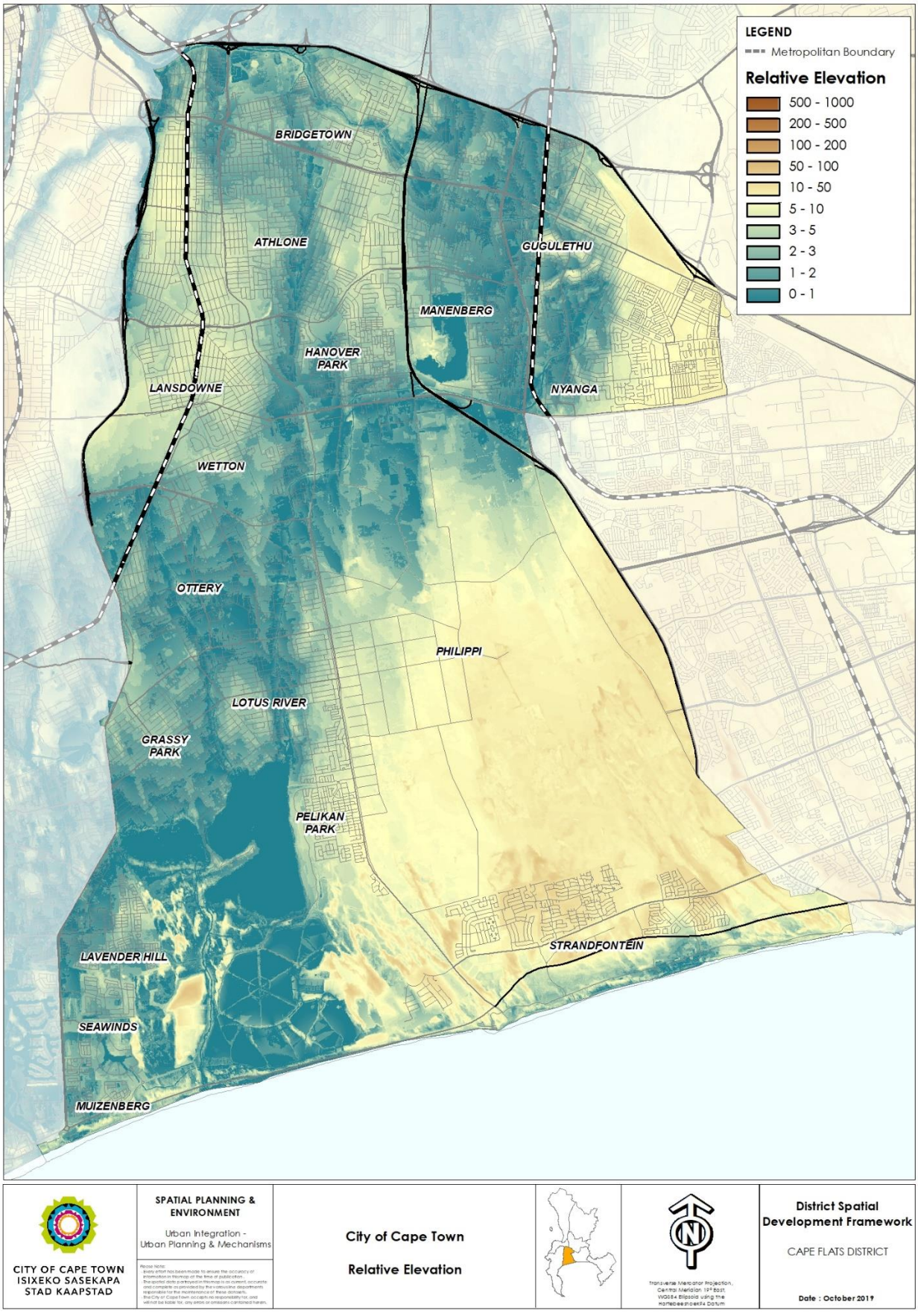


Figure 81: Relative Elevation, Cape Flats District.

Rating of Probability	Rating of Maximum Impact	Vulnerability Rating	Coping Capacity	DRM Priority Rating	Development Principles and Exceptions
Likely	Moderate	Very Vulnerable	Good	High	Careful management of development to avoid developing in high flood risk areas, to protect the environmental integrity of aquatic resources and to ensure that permitted development enhances the aesthetics and character of the adjacent watercourses / wetlands.

11.2.2 Built Environment Risks

3.5.1.1 Cemeteries, solid waste disposal sites and waste water treatment works:

Exclusion buffers exist around land fill and waste disposal sites to protect surrounding populations from hazards and nuisances. Historic sites also exclude certain types of development for a period of time determined in the waste management regulations as they present particular hazards in terms of structural stability, the release of biogas and effluent from these sites. This is a challenge in the District where informal settlements have in located on top of historic sites. Smaller sites and drop off facilities present fewer nuisances and hazards but may have an impact on neighbouring property uses.

Cemeteries act as development moderators as their future use is limited.

Rating of Probability	Rating of Maximum Impact	Vulnerability Rating	Coping Capacity	DRM Priority Rating	Development Principles and Exceptions
n/a	n/a	n/a	n/a	n/a	No inappropriate development in waste sites or buffer areas.

3.5.1.2 Infrastructure Availability:

The availability and condition of infrastructure influences the type of development that can occur, higher infrastructure capacity can include a higher intensity of land use. Infratructure needs to accommodate the growth and demand that will allow cost recovery and a more efficient urban form.

Aging and inadequate infrastructure poses different levels of risk throughout the District. See map "Slight and Severe Lack of Capacity."

Rating of Probability	Rating of Maximum Impact	Vulnerability Rating	Coping Capacity	DRM Priority Rating	Development Principles and Exceptions
n/a	n/a	n/a	n/a	n/a	Development shouldn't occur where bulk infrastructure services are stressed. Infrastructure should build in redundancy in areas where development in prioritised.

3.5.1.3 Structural Fire Informal Settlements:

Informal settlements and backyard dwellings are often built at extremely high densities and are unable to meet building standards for fire risk reduction. All informal settlements. The reasons for informal settlement fires and methods for reducing risk are complex and site specific requiring an integrated response. From a spatial planning perspective, community planning initiatives such as reblocking and maintenance access routes for emergency services are interventions that may reduce risk.

Rating of Probability	Rating of Maximum Impact	Vulnerability Rating	Coping Capacity	DRM Priority Rating	Development Principles and Exceptions
Very Likely	Extreme	Very Vulnerable	Adequate	Very High	Access for fire services needs to be maintained Working with informal settlement communities to manage risks and adapt buildings.

3.5.1.4 Structural Fire Formal Settlements:

Fire in formal settlements is a risk across the district, particularly when exposed to high temperatures and high winds. The prevalence of older buildings in the District and more vegetated suburbs also contributes to this risk. In general however a higher degree of building standard compliance and clearer access routes for emergency mean that there is less vulnerability than informal settlements experience.

Rating of Probability	Rating of Maximum Impact	Vulnerability Rating	Coping Capacity	DRM Priority Rating	Development Principles and Exceptions
Very Likely	Extreme	Vulnerable	Adequate	Very High	Maintaining access for fire services and maintenance of water access points. Compliance with buildings standards and urban design to reduce fire risk. Encouraging maintenance of trees and vegetation in private properties.

3.5.1.5 Heat and heat islands

All areas of the city are at risk from increased heat due to climate change, including increased heat waves (defined as 3 or more days in a row of temperatures higher than 32°C) and high heat days (defined as a temperature of higher than 35°C). Dense urban areas with low levels of green vegetation are most at risk of heat impacts and can be several degrees hotter than those areas not subject to the heat island effect.

Fire risk is anticipated to increase over time due to increased temperatures, increased drying, and higher wind speeds caused by climate change.

Rating of Probability	Rating of Maximum Impact	Vulnerability Rating	Coping Capacity	DRM Priority Rating	Development Principles and Exceptions
Likely	Moderate	Vulnerable	Adequate	Lower	Careful management of development to ensure the equitable distribution of green space, reduce the loss of exiting green vegetation, and ensure that areas targeted for densification include sufficient green space and public spaces and facilities that are designed for cooling.

3.5.1.6 Unmanaged Land Occupation/Unregulated Development

Occupation of city owned and private land threatens the availability of land reserved for other uses such as future human settlements or social service provision they may also place households at risk of flood, fire or other risks depending on the location. Unregulated and dense development in informal settlements can result in building forms and conditions that are vulnerable to risks of heat or fire and are not able to access infrastructure and services.

Rating of Probability	Rating of Maximum Impact	Vulnerability Rating	Coping Capacity	DRM Priority Rating	Development Principles and Exceptions
n/a	n/a	n/a	n/a	n/a	Refer to human settlements policy and means to address affordable housing demand across the City. Aim for effective land use management and enforcement across the City.

11.3 Climate Change Hazard, Vulnerability and Risk Assessment Study:

11.2.3 Overview

A climate change hazard, vulnerability, and risk study has been conducted for the City which identified six key climate hazards which the city must adapt to. These hazards are:

- Decrease in rainfall
- Change in seasonality of rainfall
- Increased mean, maximum, and minimum temperatures
- Increased number of heat waves and very hot days
- Increased wind strength
- Sea-level rise increased and coastal erosion

It is important to note that many of the climate impacts that Cape Town currently experiences and will experience into the future are due to high levels of vulnerability and low levels of resilience, rather than due to particularly extreme climate hazards or events.

11.2.3.1 Vulnerability and Impact

Vulnerability is due to several factors, including physical and geographical vulnerability (i.e. proximity to high risk areas such as the coast or flood-prone areas), social vulnerability (i.e. low levels of resilience and adaptive capacity), the legacy of poor planning decisions (i.e. infrastructure or services located in high risk areas), and the adaptive capacity of local (and other spheres of) government (i.e. the ability of government to take action to address risks).

These climate hazards are anticipated to have a range of negative impacts on the city, including but not limited to the following impacts:

- Drought and water scarcity due to decreased rainfall
- Increased wildfire and urban fire risk due to increased heat and wind
- Heat stress and other related health impacts including mental health impacts
- Loss of biodiversity due to climatic changes that these systems are not adapted to
- Coastal erosion and coastal storm damage due to sea level rise and a change in coastal system dynamics
- Flooding, due to high vulnerability and poor drainage, even within a context of lower overall rainfall
- Damage to City infrastructure due to flooding, sea level rise, heat, wind, or drought.
- Food insecurity due to damage to agriculture, especially in key food growing regions outside of Cape Town which are projected to experience more severe climatic changes
- City-scale economic losses due to major events such as droughts
- Loss of livelihoods associated with natural resources such as flower selling or urban agriculture
- Increased rural urban migration due to impacts on rural livelihoods, leading to increased informality and backlogs in basic service provision
- Increased resource costs due to scarcity e.g. water and food
- Potential for civil unrest or protest action

A climate hazard, vulnerability, and risk study has been completed which has mapped climate hazards, vulnerability/resilience, and overall climate risk (hazard+vulnerability = risk). Hazard

and risk mapping has been done for the baseline period (1960 – 1991), the mid-future (2021-2050) and the far future (2070-2099), while vulnerability/resilience mapping was absed on current data. The climate projections are based on a low climate-mitigation scenario and are in line with the current global trend in which carbon emissions are increasing over time. For the purposes of the district planning process, the mid-future assessment is presented below (see maps on pages xyz).

Figure 83 shows a consolidated map of all climate hazards (harms) for the mid-future period, including rainfall changes, temperature changes, heat islands, flood risk, coastal inundation risk, and wind speed change. In mountainous areas, and other naturally vegetated areas risk pertains largely to increased fire risk. Heat island effects are seen in dense urban areas while flood risks are seen in low lying areas around water bodies.

Figure 84 shows a composite score for resilience in the present day based on a weighted analysis of the social, economic, and environmental factors listed in the table below:

Table 31: Social, economic and environmental factors

Indicator	Description	Weighting
Crime Rate	Total number of crimes by police precinct area	5
Electricity for Lighting	Percentage of households with acces to electricity for lighting	4
Flushing Toilets	Percentage of households with flush toilets (main sewerage connection and septic tanks)	4
Median Household Income	Median household income	5
Range of household income within 3km	Measure of income disparity in different neighbourhoods: maximum minus minimum household income within a 3km radius	4
Higher Education	Percentage of people over the age of 20 with higher education	4
Employment opportunities within 1km	Measure of employment opportunies , ranked zoning areas by potential formal employment areas assessed in a 1km radius	5
Employment variety within 1 km	Measure of job diversity opportunties: distance from multiple zoning areas related to employment opportunities assessed within a 1km radius	5
Refuse collection	Percentage of households without municipal refuse collection services	3
Tap Water	Percentage of households without access to tap water	5
Toilet Facilities	Percentage of households without access to toilet facilities	5
Population Density	Number of people living in the area relative to the size of the area	4
Tap Water Inside Houses	Percentage of Households with tap water inside their house	4
Travel Time to Hospitals	Estimated time to travel to the nearest hospital	3
Travel Time to Police Stations	Estimated time to travel to the nearest police station	3
Travel Time to nearest Spring	Estimated time to travel to the nearest spring	1
Travel Time to CBD	Estimated time to travel to the CBD	5

Employment Rate	Percentage of people unemployed in the formal sector	4
Weekly Solid Waste Collection	Percentage of households with weekly solid waste collection services	4
Jobs: Population Density	Measure of job opportunities relative to population densities	5

It should be noted that resilience can be seen as the corollary to vulnerability, and therefore areas of high resilience will have relatively low vulnerability, and vice versa.

Figure 85 shows an assessment of risk relative to resilience, based on figures 83 and 84; in this figure areas with high exposure to harms and low resilience will have the highest risk rating while those with low exposure to harms and high resilience will have the lowest risk rating.

Figure 84 presents the demonstrates the method for measuring exposure against resilience revealed in Figure 85 risk hotspots and shows the position of the neighbourhoods along these scales.

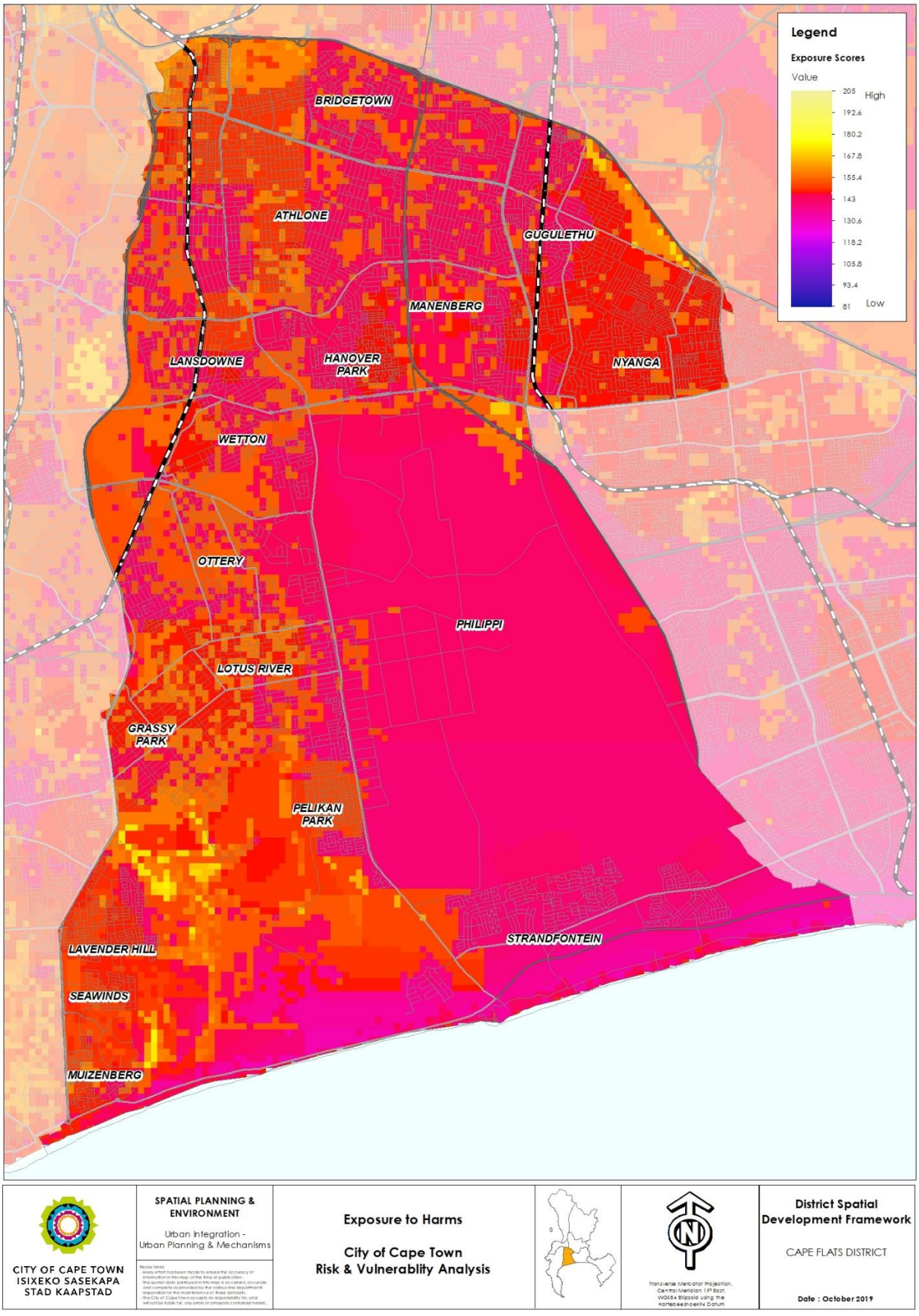


Figure 82: Risk and Vulnerability Analysis w.r.t. Exposure to Harms

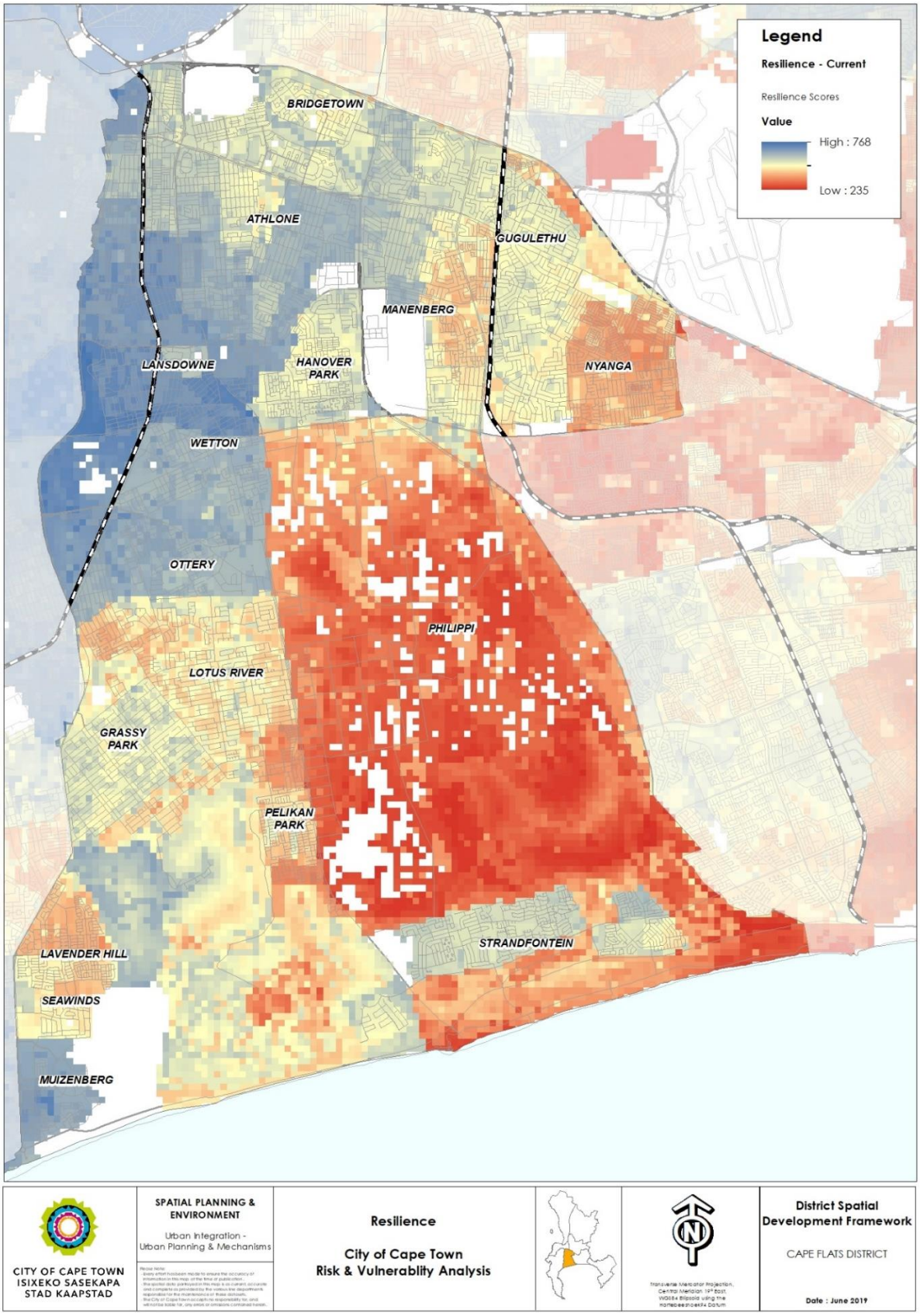


Figure 83: Risk and Vulnerability w.r.t. Resilience



Figure 84: Climate risk hot spots (higher score = higher risk)

Implications:

The Cape Flats is home to many of the City's most vulnerable populations and in addition is exposed to various risks. Vulnerable areas and risk hotspots indicate areas that will need to be prioritised for resilience building, public sector interventions and support.

11.4 Key Opportunities and Constraints

The following table identifies opportune **(encouraged)** and constrained **(discouraged)** area for development in the Cape Flats District, informed by the aforementioned risk assessment.

Table 32: Key Opportunities and Constraints

Risk	DRM Priority Rating	Impact Radius	Discouraged Types of Development	Encouraged Types of Development
waste disposal sites	n/a	800m	Residential Development within buffer	Non-Residential development; Circular economy related industry and commerce
Cemetery	n/a			Open space uses
Structural Fire: Informal- Formal-	Very High	Built up areas, Informal Settlements particularly vulnerable	Development without adequate access to fire services or fire hydrants	Encourage use of fire retardant building materials and methods and adherence to building standards. Safe use of combustible fuels. Work with informal settlements.
Unmanaged Land Occupation/Unregulated Development	n/a for Disaster Risk Management however a priority for law enforcement	Vacant and underutilised land	Left over spaces and derelict land that encourages speculation.	Refer to human settlements policy and need to address affordable housing demand.
Heat and Heat Islands	Lower	Whole City, especially built up areas	Excessive hard surfacing without landscaping	Ensure equitable distribution of green space and design urban areas for cooling effects.

Flood Risk, Storm Surge exposure and Coastal Inundation Zones	High	Informed by 1:100 year flood lines coastal urban edge line[16] All exposed and flatter coastal areas	Intensification of urban development	Green infrastructure programmes to defend nearby infrastructure, non-motorised transport Open space recreation Feasible development to support identified public recreational nodes.
Wind-blown sand	Lower	Dynamic dune systems		Rehabilitation of degraded dune systems. Managed retreat Green Infrastructure Defenses of crucial infrastructure
Coastal Erosion Zones		Along entire coast	All urban development	 Feasible development to support identified recreational nodes.

[16] These are indicative and do not include all areas and properties at risk.