HELDERBERG
DISTRICT PLAN

Integrated district spatial development framework
and environmental management framework

APPROVED - Vol. 1: Baseline & Analysis Report

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CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

CONTENTS

LIST OF TABLES

LIST OF FIGURES

1 INTRODUCTION

This integrated District Spatial Development Framework (DSDF) and Environmental Management Framework (EMF), hereinafter referred to as the **'District Plan'**, is a review of the 2012 District Spatial Plan (DSP) and provides up to date spatial planning guidance for one (1) of eight (8) planning Districts in the City. This process follows the City's commitment to review the District Plans periodically on a ten (10) year basis or when a need arises due to, inter alia, changing trends in the natural environment, built environment, population trends/composition and/or in the legislative environment.

1.1 Structure of the District Plan Suite of Documents

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

Figure 1: Structure of the District Plan

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

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.

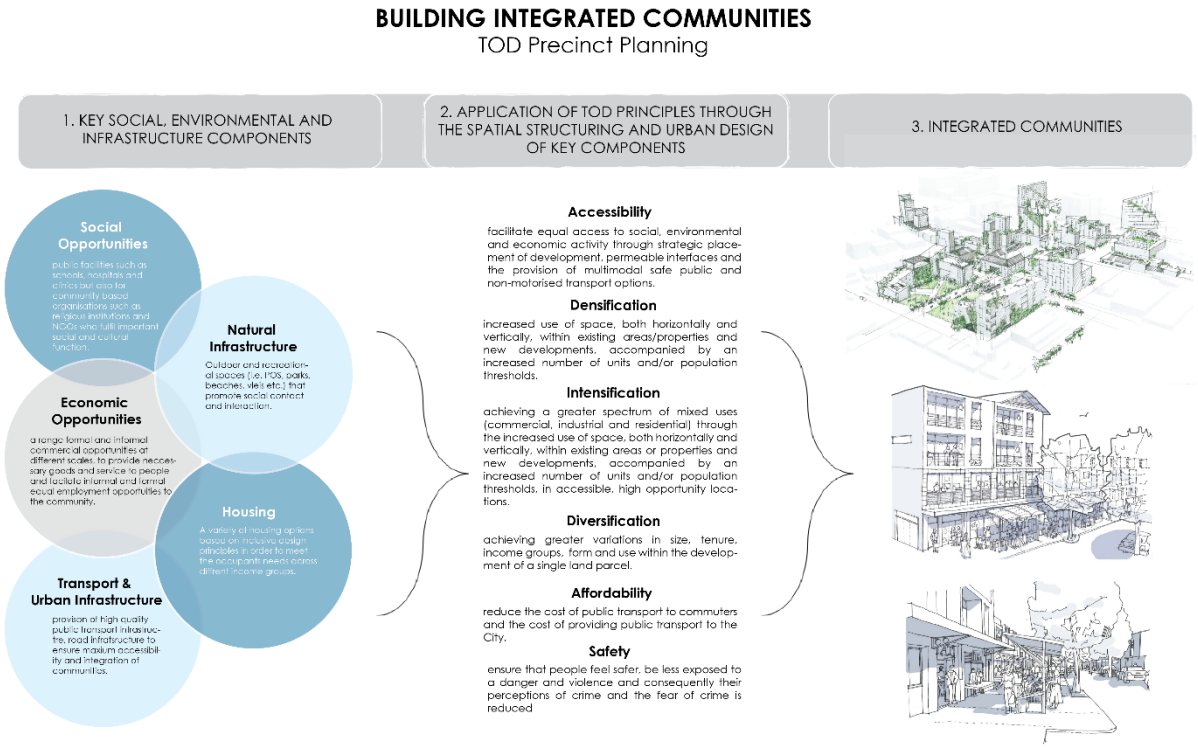

Figure 2: Building integrated communities (TOD Strategic Framework, 2016)

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 Plan), 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.

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 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:

1.3.1 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.

1.3.2 State of the Environment:

a. This will serve as the baseline for the EMF for the District;

b. Are there areas of ecological and environmental significance which must be conserved/protected from urban development, and where are they located?

c. 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)?

d. What are the bio-physical features of the district that may constrain any form of future development (i.e. rivers, wetland, topography etc.)?

e. Which areas require appropriate interface development guidelines to mitigate negative impact?

f. Which areas are appropriate for environmental and heritage exemptions or designations (in terms of NEMA and NHRA)?

1.3.3 State of the Built Environment:

a. What and where are the current development trends and pressures in the district?

b. 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?

c. 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?

d. 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).

e. What is the extent of underutilised vacant land in the district?

1.3.4 State of the Economy and Property Market:

a. What is the state of employment/unemployment?

b. What are the best-performing industries that offer competitive advantages?

c. What are the best-performing property markets in the district and which areas offer the most property market potential?

1.3.5 Risk and Resilience:

a. 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?

b. How can spatial development promote social inclusion, physical connectivity and equitable travel to optimise carbon emission reductions?

c. What is the level of vulnerability and resilience of current areas in the district?

1.3.6 Policy and Legislative Analysis

Reflects 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, 2023 (CTMSDF);

b. Cape Town 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. Cape Town Bioregional Plan, 2015;

g. Environmental Strategy;

h. Economic Growth Strategy (EGS);

i. Social Development Strategy (SDS);

j. Integrated Human Settlements Framework (IHSF);

k. Cape Town Densification Policy, 2012;

l. Energy2040;

m. Climate Change and Water Strategy; and

n. 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 Plan 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.

A: STATE OF THE POPULATION

2 DEMOGRAPHICS

2.1 Overview

As of 2018, the Helderberg District comprises the second smallest proportion of the overall metropolitan population at 6.39%. Despite its small size, the district population has nearly doubled (increasing by 87.06%) from 150 257 to 281 077 between 2001 and 2018. This translates to an annual average growth rate of 5.12% – the third highest of all eight planning districts and significantly greater than the metropolitan rate of 3.06%.

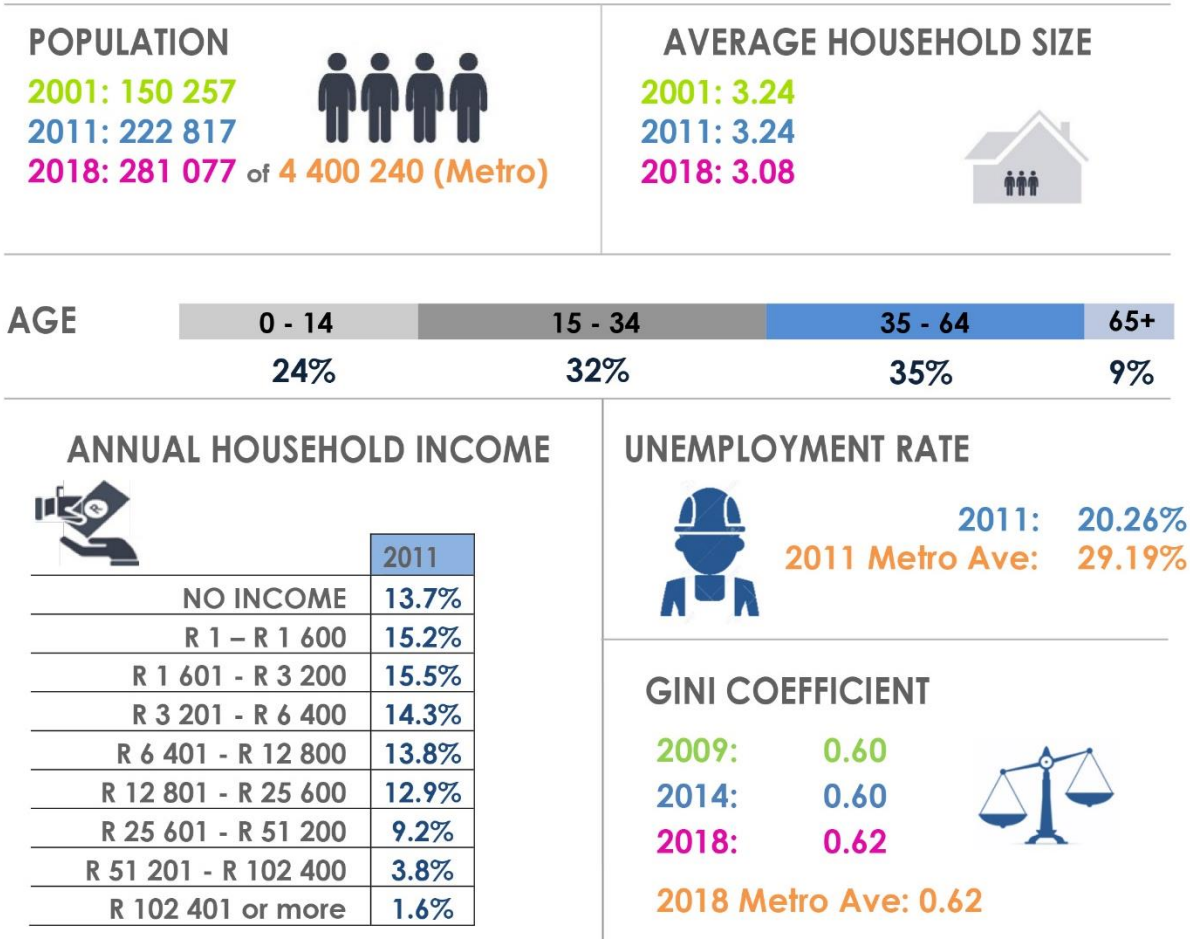

Figure 3: Overview of key demographics statistics in the Helderberg District (Census, 2001; Census, 2011; CCT roof count, 2018; HIS Markit, 2019)

2.2 Population

2.2.1 Growth

The population of the Helderberg District is estimated at 281 077. In effect, it comprises a mere 6.39% of the city's total population of 4 400 240 – the second lowest proportion above Table Bay's 5.76%. In contrast with its small population size, the district has experienced the third largest population growth rate between 2001 and 2018. In that time, the district's population nearly doubled (increasing by 87.06%) from 150 257 to 281 077, equating to an average annual growth rate of 5.12%. This is significantly higher than the average annual metropolitan population growth rate of 3.06% and comparable to the Northern District (5.49%) and Blaauwberg (6.54%). This high growth rate relative to other districts means that Helderberg has come to comprise a greater share of metropolitan population over time, from 5.19% in 2001 to 5.96% in 2011 and finally 6.39% in 2018. However, Helderberg has seen a decrease in annual average population growth rate over time, from 4.83% in the 2001–2011 period to 3.74% in the 2011–2018 period, suggesting that population growth in the district may be reaching a plateau.

Table 1: District versus metropolitan population trends, 2001–2018 (Census 2001 & 2011; roof count, 2018)

	2001	Annual average change 2001-2011	2011	Annual average change 2011-2018	2018	Annual average change 2001-2018
Helderberg	150 257	4.83%	222 817	3.74%	281 077	5.12%
Cape Town	2 893 249	2.93%	3 740 026	2.52%	4 400 240	3.06%

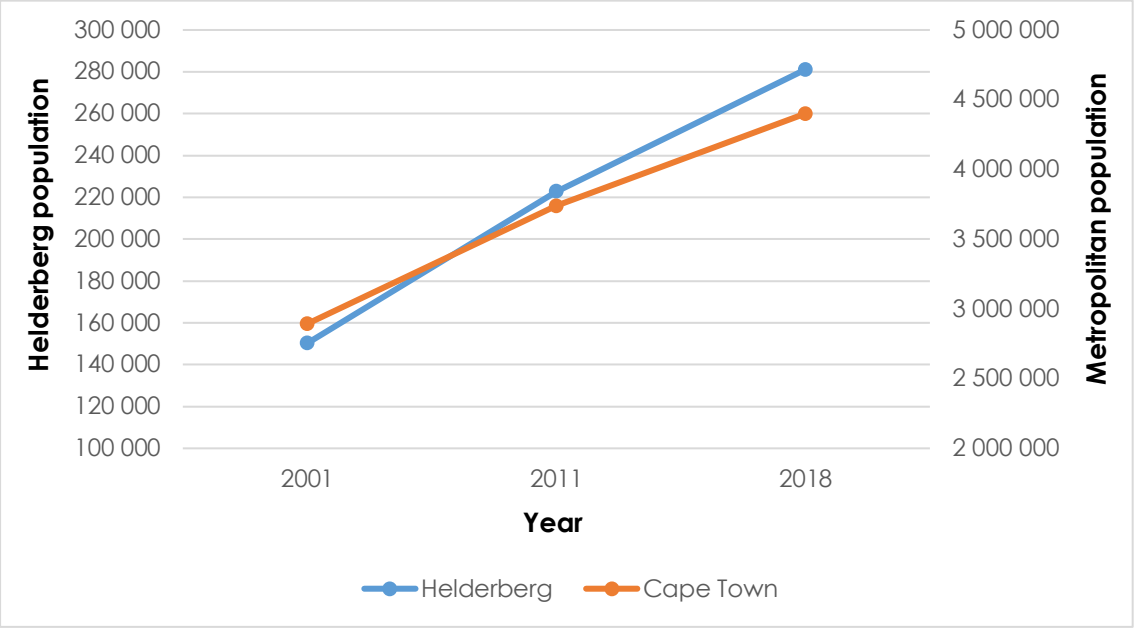

Figure 4: District versus metropolitan population growth, 2001–2018 (Census, 2001 & 2011; roof count, 2018)

2.2.2 Spatial Distribution

As of 2018, population in the district is most strongly concentrated in the Strand and Gordon's Bay Sub-Districts, particularly in areas straddling the boundary between the two. The most highly populated areas here by a significant margin are:

- Nomzamo (48 339; 19.55%); and
- Lwandle (23 309; 9.42%).

The next biggest contributors to district population are more modest, including:

- Strand (10 376; 4.20%);
- Rusthof (8 391; 3.39%);
- Broadlands (6 640; 2.68%);
- Sercor Park (5 345; 2.16%);
- Gustrow (5 206; 2.10%); and
- Gordon's Bay (5 406; 2.18%).

A key exception to this broad trend is Macassar. A relatively isolated populated area, it accounts for 16.36% (33 032) of the total district population, the second largest share after Nomzamo. A similar, but less extreme exception, is found in Sir Lowry's Pass, another relatively isolated populated area accounting for a modest, but not insignificant 3.83% (9 481) of the total district population.

Average gross population density among populated areas in the district stands at a scant 3 390 persons/km^2 (30.80 persons/ha). Gross population density distribution across the district generally mirrors that of population. More highly populated areas largely present higher population densities, as seen in those within the Strand and Gordon's Bay Sub-Districts, particularly those straddling the boundary between them, where population densities are in the range of 6 000–7 000 persons/km^2 (60–70 persons/ha). Significant outliers of both high population and population density are as follows:

- Lwandle (24 636 persons/km^2 / 246.36 persons/ha);
- Nomzamo (20519 persons/km^2 / 205.19 persons/ha); and
- Sercor Park (14 079 persons/km^2 / 140.79 persons/ha).

Both Lwandle and Nomzamo are home to significant informal settlements.

The inverse trend is also observed, with the most sparsely populated areas generally corresponding with some of the lowest population densities, as in areas throughout Greater Somerset West, mostly suburban in nature. As with total population, the two notable exceptions to this trend are the areas of Macassar and Sir Lowry's Pass. Despite Macassar's significant (16.36%) share of total district population, it is very sparsely populated area, with a population density of only 4 616 persons/km^2 (46.16 persons/ha). Similarly, Sir Lowry's Pass has a population density of only 4 798 persons/km^2 (47.98 persons/ha).

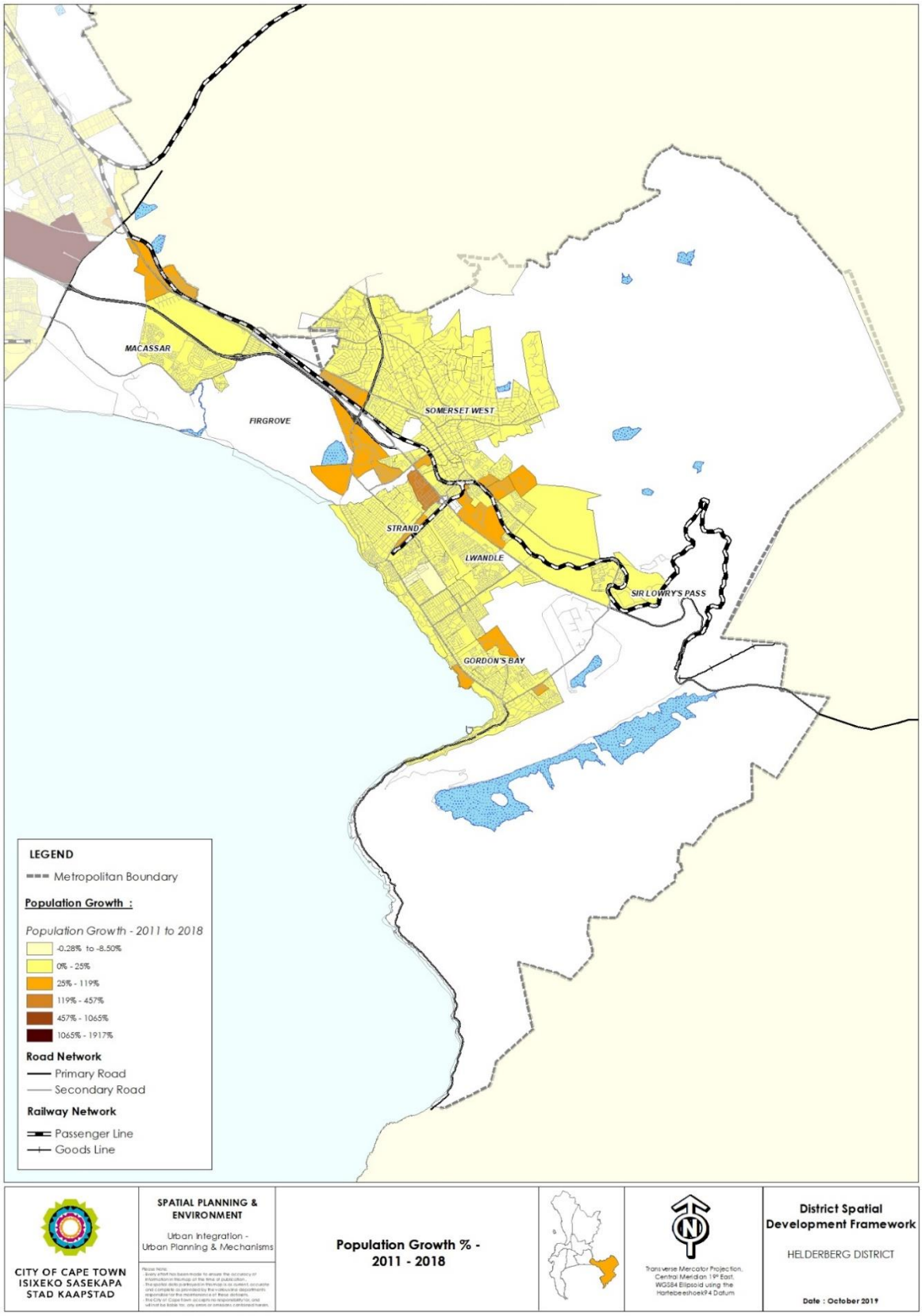

Figure 5: Helderberg District population change 2011–2018 (Census, 2011; roof count, 2018)

Between 2011 and 2018, most areas within the district grew only marginally in population size or underwent no significant change at all. Population change in these areas ranged between 0% and 10% – drastically lower than the overall district population growth rate of 26.15% in the same time span between 2011 and 2018. Numerous areas spread across the Gordon's Bay, Strand and Greater Somerset West Sub-Districts grew modestly by 11%–20%, with several others in each of Greater Somerset West, Strand, Gordon's Bay and Sir Lowry's Pass growing more moderately by 21%–43%. The highest population growth rates were observed in the following areas (and sub-districts):

- Croydon (76%; Macassar)
- Firgrove Rural (125%; Paardevlei)
- Gants Plaza (200%; Strand)
- Victoria Park (65%; Strand)
- Rome (48%; Strand)
- Fairview Golf Estate (59%; Gordon's Bay)
- Harbour Island (51%; Gordon's Bay)
- Dennegeur (49%; Greater Somerset West)
- Olive Grove (46%; Greater Somerset West)

However, neither of the above areas was highly or densely populated in 2011. Thus, their high population growth rates contributed little to overall population growth in the district. Rather, the majority of population growth has been driven by areas with a combination of higher populations and moderate growth rates, such as Nomzamo (28%), Lwandle (18%), and Sir Lowry's Pass (15%).

2.2.3 Population Structure

2.2.3.1 Age Distribution

Measuring at 24.09% in 2011, the proportion of children (younger than 14) of the total Helderberg population is only marginally below that of Cape Town at 24.82%. Similarly, working-age persons (aged 15–64) comprise 67.35% of the total district population, compared to an only marginally higher metropolitan proportion of 69.63%. By contrast, elderly people (aged 65 and older) comprise 8.55% of the district population – significantly greater than most districts and the metropolitan average of 5.55%.

The proportions of children and aged persons have a direct bearing on the dependency ratio of the district, which is a measure of the number of people in the "dependent age groups" in relation to the number of working-aged people (expressed per 100). This gives a rough estimate of the level of dependency in a society, be it in terms of income, social, physical or logistical needs. In the Helderberg

District, the 2011 dependency ratio of 48.47 (significantly greater than the metropolitan dependency ration of 42.90) indicates that for approximately every two people between the age of 15 and 65, there is one child or aged person that may be dependent on them. The most significant contributor to this relatively high dependency ratio is the aforementioned high percentage of aged persons in the district relative to Cape Town as a whole.

Table 2: District versus metropolitan population age distribution, 2011 (Census, 2011)

Planning district	Year	0 - 14		15 - 64		65 +		Dependency ratio	Index of ageing
		Number	%	Number	%	Number	%		
Helderberg	2001	38 485	25.61	99 506	66.22	12 265	8.16	51.00	31.87
	2011	53 685	24.09	150 078	67.35	19 056	8.55	48.47	35.50
Cape Town	2001	771 210	26.65	1 978 005	68.36	144 227	4.98	46.28	18.70
	2011	928 302	24.82	2 604 201	69.63	207 474	5.55	42.90	22.35

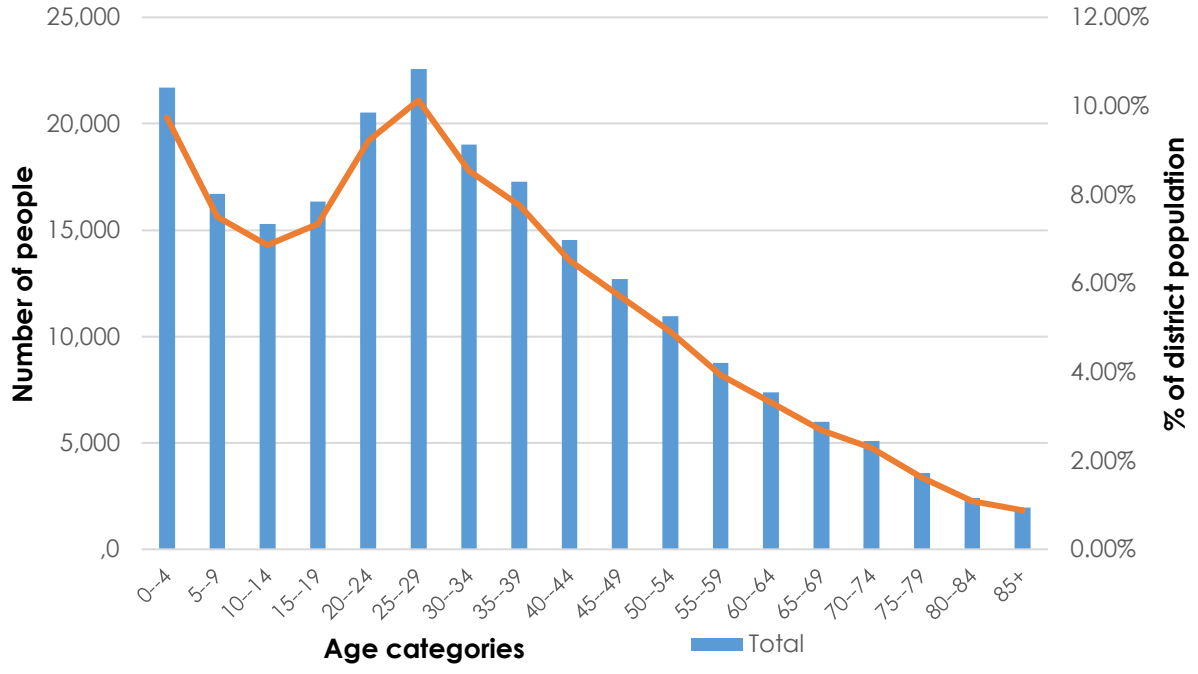

Figure 6: Helderberg District population age distribution (Census, 2011)

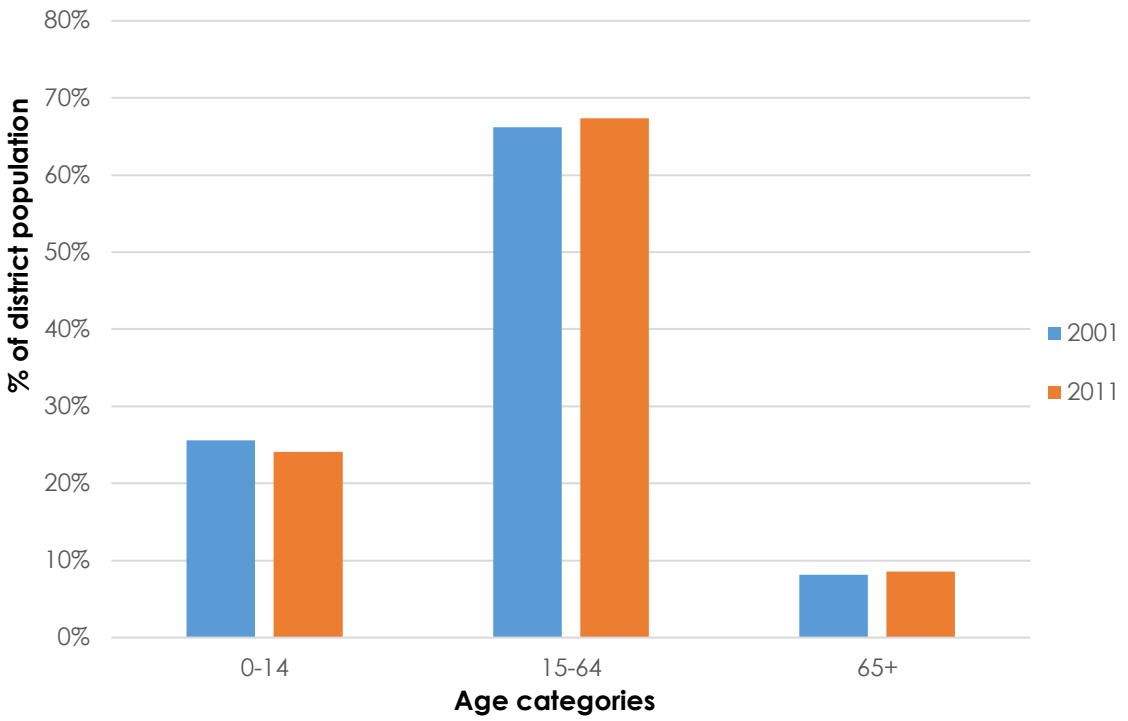

Figure 7: Helderberg District change in age distribution, 2001–2011 (Census, 2001 & 2011)

The high number of aged persons in the district is further represented by the slight increase in the district's index of ageing, from 31.87 in 2001 to 35.50 in 2011. This means that as of 2011, there are more aged persons in relation to children (expressed per 100). This modest increase in the index of ageing is due to a marginal decrease in the district's child population, accompanied by a marginal increase in the working-age population.

2.2.3.2 Education

At 30.11%, the Helderberg District almost precisely matches the average metropolitan proportion (30.17%) of adults to have attained a matric-level education, as measured in 2011. By contrast, just under 1/2 (48.08%) of the district's adult population has **not** completed secondary education. This district performance is slightly better than the city as a whole, where just over 1/2 (53.11%) of the adult population has not completed secondary school (**Table 3**). Within the 48.08% of adults in the district who have not completed secondary school, approximately 1/3 (33.65%) of the district's adult population has **partially** completed secondary education This stands below the metropolitan average of 38.64%, representing a lower drop drop-out rate among pupils at secondary school. The remaining 14.43% of adults in the district have no more than a basic education at best. More encouragingly, approximately 1/5 (20.88%) of adults in the district have acquired a higher form of education, which stands above the metropolitan average of 16.17%.

Table 3: District versus metropolitan distribution of highest adult (aged 20+) education level (Census, 2011)

Planning District	No Schooling		Partial primary to partial secondary schooling		Matric		Higher education	
	Number	%	Number	%	Number	%	Number	%
Helderberg	2 739	1.85%	68 304	46.22%	44 496	30.11%	30 852	20.88%
Cape Town	42 969	1.76%	1 255 404	51.35%	737 658	30.17%	395 436	16.17%

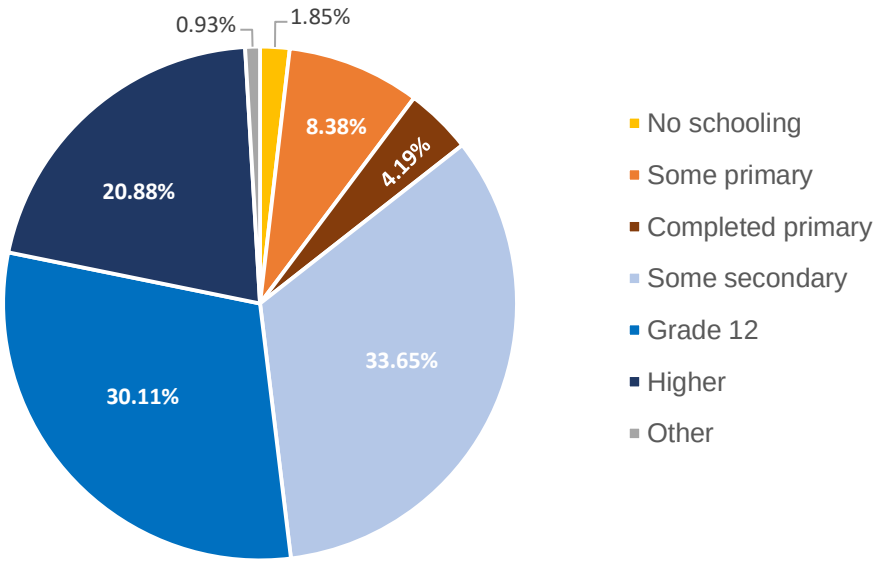

Figure 8: Helderberg District detailed distribution of highest adult (aged 20+) education level (Census, 2011)

2.3 Households

2.3.1 District Trends

As of 2018, the number of households in the Helderberg District is estimated at 91 146. Almost matching its share of total metropolitan population (6.39%), it comprises 6.93% of the city's overall 1 315 015 households.

Between 2001 and 2018, the number of households in the metropolitan area increased at an annual average rate of 4.08%, whereas metropolitan population grew at an annual average rate of 3.06%. This is tied to an overall decrease in average household sizes, from 3.72 in 2001 to 3.35 in 2018, with the consequence of greater demand for housing over time.

Table 4 District versus metropolitan population and household growth trends, 2001–2018 (Census, 2001 & 2011; roof count, 2018)

Statistic	Planning district	2001	Annual average change 2001-2011	2011	Annual average change 2011-2018	2018	Annual average change 2001-2018
Population	Helderberg	150 257	4.83%	222 817	3.74%	281 077	5.12%
	Cape Town	2 893 249	2.93%	3 740 026	2.52%	4 400 240	3.06%
Households	Helderberg	46 358	4.83%	68 744	4.66%	91 146	5.68%
	Cape Town	776 781	3.76%	1 068 573	3.29%	1 315 015	4.08%
Average household size	Helderberg	3.24	-	3.24	-	3.08	-
	Cape Town	3.72	-	3.50	-	3.35	-

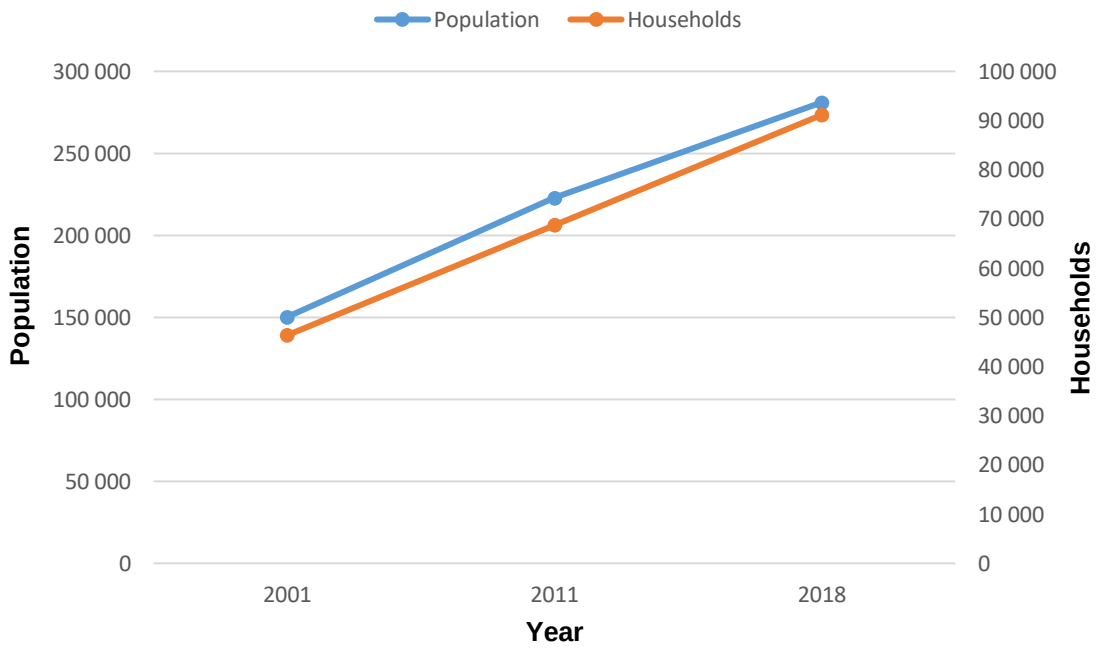

Figure 9: Helderberg District population versus household growth, 2001–2018 (Census, 2001 & 2011; roof count, 2018)

As with population growth, household growth in the Helderberg District deviates slightly from metropolitan trends. Between 2001 and 2018, the number of households in the district grew at an annual average rate of 5.68%. This is the third highest growth rate in the city after the Northern District (6.41%) and Blaauwberg (8.69%) and stands

significantly above the metropolitan average of 4.04%. Furthermore, the gap between population and household growth is less pronounced in the Helderberg District than across the city as a whole. The district's annual average 2001–2018 household growth rate of 5.68% is only slightly higher than that of population at 5.12%. Between 2001 and 2011, population and household growth rates in the district were precisely the same at 4.83%, with household growth only outpacing population growth between 2011 and 2018. Intuitively, the average size of households in the district has remained fairly consistent, decreasing only marginally between 2011 and 2018. Thus, the greater demand for housing due to households splitting into smaller units seen in Cape Town as a whole is not as significant a pressure in Helderberg.

2.3.2 Spatial Distribution

As with gross population density (at an average of 30.80 persons/ha), gross household density across populated areas in the Helderberg District is generally extremely low, averaging at 10.05 du/ha in 2018. Due to the large amounts of extremely sparsely populated rural land in areas such as Firgrove Rural and Helderberg Rural, this value is possibly skewed. However, even when excluding sub-places with exceptionally low household densities, average gross household density only reaches 10.77 du/ha.

The spatial distribution of households and their densities largely reflects district-scale population patterns. Areas with greater household numbers at greater densities generally correspond with those of larger populations. These are primarily located in the Strand Sub-District, with generally more moderate household densities in Gordon's Bay and the south-eastern edge of Greater Somerset West. The areas with the greatest confluence of household numbers and densities are Nomzamo (67.98 du/ha) and Lwandle (65.90 du/ha), both of which have a large degree of informal dwellings.

The correlation between population and household numbers and densities also presents itself in household growth between 2011 and 2018, which mirrors the growth in population almost precisely. This reflects the district-scale uniformity of population and household growth rates.

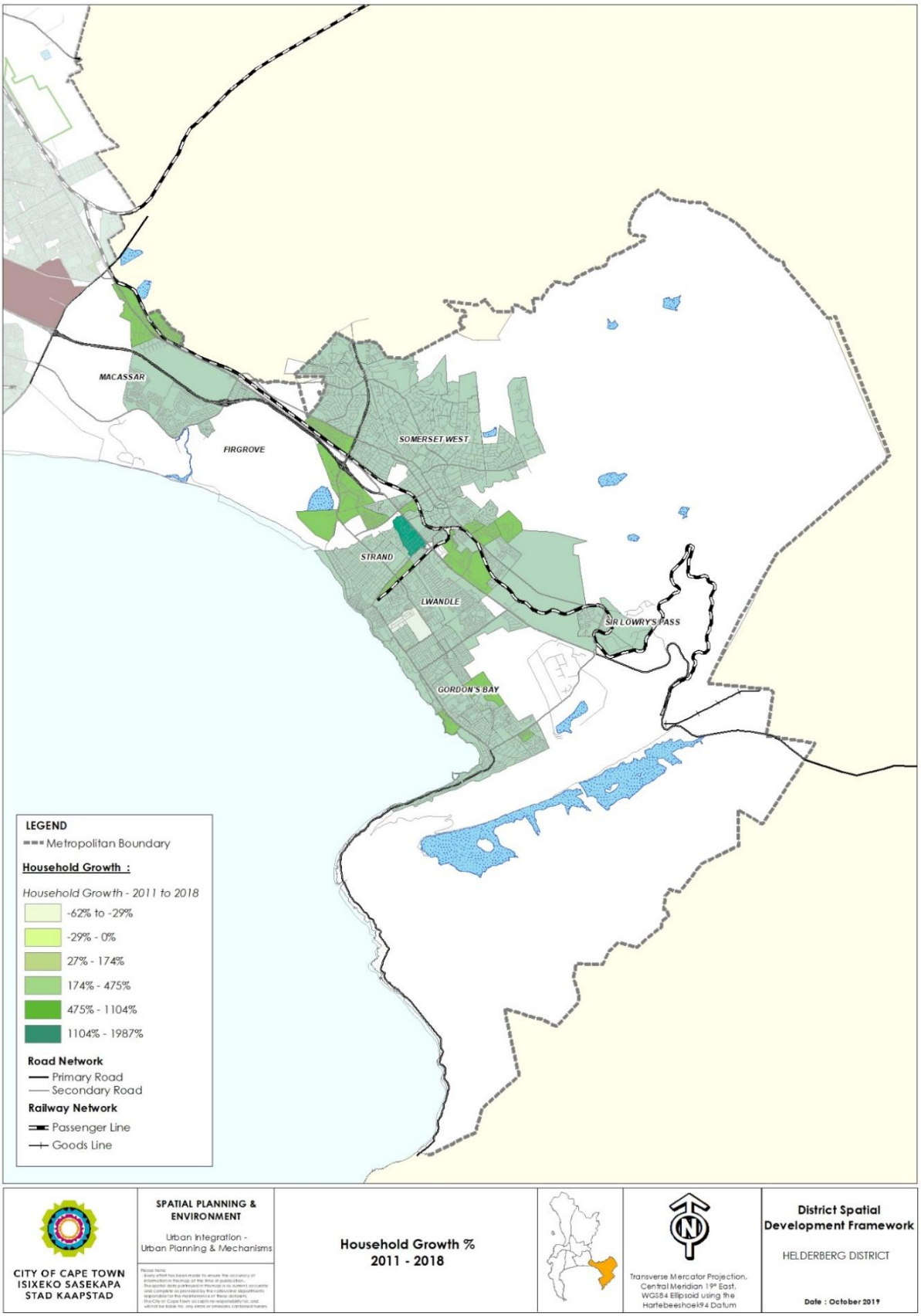

Figure 10: Helderberg District change in household numbers, 2011–2018 (Census, 2011; roof count, 2018)

2.4 Employment

2.4.1 District Trends

As of 2011, approximately 2/3 (67.36% or 150 081) of the Helderberg District's 222 817 residents are of working age (15–64 years old). Of the working-age population, approximately 2/3 (67.87%) make up the labour force of 101 853, with the remaining 1/3 (32.13%) classified as "not economically active". Of those not actively participating in the economy, a scant 3.49% identify as discouraged work-seekers. The remainder ("other economically inactive"), abstain from work for a variety of reasons, ranging from full-time studies, duties as a homemaker/parent, disability or simply old age. As measured in the same year, slightly over 1/2 (54.12%) of the district's working-age population is employed (labour absorption rate), versus a metropolitan average of 49.70%.

When considering the 20 634 unemployed persons in the district as a percentage of the labour force (those actively looking for work of participating in the economy, as opposed to the working-age population as a whole), the strict unemployment rate of the district stands at 20.26%. In effect, approximately 1/5 people looking for employment is unable to find work. Even so, this is significantly below the overall metropolitan strict unemployment rate of 29.19%.

Despite the above-metropolitan average increase in population in the district between 2001 and 2011, the unemployment rate decreased from 25.40% to 20.26% during the same period. This has intuitively been accompanied by a rise in the labour absorption rate from 49.56% to 54.12%. Amidst a fairly stable labour force participation rate between 2011 and 2011, this decrease in unemployment represents a real (as opposed to relative) increase in work opportunities for the district's working-age population.

Table 5: Helderberg District labour force Indicators, 2001–2011 (Census, 2001 & 2011)

Labour Force Indicators	**2001**	**2011**
Population aged 15 to 64 years	**100 473**	**150 081**
Labour Force	**66 749**	**101 853**
Employed	49 797	81 219
Unemployed	16 952	20 634
Not Economically Active	**33 724**	**48 228**
Discouraged Work-seekers	3 243	5 244
Other not economically active	30 481	42 984
Rates %		
Unemployment rate	25.40%	20.26%
Labour absorption rate	49.56%	54.12%
Labour force participation rate	66.43%	67.87%

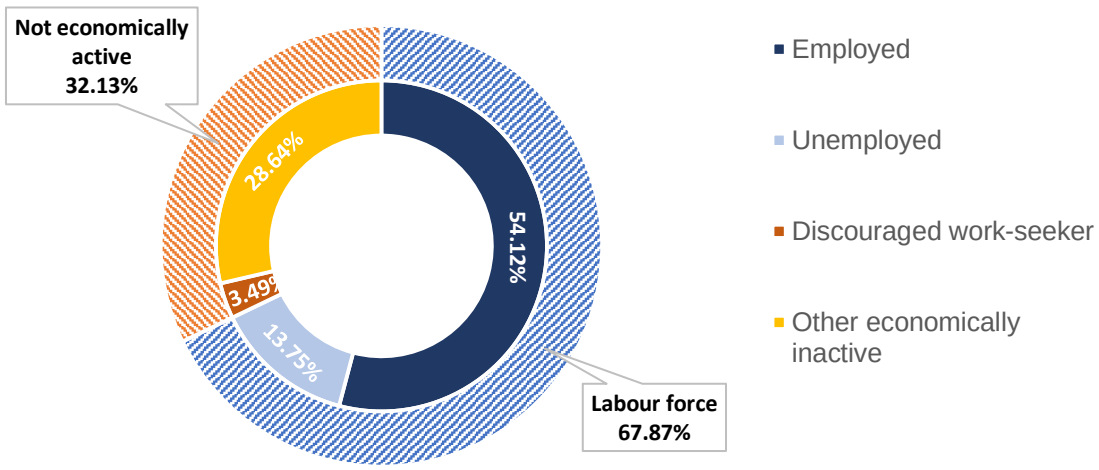

Figure 11: Helderberg District employment status of working-aged persons (15–64), 2011 (Census, 2011)

2.4.2 Spatial Distribution

Although unemployment is relatively low in the district compared to the city as a whole, unemployment is highly unequally distributed throughout the district. The highest unemployment rates are concentrated in areas straddling the boundary between the Strand and Gordon's Bay Sub-Districts, with district maxima recorded in Lwandle (40.31%), Nomzamo (31.93%) and Broadlands (28.37%). The areas in the remainder of Strand and Gordon's Bay have unemployment rates in a drastically lower range of 6%–10, as is the case for the rural areas within Greater Somerset West. The lowest unemployment rates, ranging from 0% to 5%, are observed in areas constituting the Paardevlei District and the suburban part of Greater Somerset West Two important exceptions to this spatial distribution pattern, are Macassar and Sir Lowry's Pass, where a respective 23.78% and 22.16% of the labour force are without work.

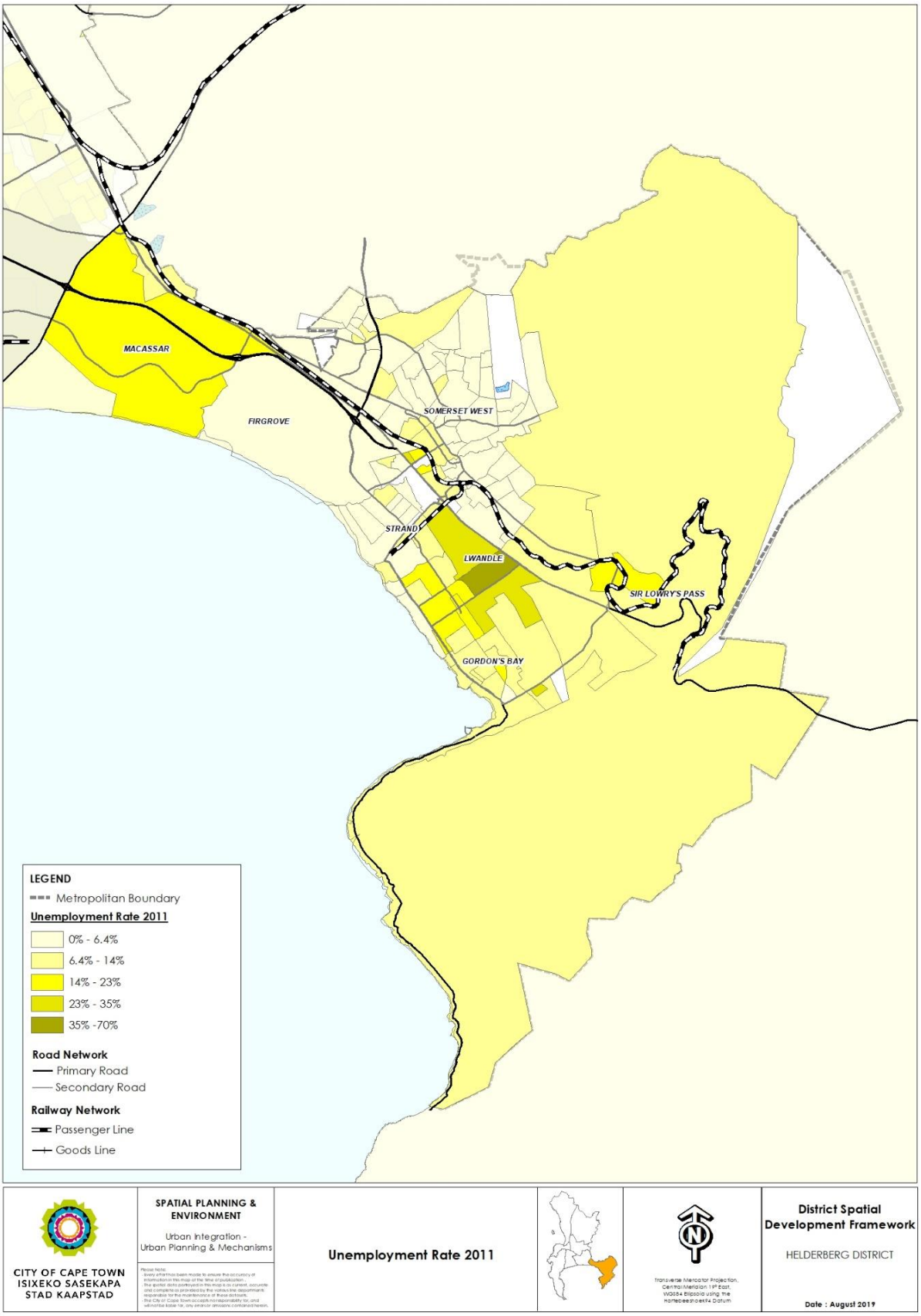

Figure 12: Helderberg District unemployment rate distribution, 2011 (Census, 2011)

2.5 Income

2.5.1 District Trends

As of 2011, the six lowest income brackets, ranging from R0 to R25 600 per month, are fairly evenly distributed among households in the district, each accounting for 12%–16% of total district households. This initially suggests relatively little income inequality. However, due to the relatively high percentages of households falling in the three highest income brackets, ranging from R25 601 to R102 401 or more per month, Helderberg in fact has the highest degree of income inequality among Cape Town's eight districts. As of 2018, the district has a Gini Coefficient of 0.62, matched only by the overall metropolitan average. Furthermore, mirroring the overall metropolitan trend, Helderberg has seen a steady rise in income inequality between 2009 and 2018.

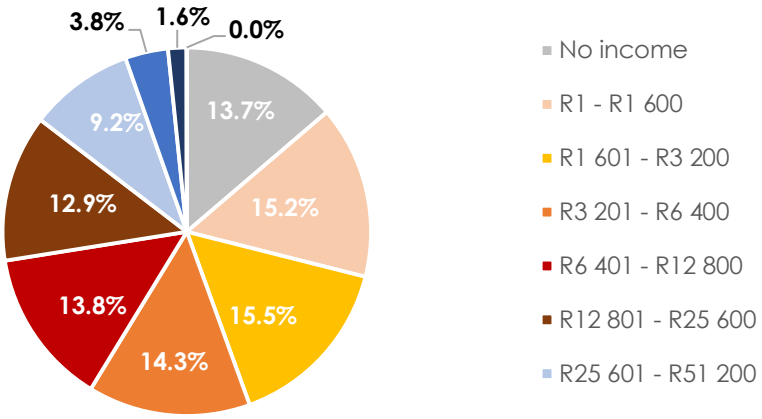

Figure 13: Helderberg District monthly household income distribution as a percentage of total households, 2011 (Census, 2011)

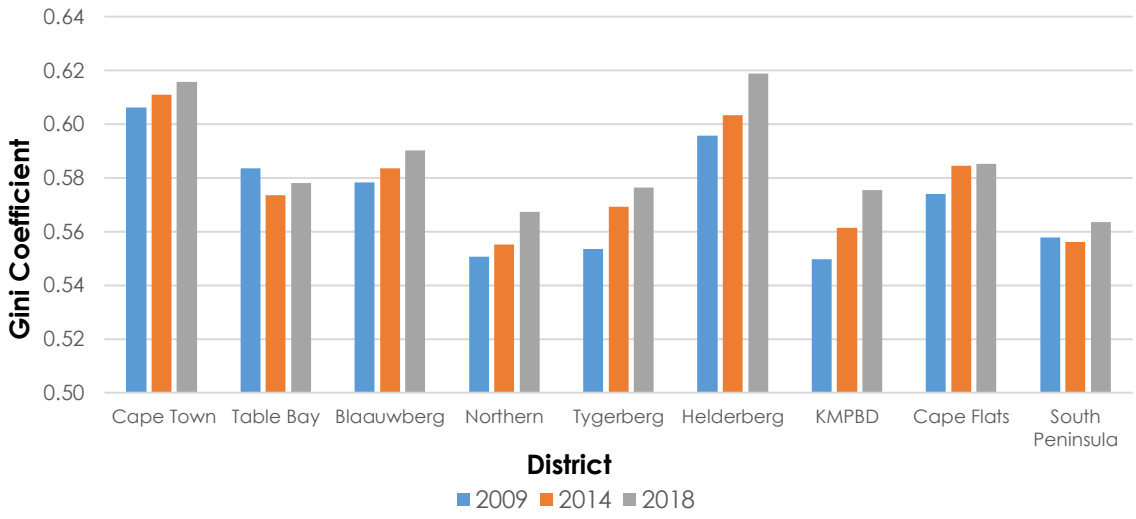

Figure 14: Metropolitan change in income inequality, 2009–2018 (HIS Markit, 2019)

In spite of consistently increasing income inequality, the Helderberg District Human Development Index (HDI) has been increasing over time, most markedly between 2009 and 2014, again mirroring metropolitan trends. As of 2018, the district's HDI of 0.76 sits marginally above the metropolitan average of 0.74.

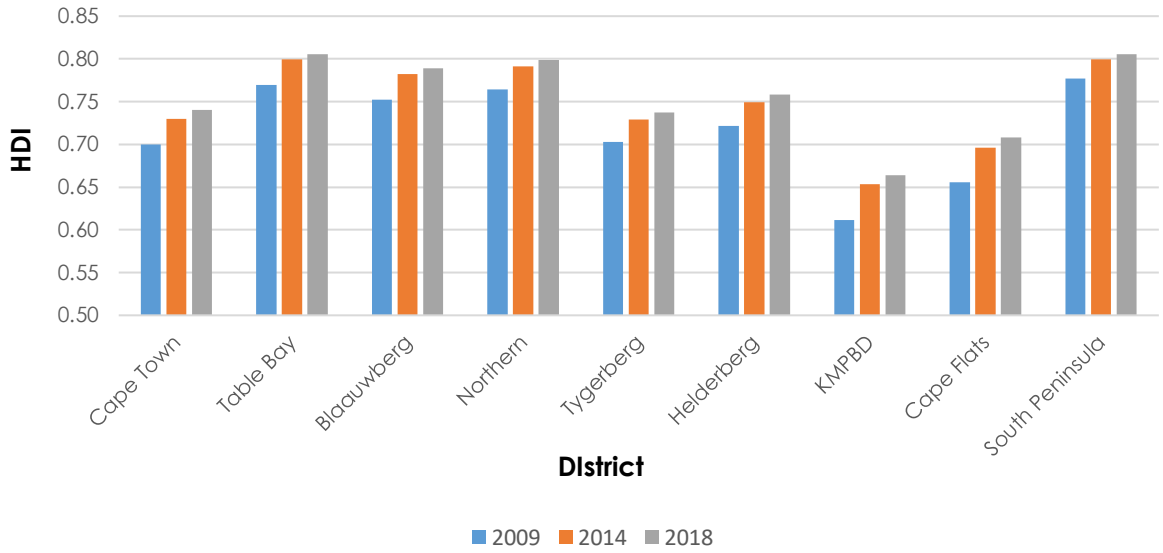

Figure 15: Metropolitan change in the Human Development Index, 2009–2018 (HIS Markit, 2019)

2.5.2 Spatial Distribution

As suggested by the above overview, income levels are highly unequally distributed across the district. As of 2011, there is a clear correlation between median monthly household income and unemployment rates. Generally, the poorest areas in the district, with the lowest median monthly household incomes, straddle the boundary between Strand and Gordon's Bay. Specifically, these are:

- Rusthof and Gustrow (R3 201 – R6 400);
- Onverwacht, Nomzamo, Sercor Park and Broadlands (R1 601 – R3 200); and
- Weltevreden and Lwandle – the poorest areas in the district (R801 – R1 600).

Notable exceptions to this broad spatial trend are Macassar and Sir Lowry's Pass. Households in these two areas earn medina household incomes of R3 201– R6 400 and R1 601–R3 200, respectively.

The remainder of areas in the Strand and Gordon's Bay Sub-Districts generally survive on slightly higher monthly household incomes of R6 401–R12 800. While some areas in the Greater Somerset West live on this same median income bracket, this sub-district is generally home to the majority of wealthier households in the district. Median monthly household incomes of R12 801–R25 600 are concentrated primarily towards its north-western and south-eastern edges, while the wealthiest households (earning median monthly incomes of R25 601–R51 200) are located primarily towards its north-

eastern edge, abutting the Helderberg Nature Reserve. These households comprise largely of suburban gated estates.

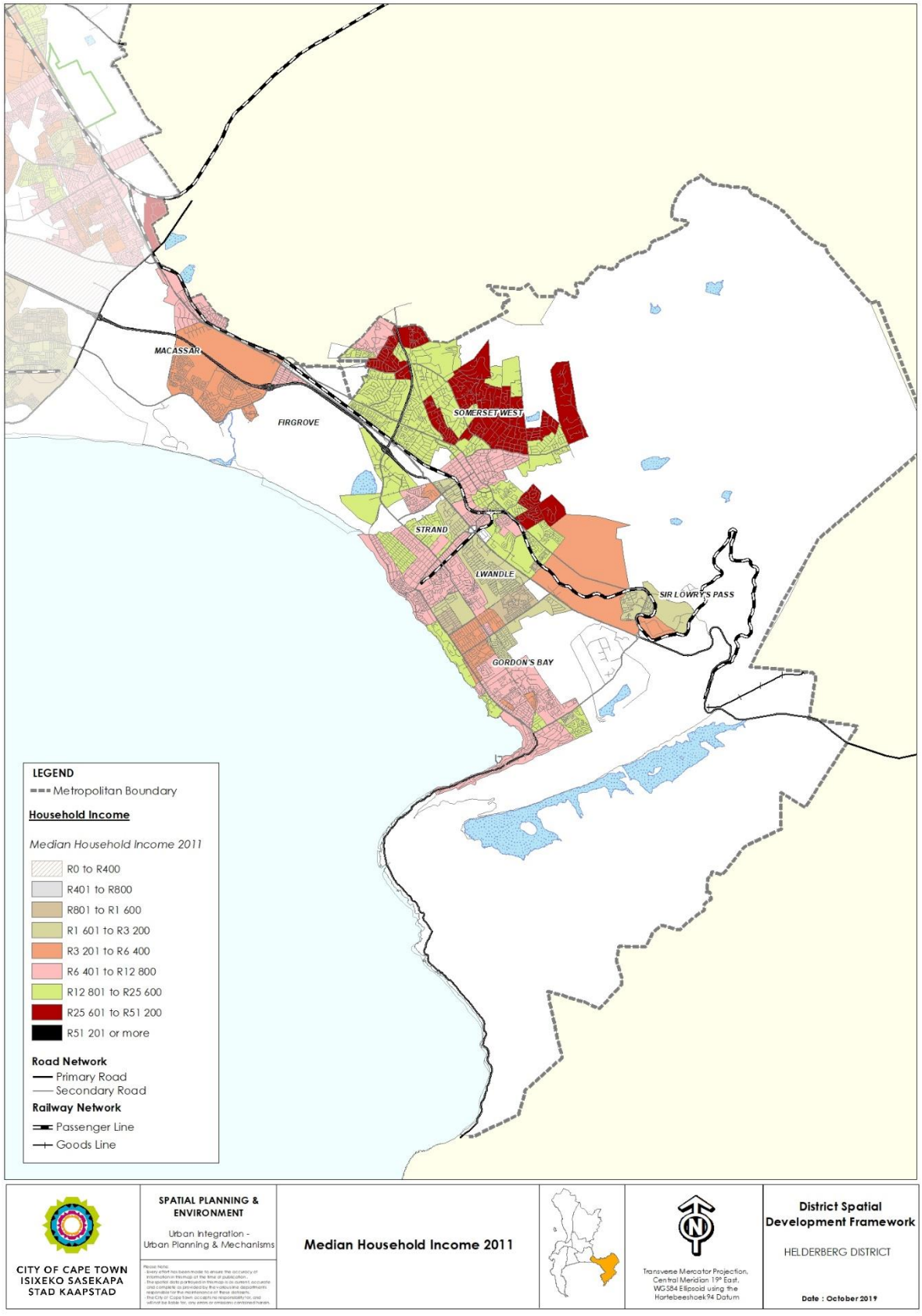

Figure 16: Helderberg District median household income distribution, 2011 (Census, 2011

B: STATE OF THE ENVIRONMENT

3 NATURAL AND HERITAGE ENVIRONMENT

The following section outlines the key environmental and heritage trends and spatial implications that have been identified in the district based on Strategic Environmental Assessment, the Cape Town State of Environment Report, the attributes for the district and other relevant policy documentation of the City of Cape Town (hereafter referred to as the City or CCT).

3.1 Status Quo, Trends and Patterns

3.1.1 Geology

The greater Cape Town region has varied geological features, incorporating igneous, metamorphic and sedimentary rocks that were formed from the Late Precambrian period onward. The current geological characteristics of the area were determined by tectonic forces dating as far back as the split of the southern continents once forming Gondwanaland, as well as by erosion and weathering over time (Reid *et al.*, 2001).

The dominant deposits underlying the Helderberg District belong to the Precambrian Malmesbury Group, which extends across the coastal plain from Saldanha to False Bay. Intrusions of Cape Granite Suite deposits, belonging to the Stellenbosch and Kuils River-Helderberg Plutonsare, are also present. These deposits are overlain by more recent deposits belonging to the Table Mountain Group, the geologically recent Sandveld Group (consisting of permeable Quaternary material) as well as other contemporary sediments (Geological Survey, 1990).

The eastern region is geologically derived from the Cape Fold Belt, originating from as early as the Cambrian period some 543–490 million years ago, while the mountain range itself is more recent and was formed roughly 250 million years ago (Reid *et al.*, 2001). These rocks are highly sheared, cleaved and folded due to deformation processes. The Hottentots Holland Mountains, Dwarsberg, Jonkershoek and Stellenboschberg, which lie along the north-eastern boundary of Helderberg District, consist mainly of folded quartzitic Table Mountain Sandstone.

The sediments of the Malmesbury Group consist of a variety of shales, greywackes, quartzites and grits, with occasional bands of conglomerate, limestone, dolomite, chert, basic lavas and tuffs. They are mostly dark and medium-grained (eWisa, 2008). The Tygerberg formation is a sub-group of the Malmesbury Group. It comprises greywacke, phyllite and quartzitic sandstone interbedded with lava and tuff rocks (Geological Survey, 1990). Exposures of the Tygerberg formation are found along the eastern fringe of the region of Somerset West and Gordon's Bay at the base of the Hottentots Holland and Helderberg Mountains (Geological Survey, 1990).

Rocks of the Cape Granite Suite are characteristically light grey and coarse-grained porphyritic. Outcrops of the Cape Granite Suite occur across the district but are most pronounced in the Somerset West area (Geological Survey, 1990).

The Table Mountain Group is well represented along the Helderberg District in the form of the Hottentots Holland Mountains and the base of the Stellenboschberg and Jonkershoek. The successive formations are exposed with increased elevation above sea level, beginning with the Peninsula Formation along the base. Typically, this is light grey quartzitic sandstone with thin siltstone, shale and conglomerate beds. This is followed upwards by the Cederberg Formation, which is dark grey massive shale/siltstone with thin sandstone lenses. The formation is overlain by the Goudini Formation, made up of thinly bedded quartzitic sandstone with thin shale beds in places. It is followed by the more extensive exposures of Skurweberg and Rietvlei Formations, which comprise the majority of the peaks, valleys and plateau of the Hottentots Holland Mountains beyond the Steenbras Dam area. Rocks are light grey quartzitic sandstone with thin conglomerate and grit beds and light grey feldspathic sandstone, siltstone and micaceous shale bands (Geological Survey, 1990).

3.1.2 Topography

Geology determines topography by influencing the slopes and soils in an area. The present landscape of Helderberg District, ranging from low-lying sandy plains to rocky mountains, was formed by prolonged erosion of the once-continuous Table Mountain Group sandstone cover on the Cape Flats that has left residual high mountain ridges.

The plains of the Cape Flats extend from the Cape Peninsula to the Hottentots Holland Mountains, covering most of the western and southern region of Helderberg District. They consist of interspersed *koppies* with a diversity of slopes and hollows, landforms and drainage lines. The Hottentots Holland Mountains, Jonkershoek and Helderberg as well as the adjacent narrow coastal strip include narrow flats, *kloofs*, gorges, sheer cliffs, wave-cut platforms, rocky shores, small bays and isolated sandy beaches. Surf-zone erosion during past sea-level fluctuations has formed a marine platform between Gordon's Bay and Strand, and a deposit of rounded boulders rests on a wave-cut terrace roughly 20 m above sea-level south of the Steenbras River Mouth (Reid et al., 2001).

3.1.3 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. However, soils in the greater Cape Town area are quickly being lost to development through urban expansion and sprawl and through mining for building purposes (CCT, 2002).

Towards the interior of the Helderberg District, the sands are darker grey or reddish-brown with some localised scattered ferricrete and silcrete covered by recent thin deposits of loam (eWisa, 2008). Some peat layers occur in the wetland areas due to the accumulation of plant material.

The more mountainous regions in the east of Helderberg District are characterised by shallow, rocky soils. The general eastern region contains acid sands. The areas around Somerset West and the Eerste River are dominated by shale and granite clay and loams (CCT, 1999).

Alluvium occurs along the river course of the Lourens River, particularly its upper reaches. Alluvium is most notable in the floodplain region at the confluence of the Eerste River. Most of the catchments of the Eerste River contain fertile soils overlying Cape Granite and Malmesbury Shale (CCT, 1999).

Soils derived from the weathering of Malmesbury Group shales, a result of deposition and compression of silt and clay, are rich in clay and have a superior nutrient status, fertility and water-holding capacity as well as display a wide variety of depths, profiles and mineralogical make-up. These soils are not particularly vulnerable to erosion and provide a good basis for agriculture. They are, however, prone to crusting, which prevents water infiltration but can be alleviated by vegetation (Cape Nature, 2004).

Granite weathers to form various coarse sands and, given the appropriate geomorphic conditions, kaolin. The acidic sandy soils derived from Table Mountain Group sandstone are nutrient-poor and have poor water retention properties (CCT, 1999).

3.1.4 Mineral Resources

The Helderberg District has several mineral resources of economic value. The most abundant resource is building sand, located particularly in the Macassar area. Extensive sand mining has already taken place in the Macassar area, and further mining is proposed across the dunes (CCT, 2000). Stone is found east of the Somerset West and Gordon's Bay areas. Other small and scattered mineral deposits within the Helderberg District include metallurgical sand, road metal, brick clay and tungsten.

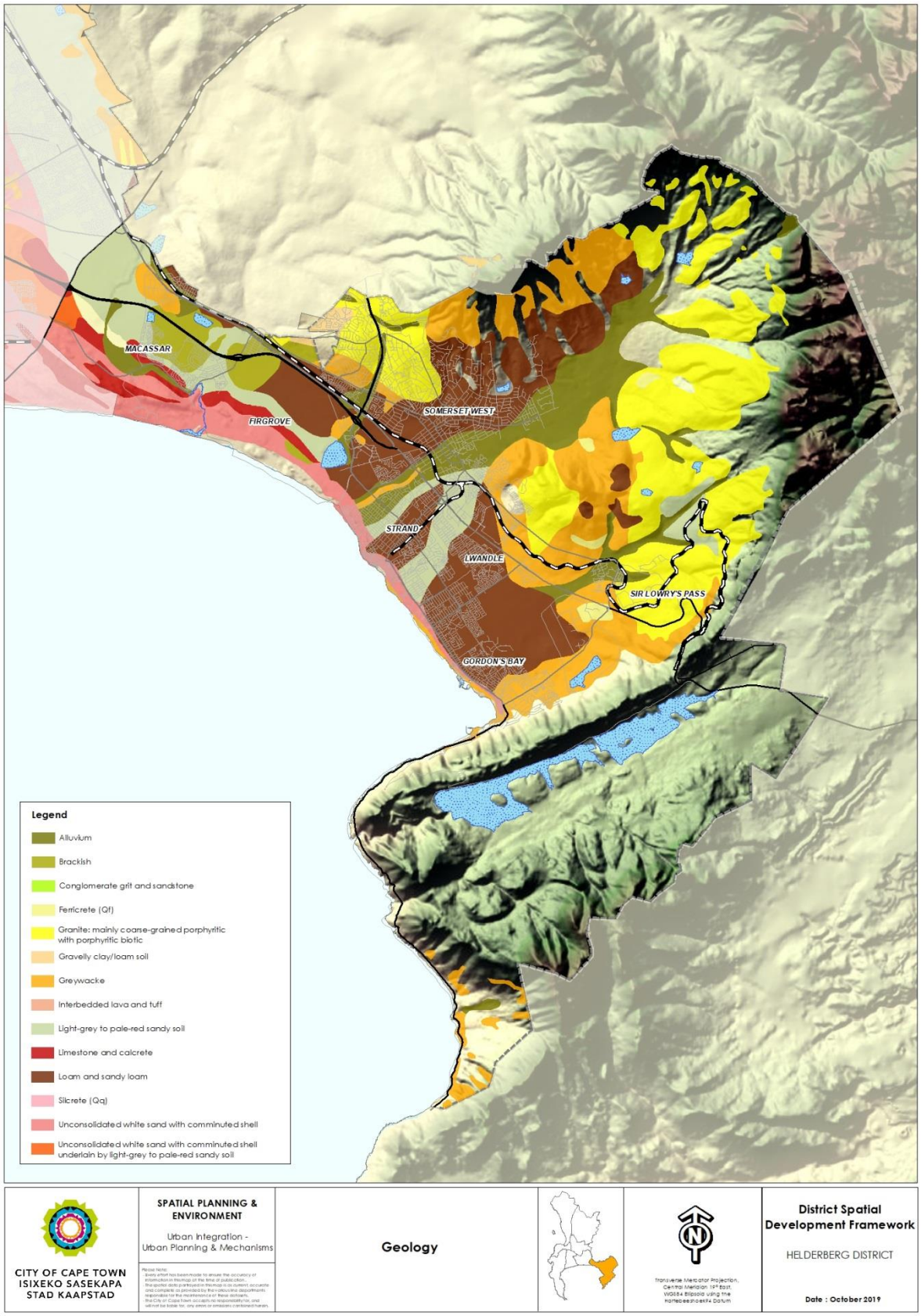

Figure 17: Underlying geology of the Helderberg District

3.1.5 Hydrology

The Lourens River rises in Watervalkloof in the Hottentots Holland Mountains at an altitude of more than 1 110 m above mean sea level. It drains the western and south-eastern slopes of the Helderberg (eWisa, 2008). The river's catchment covers approximately 128 km^2. The Lourens River flows in a south-westerly direction for almost 20 km before passing through Somerset West, cutting across the flat coastal plain and entering False Bay at Strand beach, where it forms a small estuary. The river has no major tributaries but is supplemented by streams arising in Landdroskloof and Sneeukopkloof (eWisa, 2008).

Land use abutting the Lourens River catchment includes forestry; agriculture, such as viticulture; orchards and livestock farming; industrial use and the residential areas of Somerset West and Strand. Some farm dams are located on tributaries of the river, where surplus winter flows are stored for use in summer when river flow is low (eWisa, 2008). Some water is abstracted from the Lourens River to supplement the water supply to Somerset West and Strand. Summer flow rates in the river are often significantly reduced, mainly due to invasive alien vegetation and forestry along its banks, but the river has also experienced severe flooding. In response, the City is implementing a 3-phased Lourens River flood alleviation programme[1] (DWAF, 2003). The Lourens River was declared a Protected Natural Environment in 1997, the first river in South Africa to be protected from its headwaters to the sea (DWAF, 2003).

The Sir Lowry's Pass River drains the western slopes of the Hottentots Holland Mountains and enters False Bay at Gordon's Bay. Summer flow is significantly reduced by invasive alien plants growing alongside the river bank and water abstraction. The river also receives wastewater from the Gordon's Bay WWTW and water quality is considered poor (DWAF, 2005). Urban development is encroaching onto the extensive floodplain of the Sir Lowry's Pass River and has necessitated the implementation of flood alleviation measures. Approximately 10% of the Sir Lowry's Pass River is canalised (DWAF, 2005).

The Steenbras River is approximately 17 km long, with a catchment of 70 km^2 located between the Hottentots Holland Mountains and Koeëlberg. It flows into False Bay between Gordon's Bay and Rooi Els. The mouth of the river, approximately 50 m wide and 20 m long, is small and resembles a "fjord-like" valley incised into a rocky coastal strip. The water of the Steenbras River has a low mineral content and is tea-coloured. No agriculture takes place within the catchment. Commercial forestry occupies an estimated 860 ha but is likely to be removed in the near future. Invasive alien plant infestation is a problem in this catchment (eWisa, 2008).

[1] Phase 1 entails reconstruction of riverbanks, removal of alien vegetation, litter and fencing and replanting of indigenous vegetation to accommodate 1:5 year floods (120 m^3/s). Phase 2 entails building a diversion canal to accommodate 1:20 year floods (240 m^3/s). A flood attenuation dam at Radloff Park is planned for Phase 3. The first phase is currently nearing completion. Plans are underway to implement Phases 2 and 3 (DWAF, 2003).

Table 6: State of river health in the Helderberg District (DWAF, 2005)

River	Desired state of health	State of health	Fish assemblages	Habitat integrity
Eerste River	Fair	Fair	Poor	Fair
Lourens River	Fair	Natural to fair (lower reaches)	Poor	Fair
Sir Lowry's Pass River	Fair	Poor to fair	Poor (lower reaches)	Poor to fair
Steenbras River	Good	Good	Good	Good

Invasive alien vegetation, alien fish, agriculture, urban development, dams and weirs, levees, erosion and flow modification negatively impact the riparian environments of all rivers in the district (DWAF, 2003 and DWAF, 2005).

Invasive alien vegetation, such as river gums, long-leaf wattle, kikuyu, poplars and Spanish reed has replaced much of the indigenous riparian vegetation along the Eerste and Sir Lowry's Pass Rivers and is a growing problem along the middle and lower reaches of the Lourens River. It results in modification and instability of river banks, reduction in habitat integrity, reduction in runoff and hence river flows, particularly during summer, but also clogging the channel and damming up flood waters (DWAF, 2003).

Alien fish species, such as the introduction of rainbow trout into the Eerste and Lourens Rivers, has resulted in the disappearance of the Berg River redfin as well as the Cape galaxias.

Agriculture exposes rivers to chemical residues from fertilizers and pesticides (eWisa, 2008). Small dams and water abstraction for livestock watering and garden irrigation have drastically reduced summer flow in the lower reaches of the Lourens River and Sir Lowry's Pass River (DWAF, 2003 & 2005).

Urban development has contributed to a reduction in water quality through the release of contaminated stormwater, discharge of wastewater, seepage from septic tanks and litter into rivers. The discharge of treated wastewater has significantly altered river flow regimes, resulting in the westward migration of the Eerste River estuary, which has also become less saline. Development in Gordon's Bay has also led to the canalisation of parts of the Sir Lowry's Pass River respectively, causing a loss of ecosystem functioning (DWAF, 2003 & 2005).

The flow regime of several rivers has been impacted. Examples include the Eerste River, impacted by the inter-basin transfer of water between the Theewaterskloof

Dam on the Riviersonderend and the Kleinplaas Dam on the Jonkershoek tributary to the Eerste River (DWAF, 2005), and the Lourens River, impacted by dams within the catchment, the Longkloof weir and levees on either side of the river between Victoria Road bridge and the estuary (DWAF, 2003). These modifications of flow have substantially changed habitat conditions and may intensify flood flows and disrupt the natural ability of the floodplain to absorb flood water (DWAF, 2003).

3.1.6 Estuaries

As discussed, the coast of the Helderberg District features a number of estuaries, namely those of the Eerste River in the western, Lourens River in the central and Sir Lowry's Pass and Steenbras Rivers in the eastern part of the district. Estuaries act as an interface between marine and terrestrial environments and are therefore affected by both of these.

All the estuaries within the district belong to the cool temperate bio-geographical province (based on fish community composition) (Harrison *et. al.*, 2000). The Eerste River has a medium- to large-barred estuary that is typically closed in summer and open in winter when rain brings higher volumes of river flow. Mean Annual Runoff (MAR) exceeds 15 million m^3 (Mm^3). The Lourens and Sir Lowry's Pass River estuaries are also barred estuaries, but have smaller MAR than the Eerste River estuary. The Steenbras River estuary is permanently open.

The fish community health, water quality and overall state of the estuaries in the district range between good and poor, as shown in the **Table 7** below(Harrison *et al*., 2000). The pollution and physical alteration of estuaries has a negative impact on fish stocks, as estuaries are important nursery areas for several species of marine fishes. The Eerste River estuary is one of the most important nursery estuaries in Cape Town. Although adjacent surf zone habitats also function as nursery areas for several fish species, the availability of suitable nursery areas in this region is limited (CCT, 1999). Water quality in the Eerste River estuary is, however, particularly affected by the release of effluent into the river and its tributaries. In addition, the eastern portion of the estuary was cut off by the construction of a causeway and has resulted in a confined stagnant water body that is no longer functioning as part of the estuary. While the Eerste River estuary mouth was previously closed during summer, breaking open after the first winter rains, the inflows of additional (waste) water has recently kept the mouth open throughout the year (eWisa, 2008).

Table 7: Status of estuaries in the Helderberg District (Harrison et al, 2000)

Estuary	Health of fish communities[2]	Overall water quality[3]	Overall aesthetic state[4]
Eerste River	Good	Poor	Moderate
Lourens River	Good	Moderate	Poor
Sir Lowry's Pass River	Moderate	Moderate	Moderate
Steenbras River	Moderate	Moderate	Moderate

Within the district, predicted climate change and sea level rise is likely to affect particularly the estuaries of the Lourens, Steenbras and Sir Lowry's Pass Rivers. They are expected to experience longer mouth closure, especially during the biologically active periods in spring and summer, as well as increasing inundation and flooding of low-lying areas adjacent to the estuary. The effect on the Eerste River estuary is predicted to be negligible, as the release of treated effluent already augments the river flow throughout the year (Midgley *et al.*, 2005).

3.1.7 Wetlands

Historically, much of the Cape Flats were covered by wetlands. However, most of these have disappeared due to urban development. Significant wetlands remaining in the district include Zeekoevlei, north of Macassar and the N2 in the vicinity of Firgrove, and Paardevlei, a coastal wetland on the site of Heartland (formerly known as AECI). Paardevlei was previously part of the water supply system for AECI, who enlarged it to its present area of 50 ha (DWAF, 2003). A mixed-use (commercial, tourism and residential) development is currently proposed for the Paardevlei area (eProp, 2005).

Seasonal wetlands form frequently in the area, particularly in the flood plains of the Eerste River. However, increasing urbanisation has resulted in a reduction of the number of seasonal *vleis*, as they have been filled in and drained to allow for urban development.

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[2] The assessment of fish community health is based on species richness and composition.
[3] Water quality is assessed based on the suitability for aquatic life (dissolved oxygen, unionized ammonia, oxygen absorbed), human contact (faecal coliforms) and trophic status (nitrate-nitrogen, ortho-phosphate).
[4] Aesthetic appraisal is assessed based on the state of development in and around the estuary. It incorporates factors such as floodplain land use, shoreline status, development in the floodplain/estuary surrounds, bridges, dams and weirs, mouth stabilisation, litter and rubble, nature and extent of human use, algal blooms and aquatic nuisance plants, turbidity, odour, air pollution, noise and invasive and exotic vegetation.

3.1.8 Dams

The Steenbras Dam, consisting of an upper and lower dam, is a major water reservoir for Cape Town. It was built in 1921 and has a catchment area of 190 km^2. The upper and lower Steenbras dams have capacities of 31.8 Mm^3 and 33.9 Mm^3 respectively and have a combined yield of 40 Mm^3/annum (DWAF, 2005). The upper dam stores water from its own catchment as well as water that can be transferred into it by the Palmiet Pumped Storage Scheme (eWisa, 2008). Water from the upper dam can be released to the lower dam or conveyed to the CCT's Faure Water Treatment Works (WTW) via the 160 Megawatt Steenbras Pumped Storage Scheme, thereby generating electricity. Water from the lower dam is treated at the Steenbras WTW and piped to Cape Town (Eskom, 2006). The upper and lower Steenbras dams extend along more than half of the total Steenbras River (eWisa, 2008). They are owned and operated by the City.

Other dams in the district include the Land-en-Zeezicht Dam on the Lourens River, with a water yield of 2.7Mm^3/annum, and some smaller dams on the Eerste, Lourens and Sir Lowry's Rivers. Numerous small farm dams on the tributaries to rivers in the district are located outside of the district (eWisa, 2008).

3.1.9 Groundwater

A fractured aquifer of the Malmesbury Group dominates the south-eastern region of the Helderberg District and has a yield of 2.0-5.0 ℓ/s (Meyer, 2001). Groundwater exploitation in the Malmesbury Group is often problematic. Groundwater quality varies considerably due to variable lithologies and recharge conditions, with the best groundwater quality occurring in areas of movement. Groundwater in the Malmesbury Group is generally of a sodium-chloride-alkaline nature.

A fractured aquifer with a lower yield of 0.5-2.0 ℓ/s is also found in the north-eastern part of the district (Dwaf, 2000). Further isolated areas of intergranular and fractured aquifers with a yield of 0.1-0.5 ℓ/s can also be found in the north-eastern part of the district. These aquifers occur within acid/intermediate/alkaline intrusive rocks and extend along the northern and eastern fringe of the district (DWAF, 2000). Boreholes in this region do not develop high yields. Groundwater quality in this region varies depending on the diverse weathering forms and varied rock compositions that can be found. Groundwater in granites generally displays a sodium-chloride sulphate nature (Meyer, 2001)

A Sandveld intergranular aquifer dominates the coastal, central and north-western regions of Cape Town. It has varying yields of 0.1-2.0 ℓ/s, which is typical of the underlying geology, which is moderately productive (DWAF, 2000). The Sandveld aquifer is essentially a coastal aquifer within the Sandveld Group, extending along the West Coast from False Bay to Saldanha. It is hydro-geologically divided into four units, of which the Cape Flats unit occurs from False Bay to Melkbosstrand. The groundwater is generally of a sodium-chloride-calcium-alkaline nature (Meyer, 2001). The aquifer is recharged principally by precipitation within the catchment. The water in the main

part of the aquifer has a fairly low salinity but is relatively hard. Build-up of salts in some pockets of the aquifer is due to very high evaporation rates

The Cape Flats Aquifer has a variable annual yield with *ad hoc* abstraction mostly for horticulture and small-scale use. However, this yield is sustainable and the aquifer can be utilised throughout the year (DWAF, 2005). There is, however, concern, especially in densely populated areas, regarding the vulnerability of the aquifer to pollution. The sandy substrate of the Cape Flats areas has a low filtering efficiency and, as groundwater is recharged by slow seepage from the surface, this water resource is particularly vulnerable to pollution from human activities (e.g. leachate from landfill sites) (DWAF, 2005). Due to the aquifer's proximity to the sea and frequent extension to below sea level, it is also 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 (Meyer, 2001).

The Table Mountain Group Aquifer is a unique regional aquifer (extending beyond the metropolitan area) that forms part of the Table Mountain Group Formation extending over 900 km from Nieuwoudtville to Cape Agulhas and eastwards to Algoa Bay. The aquifer is a potentially significant source of future water supply to the Western Cape. Numerous users have been identified ranging from municipalities to agriculture, with major direct and indirect impacts on the hydrogeology of the Western Cape (DWAF, 2005). There is great concern about the effect that this demand is likely to have on aquifer-dependent ecosystems such as seeps and rivers, and the potential impacts thereof will need to be established and mitigated.

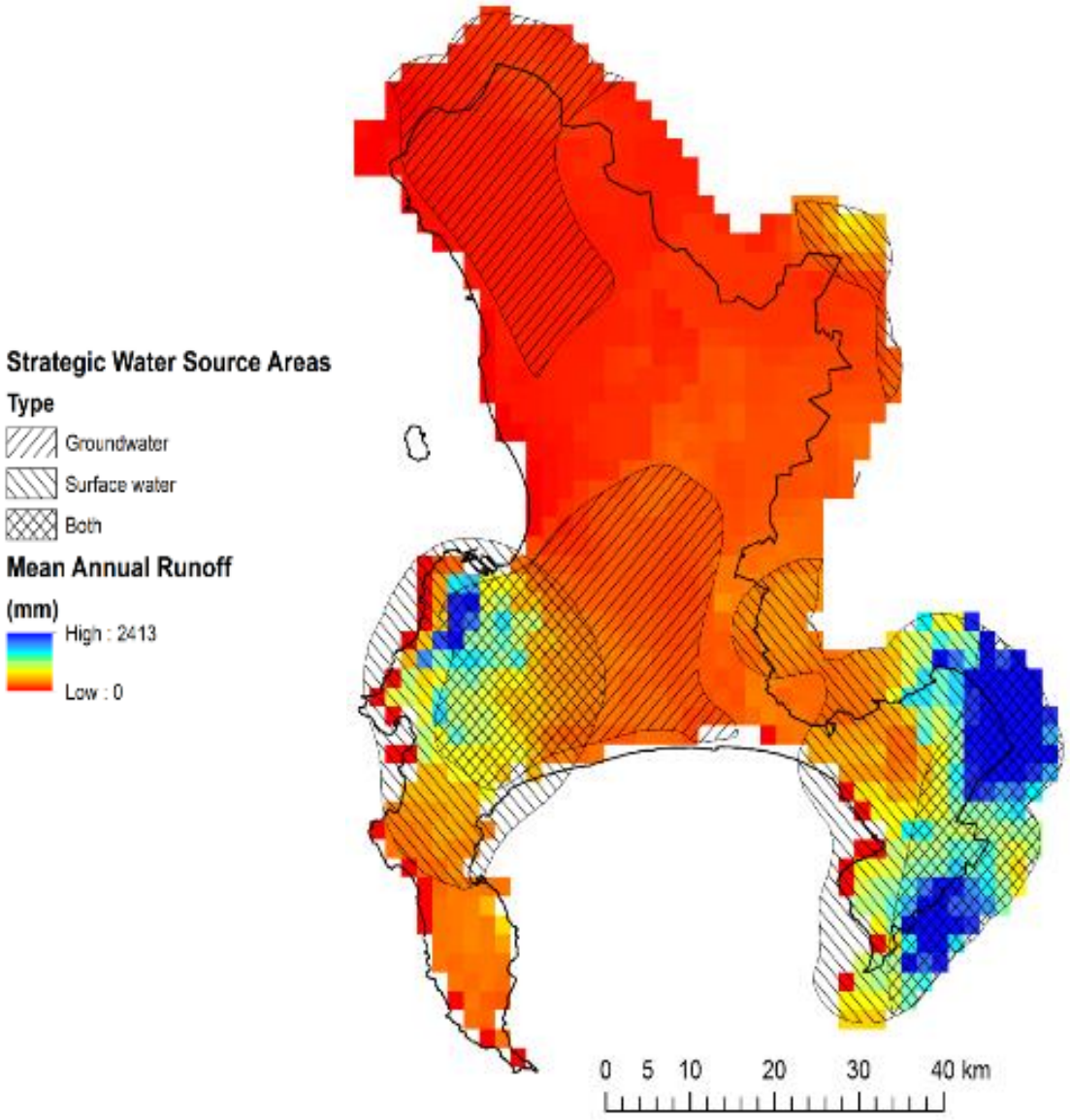


Figure 18: Strategic water source areas in Cape Town

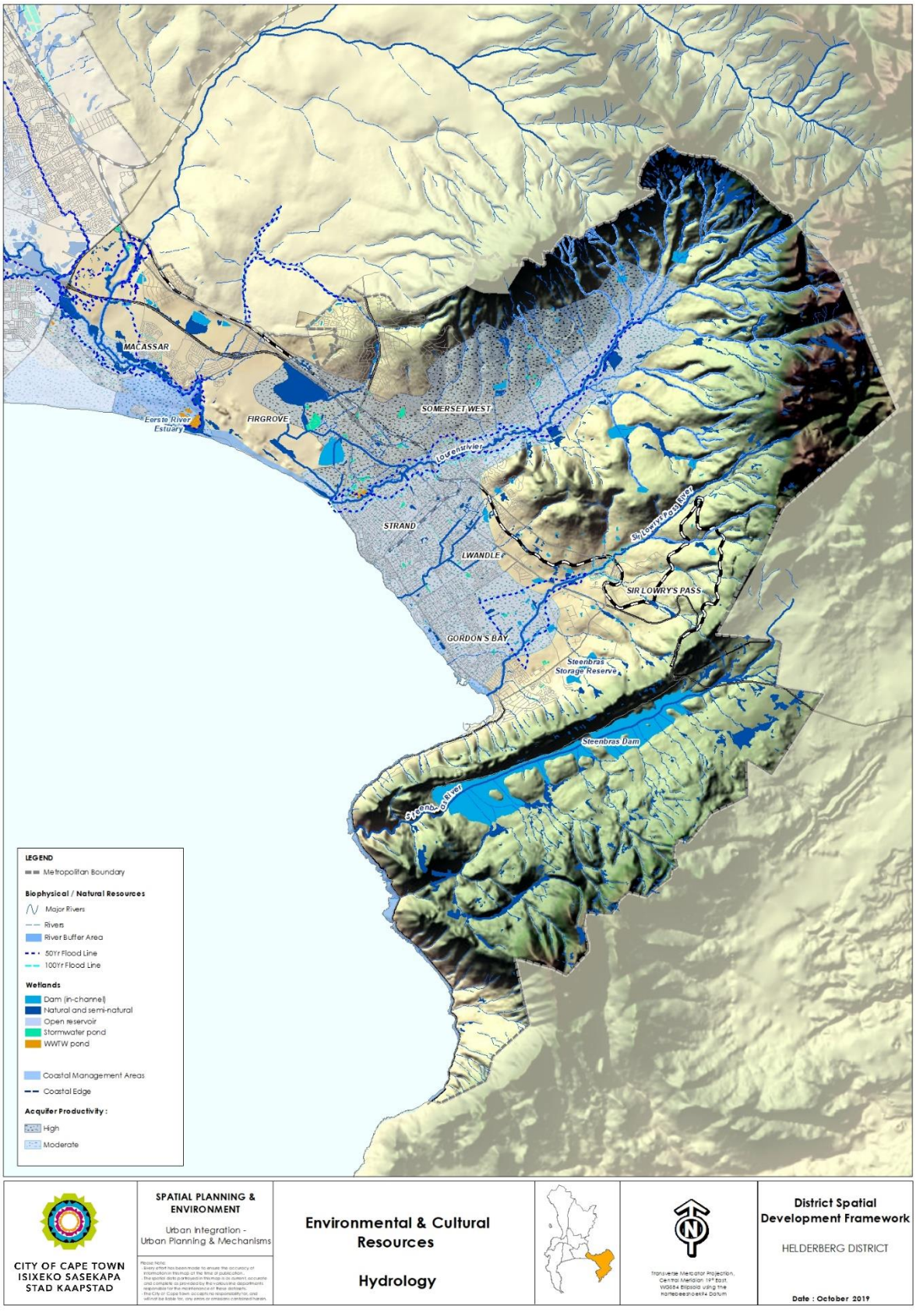


Figure 19: Hydrological system of the Helderberg District

3.1.10 Vegetation

Cape Town falls within the extreme south-west of the Cape Floral Region (CFR), the smallest but most biodiverse (relative to its size) of the six plant kingdoms in the world. The Helderberg District is home to a rich variety of vegetation (, much of which has been heavily transformed and fragmented, primarily due to agricultural land use, sprawling urban development and invasive alien species that infest large tracts of otherwise undisturbed areas, particularly in the catchments of the Eerste, Kuils, Sir Lowry's Pass and Lourens Rivers. Much of the remaining natural vegetation is found on the steeper slopes and in mountainous areas, outside of the urban edge. However, important pockets of Critically Endangered and Endangered vegetation types and conservation areas still occur throughout the district.

Kogelberg Sandstone Fynbos is found on high mountains with steep to gentle slopes and undulating plains on acid sands. Kogelberg Sandstone Fynbos is a low-growing, closed shrubland with scattered emergent tall shrubs (Rebelo *et al.*, 2006). Proteoid, ericaceous and restioid fynbos dominate. The species-level endemism of this vegetation type is exceptionally high (195) and it includes 100 Red List Threatened species. It is considered to be Critically Endangered but is fairly well conserved, with 58% conserved in the Kogelberg Biosphere Reserve, the Hottentots Holland and Groenlandberg Nature Reserves. It is found in the south-east of the district.

Boland Granite Fynbos occurs mostly on undulating plains and hills and is characterised by fairly dense, 1-2 m tall closed shrubland with occasional low trees. This vegetation type is classified as Vulnerable, with more than half of the area having been transformed by plantations, vineyards and invasive alien vegetation. Within the district, it is found on the slopes of the Hottentots Holland Mountains and to the north of the Helderberg area.

Lourensford Alluvium Fynbos is endemic to Cape Town and the level of transformation is high (93%). It is characterised by medium dense shrubland with short graminoid (grass-like) understorey. Restioid and asteraceous fynbos are dominant and some remnants are exceptionally rich in geophytes. This vegetation is one of the most threatened vegetation types, classified as Critically Endangered with less than 1% conserved. It is found in the low-lying areas between Firgrove and Gordon's Bay, with patches in Strand and Somerset West, and extends up the Lourens River Valley above Lourensford Estate.

Swartland Shale Renosterveld is characterised by low to moderately tall shrubland and where degraded by low, open shrubland dominated by *renosterbos*. It is found mostly on clay soils on moderately undulating plains and valleys. It is Critically Endangered and 90% of the area in which this vegetation occurs has already been transformed, primarily for agricultural purposes. Remants are often found in isolated patches and are threatened by invasive alien vegetation. It is found near Sir Lowry's Pass Village.

Elgin Shale Fynbos occurs on moist clay-loam soils derived from Bokkeveld Group shales. It is an open to medium dense tall proteoid shrubland under which grows

moderately tall and dense evergreen shrubs. It is Critically Endangered and the conservation target of 30% is double that of the remaining natural distribution. Within the district, a band of this vegetation occurs in the south near the Steenbras Dam, but most of the distribution falls outside the city and has been transformed for orchards.

Cape Winelands Shale Fynbos is found on moderately undulating plains and steep slopes against the mountains. The vegetation is moderately tall and dense shrubland dominated by proteoid and closed-scrub fynbos. This vegetation is classified as Vulnerable, but is relatively well conserved. In the district the vegetation is conserved in the Helderberg and Hottentots Holland Nature Reserves and also occurs on the lower slopes of the mountains near Somerset West.

Western Coastal Shale Band Vegetation occurs as a narrow band of vegetation (up to 1 km wide in certain places) within the sandstone fynbos. It supports diverse fynbos shrublands of all structural types and is found on clay soils derived from the shale of the Cederberg Formation. It falls into the conservation category of Least Threatened as most of its distribution occurs in protected areas.

Cape Flats Dune Strandveld is found along the coast on alkaline sands. This vegetation is dominated by broad-leaved shrubs and small trees such as *taaibos* (*Rhus spp.*) and *ghwarrie* (*Euclea spp.*), with a fair degree of succulence. Annuals abound, as do bulbs. Cape Flats Dune Strandveld has a higher proportion of fruit-producing plants than Fynbos vegetation and accommodates more birds and animals who are responsible for pollination and seed dispersal. Cape Flats Dune Strandveld plays an important role in terms of corridors for animals, ensuring connectivity between the coast and inland. It is listed as Endangered (DEAT 2009).

Cape Flats Sand Fynbos occurs mainly on deep, leached, acid sands (Rebelo et al. 2006). It is characterised by typical Fynbos families such as protea, erica, restio (Cape reeds), *buchu* and geophytes (bulbs). The vegetation comprises moderately tall shrubland, interspersed with restios. Cape Flats Sand Fynbos is exceptionally high in species diversity and has a high number of threatened Red Lists plant species (some 94 Red Data species occur on the remnants within Cape Town). Cape Flats Sand Fynbos is listed as Critically Endangered and most of this vegetation within Cape Town has been transformed (85%). Many of the remaining patches are small pockets surrounded by urban areas (Rebelo *et al.*, 2006).

Swartland Granite Renosterveld supports a mosaic of grassland/herblands and medium dense, shrublands dominated by *renosterbos*. Groups of small trees and tall shrubs are associated with the *heuweltjies* and rock outcrops found amidst this vegetation. This vegetation is considered Critically Endangered, with almost 80% having already been transformed (Rebelo *et al.*, 2006; DEAT, 2009). A small area of this vegetation occurs near Firgrove, north of Somerset West.

3.1.11 Conservation

The Helderberg District contains numerous sites of high conservation value (CCT Biodiversity Network, 2018). The City has taken steps to ensure the conservation and protection of the unique biodiversity within its boundaries. To this end, the following proclaimed conservation areas are found in the Helderberg district:

The **Helderberg Nature Reserve** measures 402 ha in extent and supports almost 600 plant species. It is situated on the slopes of the Helderberg Mountain, above Somerset West overlooking False Bay. The nature reserve supports Kogelberg Sandstone Fynbos, Cape Winelands Shale Fynbos, Boland Granite Fynbos and Lourensford Alluvium Fynbos vegetation types (Helderberg Nature Reserve, 2006).

The **Steenbras Nature Reserve** forms part of the Kogelberg Biosphere Reserve, which extends beyond the borders of Helderberg District. It is located above the eastern slopes of False Bay and stretches eastwards and southwards into the Hottentots Holland and to the coast, respectively. Containing over 1 800 plant species, of which 77 are endemic, the reserve is considered to be one of the most complex examples of biodiversity in the world and is a World Heritage Site (Kogelberg Biosphere Reserve, 2008). The Kogelberg Biosphere Reserve comprises about 6 950 ha of land in the south-eastern portion of the district.

The **Silwerboomkloof Natural Heritage Site** is a protected *kloof* of 5 ha located within a forest of Endangered Silver Trees (*Leucadendron argenteum)*. The site accommodates over 200 plant species (CCT, n.d.).

The **Harmony Flats Provincial Nature Reserve** is a 9 ha Core Flora site with over 200 plant species, mainly belonging to the Critically Endangered Lourensford Alluvium Fynbos. It is situated between Gordon's Bay and Strand and forms part of the Cape Town Biodiversity Network. The reserve is managed by the City and Cape Flats Nature (CCT, n.d.).

The **Macassar Dunes Conservation Area** is a Core Flora site of 741 ha and contains almost 200 plant species. Macassar and the adjacent coastal strip have been classified as a key site in the City's Biodiversity Network. The conservation area supports Cape Flats Dune Standveld and provides a protected link between the dunes and False Bay beach. However, the dunes have been invaded by woody Australian species, *Acacia cyclops* (*rooikrans*) and *Acacia saligna* (Port Jackson) (Low, 2006). The area is managed by the City and Cape Flats Nature.

The **Dick Dent Bird Sanctuary** is located on the site of an old WWTW near the estuary of the Lourens River. It accommodates many coastal and wading birds (CCT, n.d.).

The **Lourens River Protected Natural Environment** protects some 23 km of the Lourens River from its headwaters to the sea, making it the first river in South Africa to be fully protected (DWAF, 2003). The river traverses the Helderberg and Jonkershoek Mountains, historic farmlands and the towns of Somerset West and Strand, where it provides a green belt within the urban environment (CCT, 2007).

The **Hottentots Holland Nature Reserve** measures 42 000 ha in total and stretches beyond the borders of the Helderberg District. It is a Provincial Nature Reserve covering the mountaintop along the eastern border of the district (SA Venues, n.d.).

3.1.12 Fauna

Very little is known about the fine-scale distribution of fauna within Cape Town. Even for better known groups, such as birds, 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 Helderberg District. This is particularly evident with the invertebrate fauna; very little has been done on this group. There are undoubtedly numerous endemic and threatened species within the city and certainly a number which have not even been described. It is hoped that a representative suite of invertebrates would be conserved by a biodiversity network of conservation areas which adequately conserves all the vegetation types in Cape Town.

3.1.12.1 Fish Fauna

Five indigenous freshwater fish species are currently recognised as occurring within the boundaries of Cape Town. However, one species, Cape Galaxias (*Galaxias zebratus*), has been shown to comprise of at least 13 species across the Western Cape. Ongoing genetic work will hopefully allocate all the populations within the city to a particular species (there may well be more than one) and they will be assigned a conservation status. As this information is currently not known, it is best to consider the presence of Galaxias as being of conservation significance within Cape Town. Galaxias are found in flowing or standing water across the city and can be expected to occur in any suitable habitat in the district (Dorse, 2008).

The data-deficient Cape Kurper (*Sandelia capensis*) is found throughout much of the Cape Floral Kingdom. The latest taxonomic evidence has shown that what was previously always thought to be one species represents a species complex of at least five taxa. The distributions and conservation status of each of these species needs to be confirmed and presently it is unclear which taxa would fall within the district. These fish have 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. They are known to occur within the Helderberg Nature Reserve and are probably present in the better condition wetlands/rivers within the Helderberg District. Until the taxonomic issues have been resolved, the presence of these would be considered of conservation significance (Dorse, 2008).

3.1.12.2 Mammalian Fauna

The Helderberg District has large natural mountainous areas to the east (Hottentots-Holland) and to the South (the Kogelberg). These natural areas border on extensive natural areas outside of the city boundaries. As such, there are extensive areas of natural vegetation which can be expected to have almost an intact fauna component (Dorse, 2008). This is supported by recent camera observations of top predators, such as leopards, in the area.

Of the 83 species of indigenous mammals found or presumed to occur within Cape Town, 12 species (excluding marine mammals) have IUCN status. The Near Threatened Fynbos Golden Mole (*Amblysomus corriae*) is suspected to occur within the district. There are also six species of bat which could possibly occur within the district and are considered Near Threatened. Very little is known about the distribution of bats within Cape Town. Any bat roosting sites identified within or near proposed development would require a specialist report, which would assess the significance of any potential impacts (Dorse, 2008).

Honey Badgers (*Mellivora capensis*) are presumably still present in the district. These animals have massive home ranges and no single Cape Town reserve could conserve a population of this species. Substantial ecological corridors or agricultural areas would be critical in ensuring that this species persists within the city (Dorse, 2008).

The small predatory Striped Weasel (*Poecilogale albinucha*) has been recorded in the district in the past. Its status within Cape Town is unknown, but they could be resident at low densities in natural and agricultural areas (Dorse, 2008).

With regard to the remaining larger terrestrial mammals which still occur within the district, all were assigned the status of Least Concern. This indicates that the species are currently not threatened nationally, but on a local city or district scale the species may be very close to becoming locally extinct. Their future survival in the district is dependent on larger natural open space to ensure that viable populations exist. The ecological corridors linking important natural areas are essential for the continued survival of many mammal species. An important ecological corridor within the Helderberg District is the coastal corridor linking the mouth of the Lourens River westwards towards the Macassar Dunes (Dorse, 2008).

3.1.12.3 Avifauna

Of the 404 bird species recorded within Cape Town, 28 species are listed as Threatened, Numerous Threatened species found in the costal and oceanic waters off Cape Town are pelagic seabirds which breed in the Southern Ocean. These birds are therefore not associated with the mainland and need not be addressed in the EMF. However, the Endangered Bank Cormorant (*Phalacrocorax neglectus*) and the Cape Cormorant (*P. capensis*) and Near Threatened Crowned Cormorants (*P. coronatus*) roost or feed along the coastline of the Helderberg District.

Black Harrier (*Circus maurus*) is considered to be Endangered and it is suspected to occur within the district from time to time. The birds nest on the ground and they are sensitive to disturbance (Dorse, 2008).

The Vulnerable Blue Crane (*Anthropoides paradiseus*) is occasionally encountered in the agricultural areas in the western parts of the district. The Vulnerable Martial Eagle (*Polemaetus bellicosus*) is occasionally encountered within the district but no breeding localities are currently known.

In addition to the above, there are further Important Bird Areas (IBAs) and other roost and breeding sites. One such site is the Kogelberg, which forms part of the IBA known

as the Eastern False Bay Mountains (Site number 107). The area was selected as an IBA because it supports all but one of the Cape Fynbos Endemic Bird Areas (EBAs) restricted-range and biome-restricted species. There is also an incredibly important tern roost at the mouth of the Lourens River. Up to 20 000 terns have been recorded roosting here in the evenings in summer. The roost comprises of several species but the vast majority are the migratory Common Terns (Sterna hirundo) (Dorse, 2008).

3.1.12.4 Amphibian Fauna

Of the 27 amphibian species that occur within Cape Town, ten are Threatened, four species are considered Near Threatened, three species are Critically Endangered, two Endangered, and three Near Threatened. Two species, the Critically Endangered Table Mountain Ghost Frog (*Heleophryne rosei*) and the Near Threatened Cape Peninsula Moss Frog (*Arthroleptella lightfooti*), are endemic to the Cape Peninsula and these constitute the only endemic vertebrates in the city as a whole (Dorse, 2008).

Four threatened amphibians are suspected to occur within the Helderberg District. Three of these will only occur in good condition Fynbos in mountainous areas and are likely to occur within the Kogelberg. These are the Critically Endangered Rose's Mountain Toad (*Capensibufo rosei*), the Near Threatened Landdroskop Moss Frog (*Arthroleptella landdrosia*) and Montane Marsh Frog (*Poyntonia paludicola*). The Near Threatened Cape Rain Frog (*Breviceps gibbosus*) is also likely to occur in the eastern areas of the Helderberg District on clay soils. This frog is not associated with wetlands (Dorse, 2008).

Amphibians are vulnerable to disturbance, as they are sensitive to environmental factors such as water pollution and/or altered water regimes. The input of stormwater into wetlands can have a significant negative impact on biodiversity. The effects of stormwater entering wetlands of conservation significance would require a specialist report to assess the significance of any potential impacts (Dorse, 2008).

3.1.12.5 Reptile Fauna

Eight of the 61 reptile species found or suspected to occur within Cape Town are considered to have Red Data List status. The conservation assessment of South African reptiles is currently underway, with the potential that the status of some of the species found in Cape Town may change. However, Threatened terrestrial reptiles, such as the Vulnerable Dwarf Crag Lizard (*Pseudocordylus nebulosus*), are suspected to occur in the district.

The Critically Endangered Geometric Tortoise (*Psammobates geometricus*) used to be present in Lourenford Alluvial Fynbos and the Harmony Flats Nature Reserve was proclaimed in order to protect this species. Unfortunately, overly frequent fires and illegal collecting eradicated the tortoises at Harmony Flats and the species is now considered extinct within Cape Town (Dorse, 2008).

3.2 Coastal Areas and Dunes

3.2.1 Coast

The Helderberg District coastline comprises the north-eastern part of False Bay and contains a diversity of habitats and characteristics, including short and long sandy beaches, rocky shores, dunes, rocky and sandy sub-tidal areas and estuarine mudflats. Each supporting a range of marine life. The Helderberg Marine Protected Area occurs within the district.

Stretches of the coast in the Strand and Gordons Bay area are heavily urbanised and exposed to coastal processes that make the infrastructure and built form of these areas vulnerable to erosion, sand inundation or wave inundation. A number of beach resorts with hard infrastructure are especially vulnerable. Retaining walls have been built in places to manage erosion and sea water ingress.

The coast in this district is relatively intact, which makes it less vulnerable to the effects of storms or sea level rise. However, it is a dynamic and exposed coastline and any structures in the coastal area are vulnerable to extensive damage from wind and sand – and thus have very high maintenance costs. Access and security problems have hampered the realisation of the coast's considerable recreational potential.

3.2.2 Dunes

The Macassar Dunes Conservation Area is a rich and varied natural area on the False Bay coast. The sand dunes of Macassar are protected as a conservation area, as it contains some of the best remnants of Cape Town's unique strandveld vegetation. With its dense evergreen shrubs and thickets, this endangered vegetation type is home to a wide range of plants and animals. Most widespread is the Cape Flats Dune Strandveld, which grows along the slopes of the dunes. Agulhas Limestone Fynbos occurs on hard calcrete outcrops on the dune summits and upper slopes, supporting fynbos families such as reeds, heaths and buchus. Within the Macassar Conservation Area, you will also find the last remaining forest of endangered white milkwood trees. More than 80 different bird species can be found in the reserve. Some include the Southern Double-Collared Sunbird, Black-Shouldered Kite, Spotted Eagle Owl, African Black Oyster-Catcher, Kelp Gull, Cape Bulbul and Cape Spurfowl.

The Macassar dunes provide essential ecosystem services, such as shelter from high winds and wind-blown sand, freshwater production and protection from storm damage. It is essential that the biodiversity of the area is conserved so that it can continue to provide these benefits to surrounding communities and visitors for years to come.

The reserve also has an important cultural history. For many centuries, the Khoisan people living along the coast harvested their food and medicinal plants here. Furthermore, in the 1600s, the first Muslim community in South Africa was founded here. The Sheikh Yusuf shrine at Macassar is the most important Muslim shrine in Cape Town. It rests on the summit of a vegetated sand dune close to Faure, near Macassar Beach.

Over Easter weekends, thousands of members of Cape Town's Muslim community camp behind the Macassar sand dunes to pay tribute to the memory of the Sheikh.

In light of future climate change and sea level rise predictions, these flood-prone areas will see increased occurrence of storm events due to higher sea levels and increased storm energy. These factors combine to create significant safety issues for development in close proximity to the coast and emphasise the need for the protection of the remaining dune systems.

3.2.3 Erosion

Sandy coastlines, as present along parts of the district, have a particularly high potential for erosion. Erosion induced by sea level rise due to climate change is expected to impact particularly where problems are already being experienced (Midgley *et al.*, 2005). This applies especially to areas where development has occurred beyond the high water mark or too low relative to mean sea level, such as Strand, which already experiences problems associated with coastal erosion and inundation during storm events coupled with high tides. Models have predicted that the northern False Bay shoreline may erode by 18–35 m if sea levels rise by 20–40 cm above current levels (Midgley *et al*., 2005).

The destruction of dunes along the coastline also furthers erosion, as dunes form an important coastal defence system. During high seas, dunes are eroded and sand moves into an offshore bar, which changes the slope of the incoming beach. This causes waves to break earlier, thus reducing the energy and erosive power of the wave.

3.3 Agriculture and Mineral Resources

Intensive agricultural areas and areas with high agricultural potential and value in the Helderberg District include: Lourensford Wine estates, Vergelegen Wine Estate, Morgenster Wine Estate, Sir Lowry's Pass environs (north of Sir Lowry's Pass) and a portion of the Vergenoegd Farm.

3.4 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. The three main types of air pollutants measured and reported on by the City are as follows:

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

In general, NO_2 levels have decreased over the past 12 years and are within standard guideline limits. SO_2 levels have remained low 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.

3.5 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.

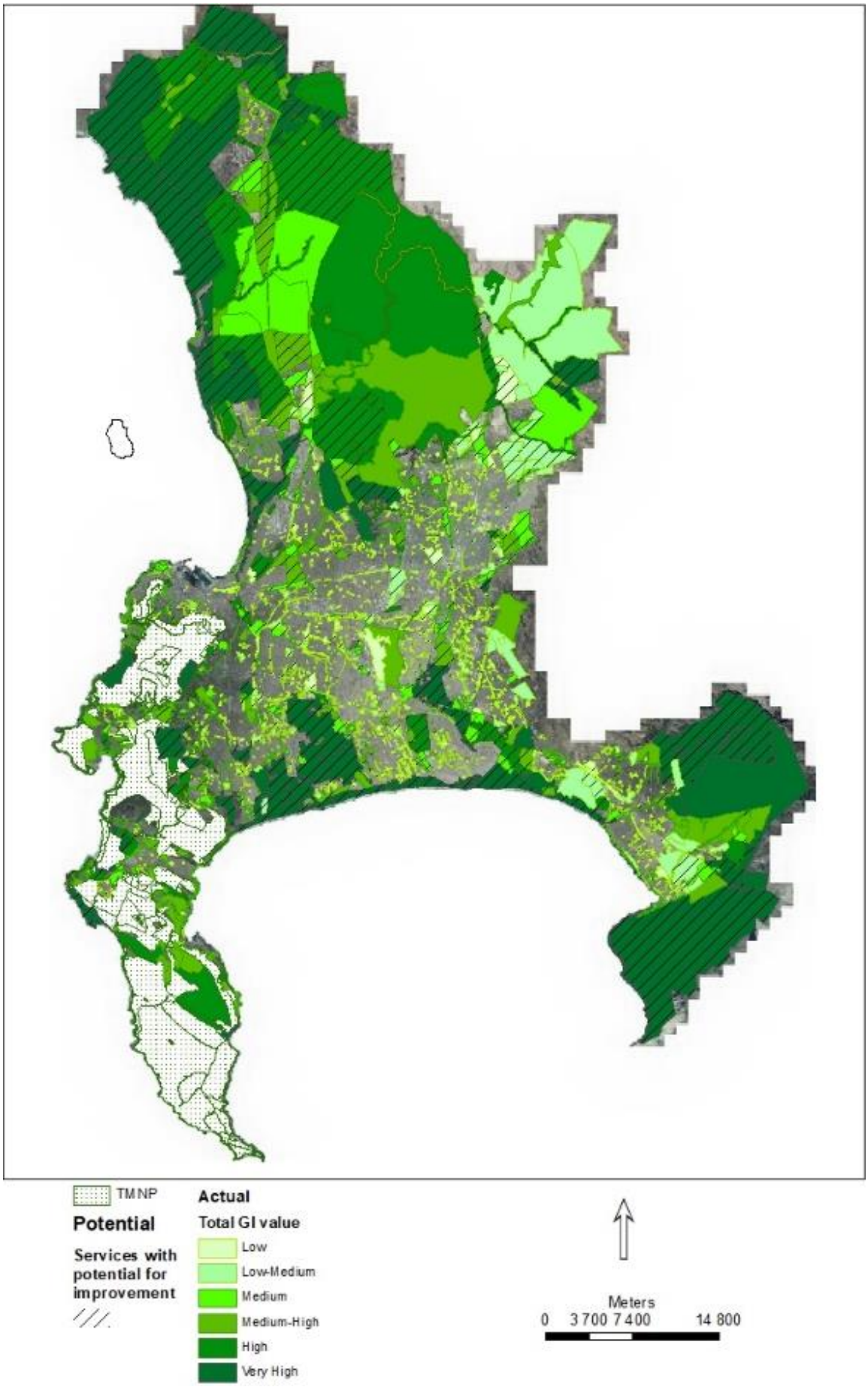


Figure 20: Mapped Green Infrastructure Network (GiNet)

3.6 Heritage and Cultural Resources

The historic narrative of the establishment and development of Cape Town as a settlement and towards its current state is reflected in its diverse cultural heritage and the wide range of heritage resources. These give the city its sense of identity and should be preserved and conserved for future generations.

3.6.1 Historical Development

The Helderberg District is perhaps best known for its wine farms, but its heritage is much more diverse. The district extends from Macassar to Gordon's Bay and includes the towns of Strand, Somerset West and the surrounding historical farms. Accelerated urbanisation since the 1980s and more so in the recent decade has severely eroded the heritage qualities of this district. Today, the suburban security estates, industrial activity and sprawling urban development stand in stark contrast to the scenic beauty of the Helderberg Mountains and the lush surrounding winelands. Economic challenges are also a threat to significant heritage places, such as the Kramats of Macassar and Zandvliet, the home of exiled Sheik Yusuf, an iconic figure in the Islamic history of Cape Town.

Amidst the above challenges, there are elements of significant heritage conservation in the district. Lwandle, established in the early/mid-20th century as an area for migrant labourers, provided hostel accommodation for single men employed in the fruit and canning industry in this part of the Western Cape. Hostel 33 was converted to a museum in 2000 as a reminder of the way of life of migrant workers during the Apartheid period in South Africa. Additionally, both Strand (which originated as a fishing community) and Gordon's Bay retain clusters of historical urban fabric, giving testimony to their early beginnings and development as 19th century resort villages.

3.6.2 Rural Cultural Landscapes

The origins of the **Helderberg Farms** are integrally linked to the establishment of a VOC outpost at the foot of the Gantouw Pass (later formalised as the constructed Sir Lowry's Pass). The outpost served to monitor the movement of Khoekhoe and burghers between the settlement, Cape Town and the interior. It is commonly believed that this outpost formed the core of Willem Adriaan van der Stel's farm Vergelegen.[5] Vergelegen was subdivided in 1707 and these subdivisions formed the core of what later became the well-known wine farms of Morgenster, Land-en-Zeezicht, Lourensford, Erinvale and Oakwood.

The southernmost edge of the **Eersterivier** cultural landscape is situated in the Helderberg District. The remainder lies in the Stellenbosch Municipality. The farm Vergenoegd (a Provincial Heritage Site) was granted in 1696 to Pieter de Vos. It forms

[5] The son of Simon van der Stel (Governor at the Cape 1691-1699). WA vd Stel was central to charges of nepotism and corruption and the use of VOC funds for personal gain as well as together with a group of close friends, monopolising the Cape market to the exclusion of other farmers. Vergelegen was nearly 10 times larger than the average farm granted to freeburghers He was recalled to the Netherlands in 1707.

the gateway to the Stellenbosch Winelands. The village/hamlet of Faure forms part of this cultural landscape.

The **Macassar/Zandvliet** cultural landscape is situated to the south of the N2, along the southern reaches of the Kuils and Eerste Rivers. Zandvliet was the home of Sheik Yusuf[6], who was exiled to the Cape in 1694. He was sent to live at Zandvliet with his entourage, his wives and children. Despite the distance from Cape Town, Zandvliet soon became the centre for Islam at the Cape. Upon Yusuf's death in 1699, Zandvliet was granted to Reverend Pieter Calden[7]. Sheik Yusuf was buried there and it remains a significant heritage place for Moslem residents today. In the 1970s, the area was identified as a so-called "coloured" group area by the Apartheid state and the historical buildings have consequently been much neglected.

Sir Lowry's Pass village (including BoPass) is situated at the foot of the Hottentots Holland Mountains. The village no doubt had its origins in the outspan that was situated at the foot of the mountain. A precursor to Sir Lowry's Pass was built in 1830. It is clear from historical records that by the mid-19th century, the Wesleyan mission station was already established.

T**he AECI/De Beers explosives factory** site in Paardevlei is a unique industrial cultural landscape. It originated in the late 19th century as a factory complex to supply explosives to the diamond mines in the north. The complex grew to include not only the homes of managers and permanent staffers, but also the hostels built for (African) migrant workers. This cultural landscape includes tree-lined avenues (de Beers Avenue), the iconic Paardevlei as well as a number of cemeteries/burial grounds associated with the factory workers. The cemetery of those who died during the Spanish Flu of 1918 is still intact in the precinct.

Less tangible heritage of Cape Town includes the narrative of Apartheid-era forced removals, sites of struggle history and the living cultural practices of residents, including traditional initiation rites. One of the challenges in the long-term planning of Cape Town is the recognition of intangible/living heritage and the provision of social facilities and spaces to accommodate cultural events and practices.

3.6.3 Urban Cultural Landscapes

As alluded to in the previous section (and similar to the Northern District), the two major urban nodes of the Helderberg District show little evidence of their historical origins. Strand and Somerset West originated as settlements dating back to the 18th and 19th centuries, respectively. Declared "white group areas" under the Apartheid state, people of colour living in these towns were subjected to forced removals. The Somerset West Methodist Mission settlement remains as a community and historical cultural landscape in the core of Somerset West.

[6] Muhammad Ysuf al-Maqassari
[7] Calden was one of van der Stel's close friends.

The AECI/De Beers Dynamite Factory site at Paardevlei represents an Industrial (urban) landscape. The redevelopment of this site has great potential for incorporation of the historical fabric and adaptive reuse of many of the character precincts.

3.6.4 Heritage Management

> "The National Heritage Resources Act introduces an integrated and interactive system for the management of the national heritage resources; to promote good government at all levels; and to empower civil society to nurture and conserve their heritage resources so that they may be bequeathed to future generations…to provide for the protection and management of conservation-worthy places and areas by local authorities…"

The National Heritage Resources Act, No. 25 of 1999 (NHRA) identifies a three-tier system for the management of heritage resources and prescribes the criteria for assessing heritage resources. The South African Heritage Resources Agency (SAHRA), in consultation with the Minister and MEC of every province must publish regulations distinguishing between at least three grading categories.

1. **Grade I:** SAHRA is responsible for the identification and management of Grade I heritage resources and the co-ordination and monitoring of the management of the national estate in the Republic.

2. **Grade II:** Heritage Western Cape (HWC) is responsible for the identification and management of Grade II heritage resources.

3. **Grade III:** The local authority (in this case the City) is responsible for the identification and management of Grade III heritage resources and heritage resources, which are deemed to fall within their competence in terms of the NHRA.

Heritage resources within Cape Town are managed both under the NHRA and the MPBL. While the management of Grade III heritage resources is currently undertaken by HWC, the NHRA prescribes that Grade III heritage resources must be carried out by the local authority where it is competent to do so. In 2013, the City was the first local authority to apply for competence in terms of the NHRA and to have its competence successfully reviewed. One of the criteria for maintaining competence in terms of the NHRA is having an effective tool for managing heritage at a local level. The Heritage Protection Overlay Zoning (HPOZ) is the tool within the Development Management Scheme (DMS) of the MPBL for the protection of heritage places and spaces. The HPOZ is designed to align with the requirements in the NHRA for managing heritage resources formally protected in terms of the Heritage Register (S30) and Heritage Areas (S31).

The following two sections outline the two parallel streams of heritage management:

3.6.4.1 National Heritage Resources Act, No. 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 palaeontological 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 the **Table 8** below.

(a) 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.

(b) General Protections

- **Section 34:** Buildings 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).

- **Section 35:** Archaeological and palaeontological sites
  In terms of S35 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.

Palaeontological remains (fossil marine shell) have been recorded in the area around the Lourens River Mouth.

Isolated Early and Middle Stone Age tools are found within agricultural tools and testify to the long history of human occupation in this landscape.

Gordons Bay Midden (situated in Hendon Park) is the only remaining largely intact shell midden along the False Bay coast. The archaeological deposits in this midden predates the introduction of domestic stock in the last 2000 years. Later Stone Age archaeological sites have also been recorded on the AECI site, near the Lourens River.

There is a relatively high potential for finding archaeological deposits associated with historical farms and homesteads. For example, archaeological investigations at Vergelegen have contributed towards a better understanding of how people lived in the past, the types of food they ate, trade networks and more.

Table 8: Formally protected areas under the NHRA (excluding memorials)

Provincial Heritage site	Address	Description
Vergenoegd farm	Off Kramat Rod, Macassar	This property was originally granted to Pieter de Vos in 1696. The earliest section of this H-shape dwelling-house with its impressive gables probably dates from the middle of the 18th century. The farmyard is bounded by a ring-wall and an interesting complex of outbuildings
Groot Paardevlei	Magnolia Street, Somerset West	The farm was granted to Frans van der Stel, youngest son of Governor Simon van der Stel, shortly after 1700. The farm was the property of Martin Melck when he died in 1781, and it was probably his widow who gave the house its H-shape. It retains many of its original architectural features. It was recently acquired by Historical Homes Limited for preservation.
Parel Valley	Aberdeen Road, Somerset West	The farm was granted to Frans van der Stel, youngest son of Governor Simon van der Stel, in 1699. The back and front gables were added to the house in 1800. It was damaged by fire early in this century and

		thereafter restored. It has recently been purchased for preservation by Historical Homes Limited.
Somerset House Preparatory School	Off St Georges Street, Somerset West	This property originally formed part of the farm Cloetenberg which was bought in 1709 by Catharina Cloete. The oldest section of the building complex dates from 1725 and the front gable of the homestead bears the date 1785.
Magistrates Office	126 Main Street, Somerset West	This building was erected in 1898. It originally housed the post office, as well as the magistrate's court, after Somerset West was proclaimed an Assistant Magistracy in 1892.
Police Station	124 Main Street, Somerset West	This building dates from approximately 1835 to 1840 and was originally used as a dwelling-house, and thereafter as a school, post office and library. It is now being used as a police station.
Coachman's House	23 Andries Pretorius Street, Somerset West;	This cottage, designed in a simple vernacular style, is one of several built by freed slaves in the eighteen thirties.
Voorburg	41 Victoria Street, Somerset West	Originally built by Morkel as a 'tuishuis' - house in town for when the family came to church
Dutch Reformed Church	Off Church Street, Somerset West	The building was first inaugurated in 1819 but was altered in 1860 to its current form.
Predikants Square	Off Church Street, Somerset West	Square associated with the DR Church and the establishment of the village of Somerset West. Significant public space.
Old Dutch Reformed Church Parsonage	41 Lourens Street, Somerset West	Mid 19th century parsonage associated with the establishment of Somerset West as a church town. Visual linke retained with the Church across Predikant Plein.
Land-en-Zeezicht	15 Verster Ave, Somerset West	Land-en-Zeezicht is a neighbourhood in Somerset West. It was originally part of the historic Vergelegen wine estate. In 1914, Hendrik Hendriksz came into

		possession of the area known as Land-en-Zeezicht, building his mansion on Verster Avenue.
Morgenster Wine Estate	Vergelegen Avenue, Off Lourensford Rd	Originally part of the Vergelegen estate granted to WA vd Stel in 1700. Subsequent subdivision and redevelopment. Well preserved historic werf and forming part of a well preserved cultural landscape.
Vergelegen Estate and Camphor trees	Vergelegen, off Lourensford Road, Somerset West	Remnants of the 18th century camphor trees allegedly planted at Vergelegen. Also listed as Champion Trees.
Old dovecote Onverwacht 811	Off Asrin Drive, Somerset Road	This dovecot is a particularly good example of the dovecots often built on old farms.
Lwandle Museum Hostel 33	Noxolo Road, Lwandle	Hostel 33 forms part of the Lwandle Migrant Labour Museum and illustrates how people lived within the migrant labour system. It represents an extraordinary spatial and social expression of resilience and oppression, which dominated the South African settlement morphology as part of an ''apartheid'' city. The heritage significance of Hostel 33 is both historical and social on a broad provincial level. Its architecture nonetheless speaks volumes about its origins in the late nineteenth century and its role later in a repressive apartheid system in South Africa. Hostel 33 is both part of a spatial expression of a wider system of oppression as well as a representation of a system of managed oppression at a local level. The value of Hostel 33 lies in its representative and symbolic nature. Hostel 33 is of outstanding significance for the memorialisation and acknowledgement of migrant workers, their role and contribution to society.
Sheikh Yusuf Kramat	Erf 1179 and Erf 1181, Macassar	The Sheikh Yusuf Kramat was declared as a National Heritage Site in December 2021 as part of the 10 Kramars which form of the 'Circle of Tombs' which are situated at various locations around the Cape Peninsula.
Dwelling and watermill, Knorhoek	Farm 830, Knorhoek	The farm Knorhoek was granted to David Malan in 1717 and was slightly over six morgen in extent. It was transferred, along with De Fortuin, to his son Jacques Malan in 1790, and a year later to François Joubert, who built the house in 1795. The house, an imposing

		Cape Dutch manor house, which has developed over the years to accommodate the various owners' needs, together with the mill—house, forms a unique complex and should be preserved.
Quinan House	Inner De Beers Avenue, AECI, Somerset West	The house was built for the General Manager of the De Beers Cape Explosive Works in 1901. This company merged with AE and CI in the 1920's arid was first occupied by William Quinan, who came out from the California Powder Works. In the U.S.A. William was succeeded by his cousin, Kenneth Quinan and the house was thus occupied by humans for 25 years, hence the name. Until 1949 the house was the residence of the General Manager, after which it served as staff quarters and hospital. In 1973 it was restored by the Company as a guest house and as e venue for entertaining. It is in excellent condition and beautifully maintained.
Sweet Safraan Victorian House	Farm 880, Sir Lowry's Pass	The property on which this dwelling—house is situated, originally formed part of a freehold grant to C.F.Prenger from Cologne in 1779 and named Frederiksburg. It was subdivided in 1830 and this portion came in the possession of the widow J.C whose husband had acquired Frederiksburg early in the 19th century. At the turn of the century a third German became the owner of Frederiksburg, G.A. Rehbein, In 1925 the farm became known as The homestead and was renamed Sweet Saffraan in 1967 to commemorate the three sweet saffraan pear trees which were growing on the original piece of Frederiksburg.
Railway Station Building	Erf 493, Sir Lowry's Pass	The old railway station building, together with its ticket box and wall clock, situated on a portion of certain land, being Sir Lowryrail 1, known as Farm 906.
Old Lourens river bridge	Main Road, Somerset West	This bridge, which is situated just where the main road to the Strand and Sir Lowry's Pass leaves the town of Somerset West, marks an important event in the history of communications in South Africa. In the 1840's the roads of the Cape Colony were in a deplorable state, so the Government decided in 1843 to establish a Central Road Board with six appointed members, three of whom were to be

		officials. John Montagu, the Colonial Secretary, was the driving force behind this body. One of the first tasks undertaken by the Board was the construction of a hard road over the Cape Flats from Cape Town to Eerste River, since this route was barely negotiable at that time. The work was completed in 1845.
San Gabriel Farm	Farm 583 Somerset West	Granted to Paul Hartog, Jr in 1759, and was 2 morgen in size. He had built the house 3 years earlier. It has a simple holbol gable of the earliest type; together with that of Joostenburg it is one of the 2 earliest surviving dated gables — both were built in 1756. This house was originally T-shaped; the present back wings are modern. The house has been much altered; the gable window is old, but the rest of the facade woodwork is new.
Navarre	Firgrove	Navarre is a small H—shaped house, one back wing being a new addition. The facade of the house which is one of the finest in the Cape has one full—width and one— half—width window on each side of the door: the windows are casements, small — only four rows of panes in height — and complete with old shutters and catches. The stable— door has moulded panels. The house, now known as Navarre, was originally the homestead of the farm Nooitgedacht which was granted to Daniel Josias Malan in 1796. At that stage the farm measured only five morgen. A further grant of 13 morgen was made to his widow in 1813. The present house, with its late neo classical gable which bears the initials JJM, was built by Malan's son, Johannes Jacobus Malan, in 1814. He inherited the farm in 1830. In the latter half of the nineteenth century the farm was subdivided and transferred to Malan's heirs.
Gantouw Pass	Somerset West	The occupation of the Hottentots Holland Valley by Willem Adriaan van der Stel halted the eastward expansion of the Colony for a time and it was only after his dismissal in 1707 that the trek over the Hottentots Holland Mountains began. The steep and dangerous Gantouw Pass went through the Hottentots Holland Kloof, just north of the present Sir Lowry's Pass. This old pass cannot be reached from Somerset West but must be approached on foot by a zig-zag path from Steenbras railway station through a forestry area. Like most of the passes over

		the "Mountains of Africa", this pass followed the course of an old game track, called the "Gantouw" or Eland's Pass.
Provincial Register	**Address**	**Description**
Bredell House	Helderberg Village, Bredell Road	The Victorian dwelling known as the Bredell farmhouse, situated on the Remainder of Portion 6 of Farm 1088, Stellenbosch District.
Police Station, Gordons Bay	4 van der Byl Street, Gordon's Bay	The S.A. Police building, situated on Erf 340, Beach Road, Gordon's Bay.

3.6.4.2 Municipal Planning By-Law, 2015

The City 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 DMS.

(a) Heritage Protection Overlay Zoning (Chapter 20 Part 1)

The intention is that all HPOZ areas are gazetted as Heritage Areas. This would allow for the lifting of the provisions of S34 of the NHRA in these areas, but is conditional on HWC being satisfied that the protection and decision making mechanism under the MPBL are adequate and robust.

There are no HPOZ in the Helderberg District, however. Potential areas have been identified for investigation for conservation. These include, but are not limited to:

- Somerset West Mission Village;
- Sir Lowry's Pass and BoPass Village; and
- Historical core of Strand.

(b) Scenic Drives Overlay Zoning (Chapter 20 Part 4)

The development of a scenic drives network aimed to link the diverse parts of the Cape Town through the promotion of the scenic qualities and tourism potential along the existing road network. A number of these identified scenic routes fall within and pass through the Helderberg District.

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; and
- Links between major scenic, historical (or recreational) points of interest.

Guidelines for the management of these routes are contained in the City's Scenic Drives Network Management Plan.

Table 9: Scenic routes within the Helderberg 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 Strandfotein, Michells Plain and Khayelitsha with the winelands.
S1	Beach Road (R44), Strand	Gateway between Stellenbosch and the coast and between the coast and the winelands. Panoramic views of the Helderberg basin and False Bay
S1	Faure/Marine Drive, Gordon's Bay	High scenic qualities comparable to those of Chapman's Beach Drive. On a clear day, views across the bay to Table Mountain. Route provides access through Gordon's Bay along the coast to Rooiels, Pringle Bay, Kleinmond and Betty's Bay
S1	N2 (Baden Powell to R44 Highway)	37, 38a
S1	Sir Lowrys Pass	
S2	Coast Road, Strand	
S2	Sir Lowrys Pass Road	

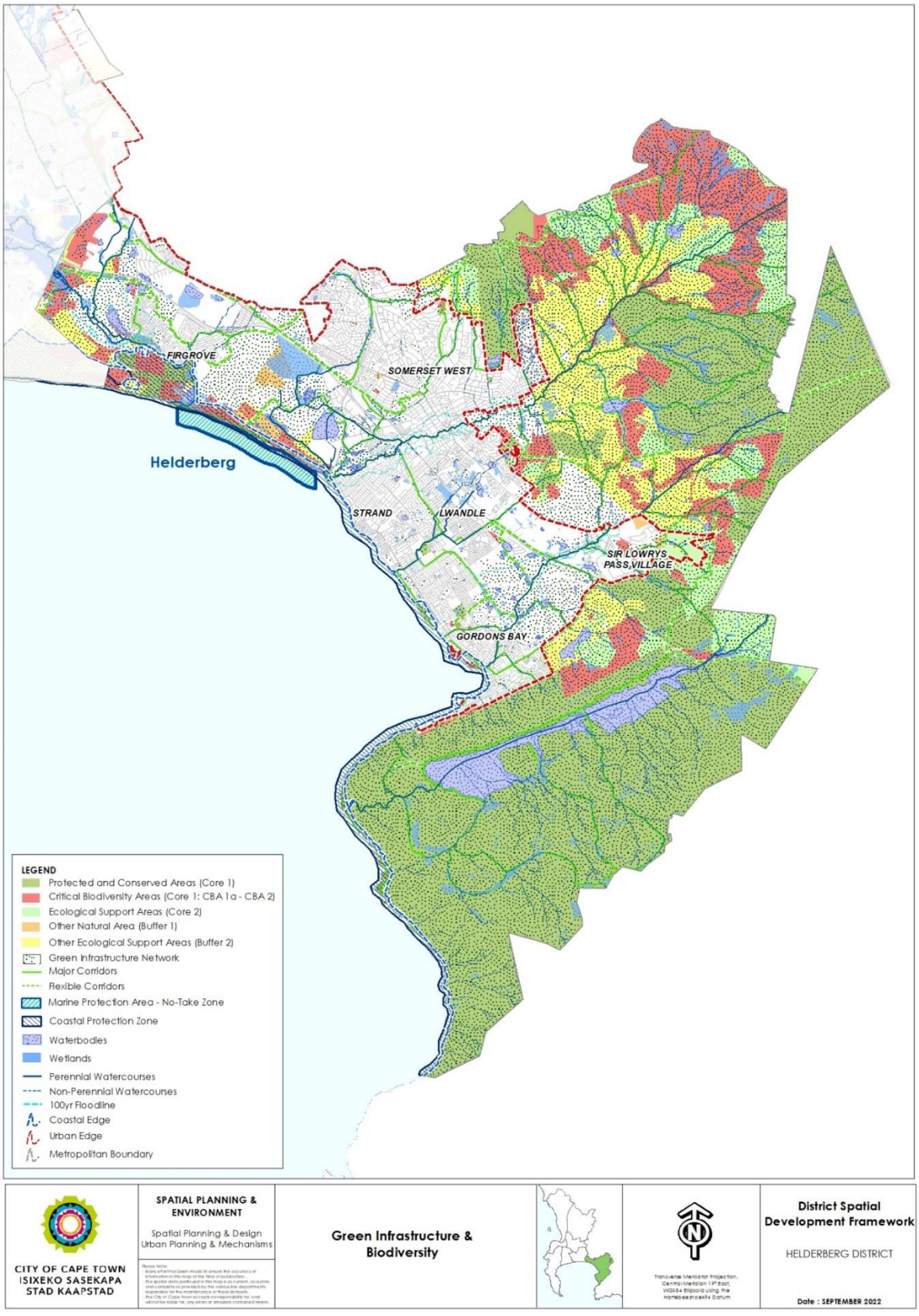


Figure 21: Green infrastructure and conservation biodiversity

[The GINet will be able to be consulted via a Viewer, which will provide information of the assets or attributes of a site. This is intended to be available on citymaps.capetown.gov.za/EGISViewer/ under 'Natural Resources and The Environment', or information will be available on request from the Environmental Management Department.]

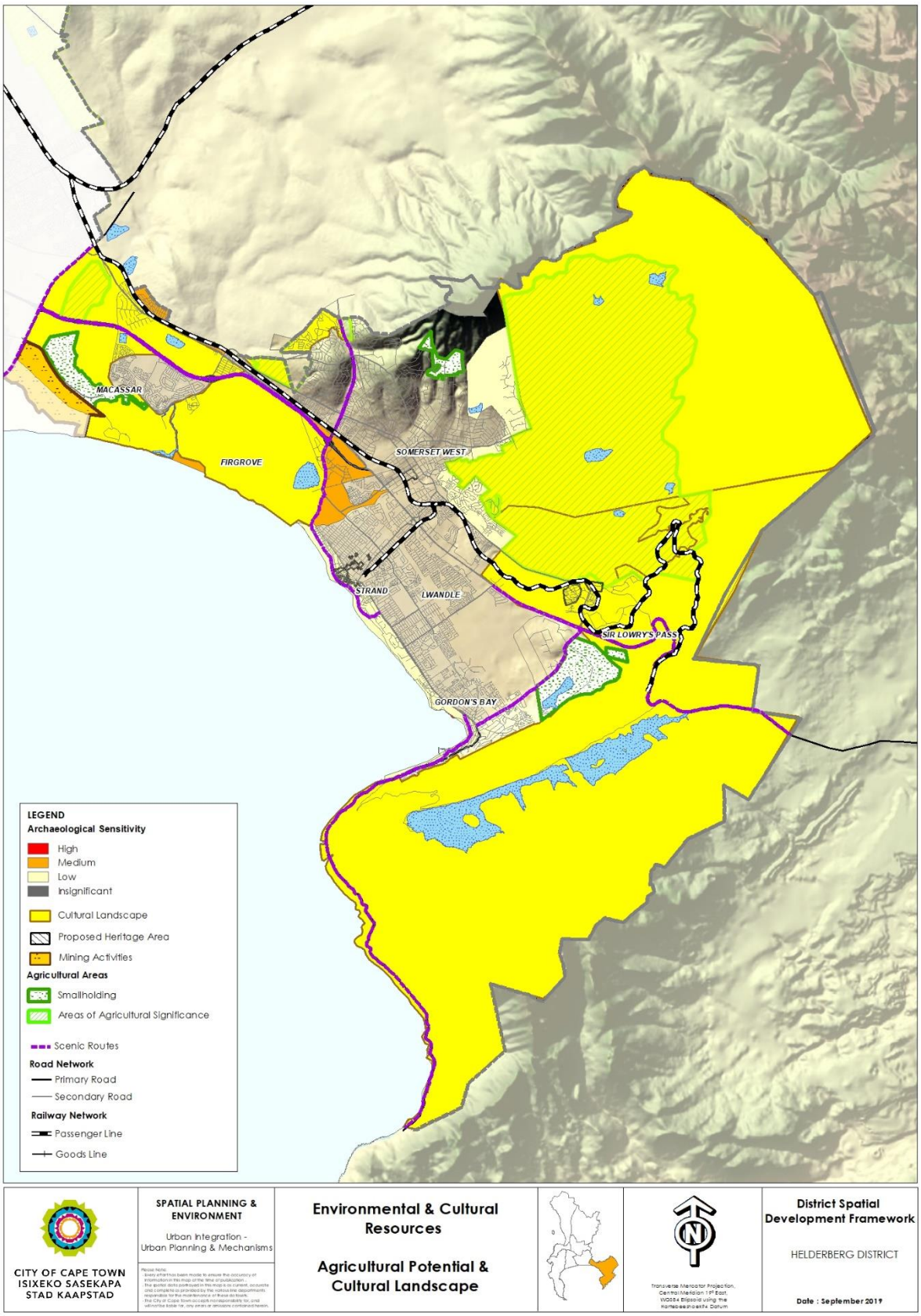


Figure 22: Agricultural potential, mineral resources and cultural landscape

3.7 Key Development Opportunities and Constraints

3.7.1 Biodiversity

- Industrial and urban expansion resulting in urban sprawl, particularly along the periphery of the existing urban areas (outside the old urban edge
- Climate change and sea level rise are exacerbating erosion and flooding particularly along the coastline;
- Private ownership of many of the high priority biodiversity sites, particularly within the urban edge, make management of these sites difficult for the City to control.
- Destructive development interfaces along biodiversity corridors.

3.7.2 Coastal Areas

- Development along the coastline and the resulting modification of the coastal environment.
- Destruction and fragmentation of dune systems due to urbanisation
- Interference with coastal dynamics and processes has led to increased erosion, loss of amenity and tourism opportunities and increasing damage and risk to coastal infrastructure and property.
- Global climate change resulting in an increasing likelihood of more frequent and more intense storm events and (in the longer term) sea level rise.

Cultural, Heritage, Agricultural and Mineral Resources

- Increased urban development pressure and industrialisation:
    - Loss of agricultural feasibility owing to numerous factors;
    - Pressure to subdivide farms into uneconomically viable units;
    - Pressure to subdivide small holding in portions which will detract from their agricultural character; Firlands, Firgrove, north of Sir Lowrys Pass village;
    - Sand mining (e.g. Macassar Dunes)
- Negative impact on heritage landscapes extending across municipal boundaries.

3.7.3 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:

    - maintaining and managing proclaimed areas;
    - sustainable harvesting of medicinal and flowering plant species;
    - potential for stimulating ecologically sustainable farming practices in conjunction with conservation of historical agricultural setting; and
    - agricultural, industrial, construction, retail and sand mining sectors.

b. Strengthens the city resilience to and mitigate risks associated with natural and unnatural disasters:

    - Rivers and wetlands provide flood control;
    - Aquifers and ground water sources are critical for water security especial in today's context; and
    - Preservation of critical biodiversity and opens spaces improves the city's ability to adapt to climate changes, by increase our ecological footprint, diversifying natural resources, etc.

c. Positive social development by:

    - Creating a sense of place and belonging by preserving and enhancing the city's cultural identity;
    - Outdoor and recreational spaces (i.e. POS, parks, beaches, *vleis*, etc.) promote social contact and interaction; and
    - Investigating the restoration of Zandvliet farm (reconstruction is probably more correct has it has largely been destroyed) and encouraging economic opportunities within the Macassar community for sustainable agriculture and heritage tourism.

3.8 Spatial Implications for Helderberg District Plan

The **Table 10** below outlines 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 10: Spatial implications of natural and heritage environment opportunities and constraints for the Helderberg District

Natural/Cultural Resource	Spatial Implication
A. Biodiversity 	1. Conserve remnants of sensitive and threatened vegetation types and control development pressure in key sensitive areas. 2. 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. 3. Rehabilitate and maintain areas of sensitive natural vegetation and high biodiversity value and establish "green corridors" where possible. 4. Ensure developments face onto green corridors or conservation areas – for both security and amenity purposes. 5. 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. 6. Consolidate and re-enforce the open space "green corridors", connecting biodiversity remnants where possible. 7. Introduce indigenous landscaping into public open spaces. 8. Control and remove alien invasive vegetation. 9. Control illegal dumping, particularly in and adjacent to important biodiversity sites.
B. Rivers, Wetlands and Ground Water	1. Establish and maintain appropriate river and wetland buffers and prevent inappropriate land uses in these areas. 2. Improve interfaces between development and natural resources. Orientate proposed new developments and existing developments that are being reconstructed, towards the rivers and include the river corridor at every possible opportunity.

	3. Prevent inappropriate land uses in identified flood prone areas. 4. Protect the re-charge and extraction areas for aquifers and groundwater sources and promote sustainable urban drainage, as appropriate. 5. Restore river systems wherever possible. 6. Clear invasive alien vegetation within river corridors and restore the riparian zone by reintroducing indigenous riparian vegetation. 7. Control illegal dumping, particularly in and adjacent to rivers and wetlands. 8. Maintain and upgrade public open spaces along rivers. 9. 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 	1. Prevent inappropriate development in or close to sensitive dune systems (Gordon's Bay, Kogel Bay Resort, Strand and Macassar Beach Resort). 2. Prevent development within the coastal edge, except at identified special place nodes, which have been identified for amenity opportunities. 3. Maximise amenity opportunities, with minimum disturbance to the coastal environment and processes. Identified areas include: • Gordon's Bay coastline • Macassar Dunes • Kogel Bay Resort • Strand Beach front 4. Avoid major new urban development infrastructure and bulk services investment in coastal areas that are vulnerable to coastal storm events and inundation.

D. Heritage and Cultural Landscapes 	1. Protect the Helderberg Wine Farms cultural landscape. 2. Avoid high-density residential development that is not in character with rural landscape. 3. Protect and rehabilitate the Sir Lowry's Pass Village cultural landscape and surrounds. 4. Ensure that development proposals do not have a negative impact on neighbouring municipal planning, i.e. ensure compatible land use across the boundaries, especially where gateway precincts are located within the municipal boundary. 5. Conserve the coastal zone of high archaeological potential. 6. Formalise Urban Conservation Areas where applicable. 7. Protect and conserve public open spaces associated with places of religious significance, e.g. Kramats at Zandvliet/Macassar
E. Mining and Agriculture 	1. Preserve and utilise high-potential agricultural land and areas currently being used for agricultural purposes. 2. Where feasible, protect mineral resources.

C: STATE OF THE BUILT ENVIRONMENT

4 LAND USE AND DEVELOPMENT TRENDS

This section of the analysis starts with a Heritage section that leads into the Land Use and Development Trends, which deals with the residential, retail and office, mixed use development, industrial, noxious industry, smallholdings, agricultural land, and coastal resorts. The section unpacks the land use and development trends by focusing individually on each Sub-district in the District and then conclude with a summary of the key trends.

This methodology is used to help group land use and development trends into physical areas to help with synthesising the information, to move towards the next phase in the District Plan Review process.

4.1 Residential

4.1.1 Sub-district 1: Macassar/Vergenoegd

Sub-district 1 includes the areas of Vergenoegd farm, Faure, Croyden, Firgrove, Macassar and Sandvlei smallholding, and is bounded by Baden Powell Drive to the west, the municipal boundary to the north, the Somchem cadastral boundary to the east and the coastline and Macassar Dunes conservation area to the south.

Sub-district 1 has experienced the highest growth rate in terms of land uptake in the last 5 years. There has been an increase in largely Single Residential land use, entrenched in gated private residential estates i.e. Sitari Country Estate, Kelderhof Country Estate, Croydon Vineyard Estate, Croydon Olive Estate, The Huntsman, Vergenoegd Village, Kelderhof Country Village, and Acorn Creek.

Croydon has experienced larger erven to be consolidated, sub-divided and rezoned to SR1 to densify the area.

Very little development can be seen South of the N2 in Macassar during the last 5 years. However, City Department: Human Settlements has recently reserved Erf 3993 (circa 35 Ha), Macassar for future Human Settlement development. This portion of land, should be investigated for cemetery purposes if the Eerste River has been canalized and the water table is sufficient for cemetery purposes. There is a pressing need for cemetery land due to the loss of the Vaalfontein cemetery site which is not suitable for this purpose due to its high water table.

Sub-district 1 can be divided into two income categories: north of the N2 and south of the N2. North of the N2 is middle to high income property owners, and south of the N2 is low to middle income residential areas. Firgrove was previously a lower income neighbourhood, but due to its location and recent demand for development in the area, the area has shown a positive growth in property value. This may be due to Sitari Country Estate, The Huntsman, and mixed use development around the Firgrove Station.

Smallholdings wedged between Macassar Road (M9) and the Eerste River has shown very little interest in subdivision and rezoning.

4.1.2 Sub-district 2: Paardevlei

Sub-district 2 is located on the seaward side of the T2 and forms part of the western environs of the developed area of Somerset West and Strand. It includes the major land holdings of Denel (Pty) Ltd (i.e. Somchem noxious industry) and Heartland landholdings (previously known as the AECI site, and currently owned by the City).

Rapid growth is seen in the Heartland Beach Road Precinct and Heartland Historical Precinct, with Single Residential and Group Housing development positively integrating with a mixed of other land uses.

Somerset Links – residential group housing infill consist of x amount of units.

De Velde Group Housing Estate – 4 stories residential group housing.

Sub-district 2 has shown the highest growth in business, office space and residential development.

4.1.3 Sub-district 3: Strand

Sub-district 3 is bounded by the T2 development route to the north; Broadlands Road to the east, the Lourens River and De Beers Avenue to the west and the False Bay coastline to the south. The area is largely urban in character with economic opportunities in the form of light industrial and retail development. Further mixed use intensification opportunities exist along the section of the T2 and Strand Main Road. Residential areas found in this sub-district include: Strand northern areas, Victoria Park, Greenways, Rustehof and the low income areas of Asanda Village, Nomzamo and Lwandle. The main attraction is the five kilometers of white sandy beach found along False Bay coast.

Lourensia park assisted Governmental housing is the most recent residential development in Sub-district 3.

Lwandle and Nomzamo are extremely dense areas. There has been a rise in illegal building work; often onto public road reserves or public open spaces. Similarly, the construction of unauthorized boarding houses has increased. The aforementioned is considered a direct response to the dire need for housing in close proximity to employment opportunities. Both these areas are located in close proximity to industrial / mixed use areas which are

employment generators. It will be critical for the City to address the form and manner of densification to ensure the safety and wellbeing of residents.

4.1.4 Sub-district 4: Gordon's Bay

Sub-district 4 is bounded by the T2; a development and scenic route to the north; the City of Cape Town jurisdictional boundary to the south-east; Broadlands Street to the west and the False Bay coastline to the south-west.

Residential development in this district has been slow, with very little new residential development in the last 5 years. During the last year some interest has been shown for the subdivision of land along Sir Lowry's Pass road, and the rezoning of land from Agriculture or Rural to Single Residential i.e. residential estates. This low interest to develop land might be due to the lack of public transport and economic/employment opportunities in the area, forcing people to travel far distances to work.

There has been rather a successful trend in Group Housing (General Residential 2) development along the Sir Lowry's Pass road, closer to Gordon's Bay. This may be due to the mixed of land uses forming a local node in the Sub-district, with Commercial, Industrial, General Residential 2, and Single Residential clustering together (refer to **Figure 24**).

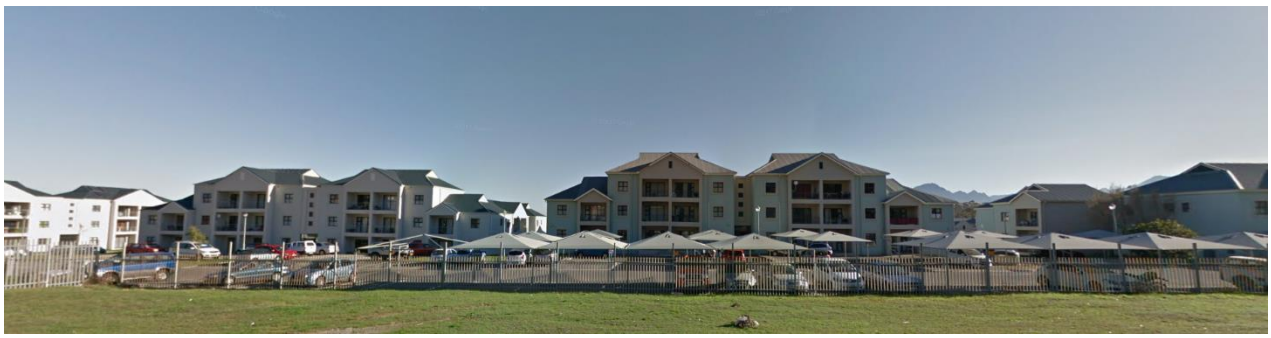


Figure 23 Seascape Mews apartments along Sir Lowry's Pass road (Google Earth, 2019)

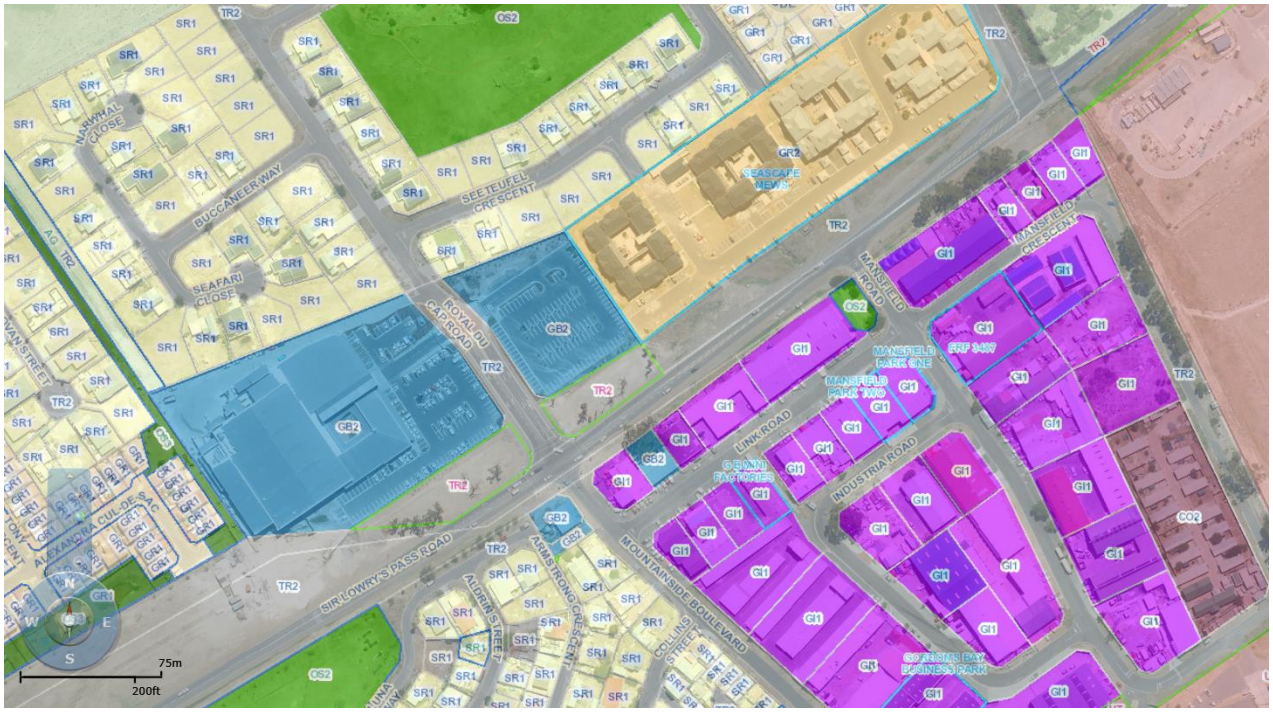


Figure 24: Mixed of land uses clustering together to form a local node (CCT, City Viewer:2019)

It is important to note that Sir Lowry's Pass road will become the first turn off from the N2, after it has been constructed and will form the gateway to Gordon's Bay. Sir Lowry's Pass road is currently intended in the 2012 District Plan to become intensified with tourism related activities, and therefore new development along this road should be guided i.e. urban design guidelines.

4.1.5 Sub-district 5: Somerset West

The sub-district is bounded by the slopes of the Helderberg Mountain to the north, the CoCT's jurisdictional boundary to the north-west and the T2 to the south. Somerset West is one of the upmarket residential suburbs in the Helderberg district.

Parel Vallei, Land en Zeezicht, Nature's Valley, Morningside, Golden Acre, Highveld, Laconcorde, Spanish Farms, Helena Heights are some of the oldest suburbs in the district. These areas play a critical role in the provision of residential accommodation for a higher income groups close to employment and public transport. The interest in these areas for

increased densification and alternative land uses are growing. The future of the areas must be carefully considered to avoid gentrification whilst still allowing for densification and land use intensification along Koeberg Road.

4.1.6 Sub-district 6: Sir Lowry's Pass

Sir Lowry's Pass sub-district is located north of the T2 on the north-eastern boundary of the district. It includes the smallholding areas (referred to in the 2012 DSDP as peripheral residential), agricultural land with vineyards estates and the Sir Lowry's Pass Village. The Sir Lowry's Pass Village has become a dormitory village and is regarded as one of the poorest communities in the Helderberg district with an increase in crime activity, and a lack of employment opportunities. A range of these socio economic factors has also led to and contributed to a large number of people living in informal structures in poor living conditions.

The Sir Lowry's Pass environs as a whole represent a unique rural character, which is under considerable development pressure to subdivide properties and establish additional urban development around the village. Predominant challenges experienced in this area include the need to manage the interface between the existing urban area and the land that was previously outside the urban edge, now pro to development subject to infrastructure capacity, while maintaining the rural character and simultaneously accommodating residential uses and creating employment opportunities.

The area previously indicated in the DSDP 2012 as Urban Peripheral development has experienced a large amount of development applications, but few has succeeded in the intended development guidelines that were envisioned for the area.

4.1.7 Second Dwelling

With the inclusion of second dwellings in the single residential zone as an additional use right, the process for obtaining such rights were thus streamlined. The take-up of such rights are however still subject to title deed restrictions in some of the older areas. In respect of the latter, the additional use right has to be tested in the Traffic Evacuation Model (TEM) to ensure that sufficient infrastructure exist for evacuation in case of emergency.

4.2 Mixed Use

The Mall Triangle and Paardevlei is the best example of mixed use development in the district. During the last 5 years the idea of a mixed use, or mixed of land uses has slowly become a way to develop land in well located areas in the district.

As mentioned, the areas around Somerset Mall has seen the highest degree of mixed use development in the last 5 years. Other areas, such as, Gordon's Bay beach front, and Somerset West CBD has shown very little development in terms of diversification and densification over the last few years.

The high unemployment rate and limited opportunities within Nomzamo & Lwandle has forced residents to find alternative sources of income. It is prevalent through the number of illegal house shops, liquor shops and ECDs.

There has been a slow uptake in what could be considered genuine mixed use developments. Two factors are considered to play a role:

- The models for financing, residential versus commercial developments differ;
- Existing legislation does not force a mix of uses but rather allows developers to pick financially viable uses from a list of primary rights within a particular zone.

Unless incentives are provided or legislation is changed, the vision of creating developments that provides a rich variety of uses is considered out of reach.

4.3 Industrial

The district boasts a significant amount of developed industrial land, with a rapid uptake of undeveloped portions of Industrial land in existing Industrial nodes. Areas with the highest agglomeration of Industrial land is: Somerset Mall Interchange, Deep Freeze (Macassar), Strand Industria, Gants Park (Strand), Asla Park, Strand Onverwacht, George Park, Helderberg Industrial Park and Mansfield Industria. The latest interest in uptake of Industrial development is around the Firgrove Station, Faure Station, and Firlands (for storage facilities).

- Jubilee Vineyard Estates (Erf 5541, Eersteriver) is situated north of the M49 road extension, and is bounded northwest by the R310, and north east by the R102. General Business 1 and General Industrial (storage) land.
- Faure Industrial Park (GI1) (Corruseal Group; Erf 49 Faure, Croydon) situated south east of the Faure Train Station.

4.4 Noxious Industry

Somchem is the most prominent area that falls within Noxious Industry in the Helderberg District. This area should be reserves for noxious trade, and risk activity. Consent for uses outside of this zoning should take into account potential negative impacts. With the development of Paardevlei East of this site, consideration should be given to the social, health and safety impacts of proposed industries.

4.5 Retail and Office

4.5.1 Sub-district 1

- Sitari Village Mall
- Croydon local node

4.5.2 Sub-district 2

- The Sanctuary Shopping Centre
- Somerset mall Triangle
- Heartland Historic Precinct
- Heartland Beach Road Precinct

4.5.3 Sub-district 3

Strand CBD has seen a decline in commercial and office space. This can be due to the lack of safe private vehicle parking for business. There has been a trend in businesses relocating to newer office space in Paardevlei that is more accessible and a larger agglomeration of economic activity. Action from the public to improve the safety and activity in the Strand CBD has shown an increase in cleanliness and safety.

4.5.4 Sub-district 4

This District showed very little growth in economic activity.

4.6 Smallholdings

Extensive land units ranging in size and character were previously located outside the Urban Edge. Since the 2018 MSDF, these areas are now indicated as either, developable areas subject to infrastructure capacity, or as areas that should be protected due to their high value as agricultural value.

Smallholding areas in the district include the following:

- Firlands (forming the gateway from the N2 into Gordon's Bay);
- Macassar (Sandvlei) smallholding areas situated next to the Eerste river;
- Parel Valley Smallholdings.

4.7 Agricultural land

Large portions of land in the Helderberg district is classified as high potential and unique agricultural land and, agricultural areas of significant value. Most of these areas are actively cultivated. The most significant areas include: Lourensford Wine Estate, Vergelegen Wine Estate, Morgenster Wine Estate, Sir Lowry's Pass environs, areas North of Sir Lowry's Pass road (M9), and the Eastern portion of the Vergenoegd Farm.

There is, however, a tendency in the last 5 years to rezone agricultural land for the development of urban use due several reasons, such as its great location in terms of access to public transport e.g. Agricultural land around Firgrove Train Station).

It is important to note that these portions of land should be preserved and utilised for food security and urban intrusion should be prevented. Further sub-division of agricultural land should also not be permitted.

4.8 Coastal Resorts & Tourism Attractions

The district has a number of coastal resorts (Voortrekker Park Resort, Harmony Park, Fleur Park is City owned land which has been long termed lease Hendon Park, and the Kogel Bay Resort) with a variety of accommodation options, which includes self-catering accommodation, camping and caravan stands. The Macassar beach resort has discontinued its use of the facilities constructed due to the dune system moving across the facility's amenities.

4.9 Development Pressures

There has been a rapid increase in the private sector to develop land in the Helderberg district over the last 5 years. Private residential gated estates on Agricultural land has been an ongoing battle in the District in terms of protecting valuable agricultural land and finding appropriate land for urban development.

Areas currently experiencing the greatest amount of development pressure linked to limited infrastructure, land and/or services capacity are listed below:

- Macassar – severe lack of Stormwater capacity & Electricity capacity
- Croydon, Sitari Country Estate, Deep Freeze, Firgrove, Somchem.
- Strand along the railway – slight lack of water capacity.
- Broadlands Park, Sercor park, Fairview Golf Estate – slight lack of water capacity.
- Gordon's Bay – severe lack of sanitation infrastructure capacity
- Jonkers Hoogte – slight lack of water capacity.
- Erf 228 RE, Erf 234, Erf 226– severe lack of electricity

4.10 Vacant Land

Figure 25 depicts all the vacant land opportunities in Helderberg. The vacant land has been grouped into four categories using the following criteria:

Table 11: Vacant Land

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	Potentially-utilised vacant land:	Vacant Land **with any** of the following attributes: • Reservations, • Pending building plan approvals, • Any public projects in pipeline stage,
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]

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. However, there are some larger-scaled properties which can potentially accommodate additional mixed use development (non-residential and residential land uses), other than only community or recreation.

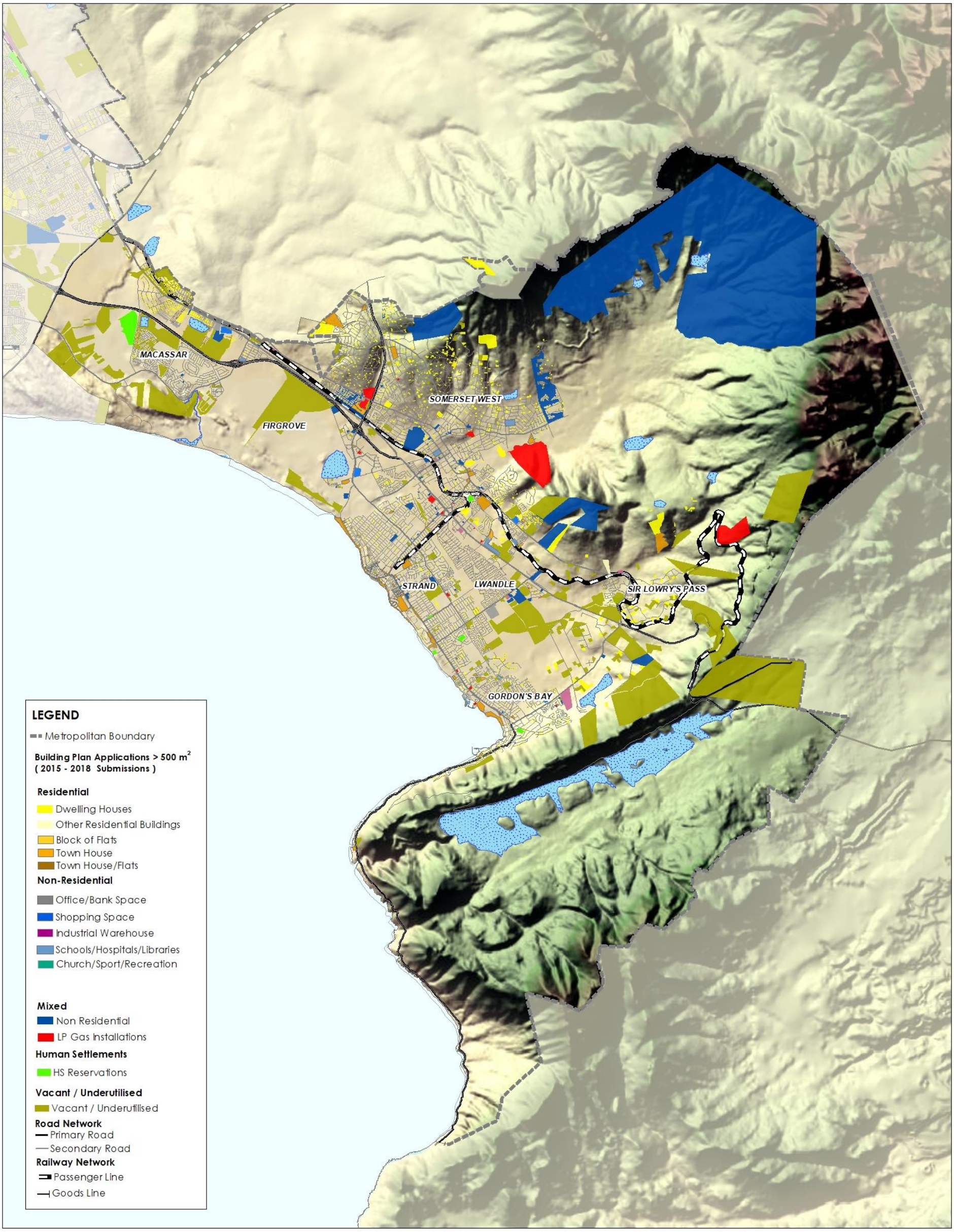


Figure 25: Building Plan Approvals 2012-2018

4.11 Key Challenges and Opportunities

4.11.1 Opportunities

- Protect natural resources to attract more tourism and investment.
- Enhance heritage qualities of unique precincts (eg Macassar/Zandvliet and Sir Lowry's pass village) with the aim of encouraging economic opportunities for the benefit of local (vulnerable) communities
- Identify areas that are not conducive for residential development (e.g. coastal zone along AECI site) and create biodiversity corridors along the false bay coast
- Redevelopment of City Resorts along False Bay coast to enhance tourism opportunities and activity.
- Appropriate interventions to enhance tourism attraction and the use as a City amenity of Macassar Beach resort.
- Underdeveloped land with existing latent rights should be encouraged for development (or expansion in the case of existing developments with latent rights) without having to undergo lengthy land use applications
- Creating incentives for consolidation of erven to promote cohesive developments instead of fragmented developments along activity corridors.
- Investigate the appropriate use for development and disposal of Vaalfontein cemetery site (this site can no longer be developed as a cemetery due to its high water table which makes it not feasible for its intended purpose).
- Establish Firgrove Station Precinct as a mixed use development with higher density development due to its TOD potential.

4.11.2 Challenges

- Loss of heritage character of precincts where densification policy has been implemented as a "one size fits all" without taking into consideration the unique qualities of the receiving environment
- Firgrove Station Area – there is a need for higher density mixed use development to the north of the Station, however this land is currently outside the City's jurisdiction. A need for readjustment of municipal boundaries is required to allow the Transport Accessible Precinct to reach its suitable development ability.
- Infrastructure capacity
- Service delivery performance is low in Lwandle and Nomzamo (canals are blocked due to solidwaste).
- Slow development of industrial land in Deep Freeze limiting employment opportunities for the Macassar residence.
- Lack of NMT routes due to gated residential estates

- Transversal co-operation to provide key supportive land uses (e.g. magistrates courts, hospitals, clinics, libraries, functional safe open space, public schools) for the district remains a challenge due to planning and financing for such not being coordinated between the different spheres of government.

- Public resistance to development, regardless of approved city policy

- Legislation currently does not enforce the provision of a range of land uses within the relevant mixed use zones.

- Financial models of developers are not accommodating mixed use type developments, furthermore there are no incentives or legislative mechanisms to support this type of development.

- Fragmented developments due to single-erf ownership.

5 TRANSPORT AND ACCESSIBILTY

5.1 Introduction

There is a strong focus on transport as an informant of the CTMSDF, using the Transit Oriented Development (TOD) Strategic Framework. This is in line with international planning trends, which recognise 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 chapter therefore provides a status quo analysis of the mobility and accessibility networks within the Helderberg District as well as on the application of TOD to a district and corridor level. **Figure 26** below, is useful in this regard, illustrating the concept of TOD at various scales.

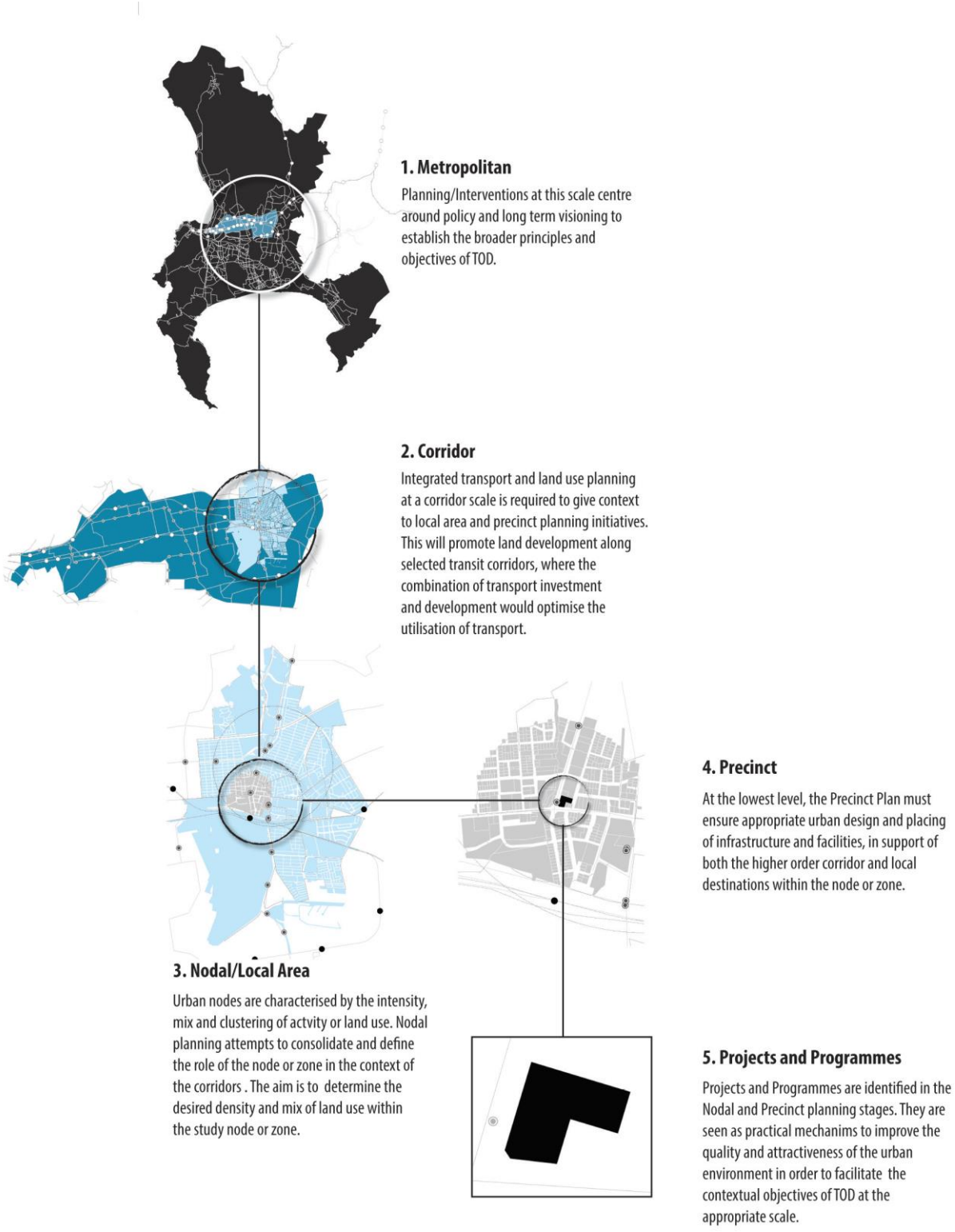


Figure 26: Transit Oriented Development at various concepts (TOD Strategic Framework, 2016: 24)

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 has developed a host of strategies that 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. There are no transport-specific strategies directed at the Helderberg District itself, however.

5.3 State of Public Transport

5.3.1 Existing Infrastructure and Services

5.3.1.1 ***High-Order Public Transport***

(a) Rail

There is a passenger railway line running from Strand to Bellville and the Cape Town CBD. It includes a Business Express service on the Northern Line.

(b) Bus Rapid Transit

Historically, the railway line has been seen as the main trunk service in the district's integrated public transport system. It is well located to serve the majority of the district and connects to both the Bellville and Cape Town CBDs. Hence, the Helderberg District does not have any existing Bus Rapid Transit (BRT) services. For similar reasons, no Feeder services are located in the Helderberg District.

5.3.1.2 ***Low-Order Public Transport***

(a) Minibus Taxis, Golden Arrow Bus Service and Related Public Transport Interchanges

The main minibus taxi and Golden Arrow Bus Service (GABS) activity is centred on the Somerset West Public Transport Interchange (PTI) and, to a lesser extent, those at Macassar, Nomzamo and the Strand railway station. There are no clear public transport "routes", apart from the dominant service along the N2, taking commuters in and out of the district. The district is served by the following public transport facilities:

No	Name	Formal/ Informal	Any plan for upgrading
1	Gordons Bay Minibus Taxi Rank	Informal	
2	Lwandle	Formal	
3	Macassar Minibus Taxi Terminus	Formal	Scoping

No	Name	Formal/ Informal	Any plan for upgrading
4	Nomzamo Minibus Taxi Terminus	Formal	New asset completed (2015)
5	Somerset Mall Public Transport Interchange	Formal	
6	Somerset West Public Transport Interchange	Formal	Procurement phase
7	Somerset West Station Transport Interchange	Informal	
8	Strand Station Transport Interchange	Formal	
9	Firgrove	Informal	

(b) Non-motorised transport (NMT)

Most non-motorised transport (NMT) facilities (comprising primarily of cycling) are still in planning, except for existing routes in Macassar and Broadway Boulevard. There is a strong presence of commuter cyclists around Nomzamo, which should be supported in the roll-out of the NMT plans, and as roads in the area are maintained and upgraded.

5.3.2 *Planning Infrastructure and Services*

5.3.2.1 Rail

The need has been identified for a new railway station between the Van der Stel and Strand stations. Furthermore, PRASA has planned a double track with 3-minute headway multiple-aspect signalling between Eerste River and Strand. While this project is included within the Western Cape Regional Spatial Development Framework, dates have not been set for its implementation.

5.3.2.2 Bus Rapid Transit

No BRT Trunk or Feeder Routes are planned in the near-future. However, in the long term, a BRT Trunk Route from Gordon's Bay to Retreat has been planned as part of Phase 3 of the MyCiTi rollout.

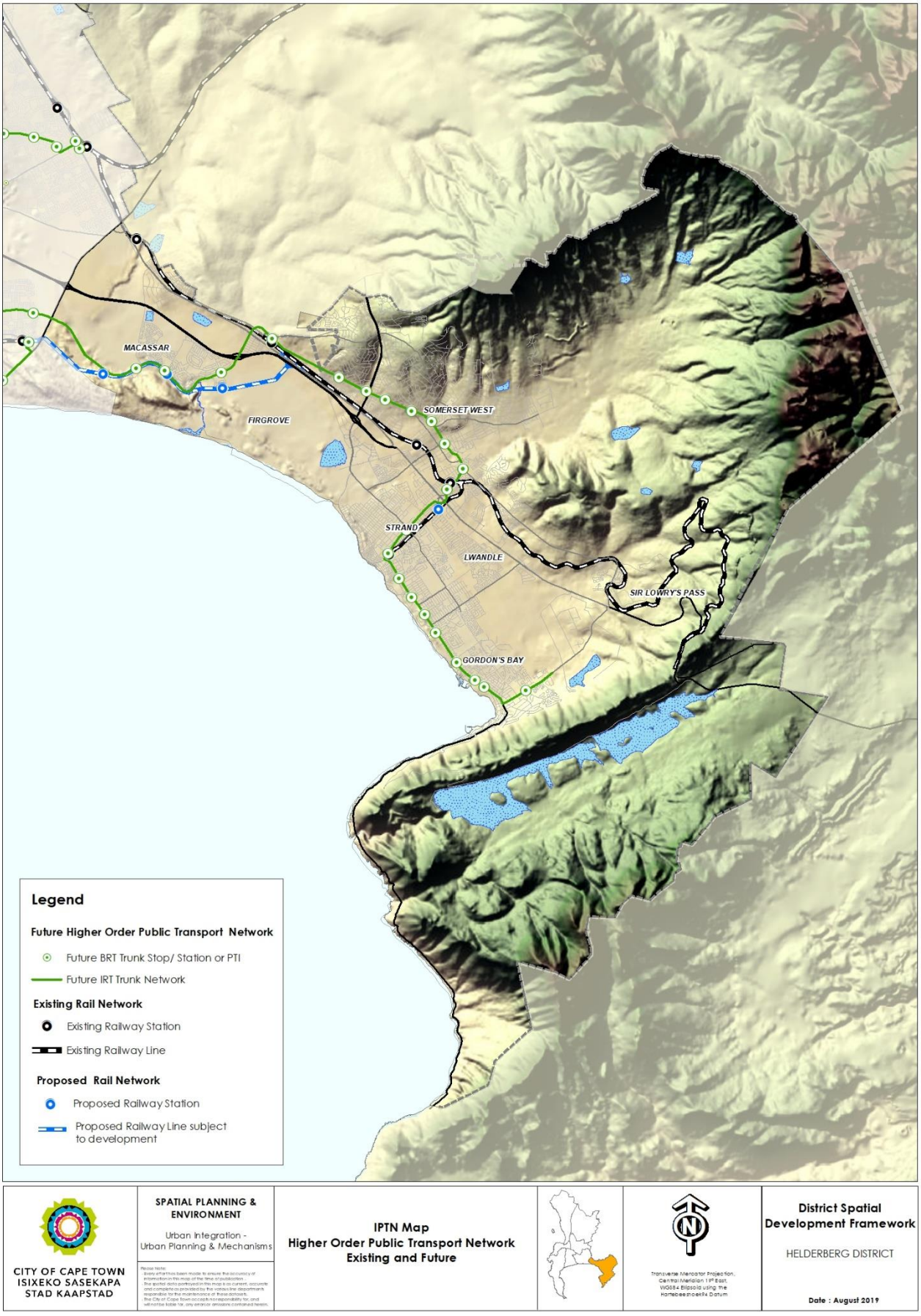


Figure 27: Existing and future high-order public transport services in the Helderberg District (IPTN, 2032)

Figure 28: Existing and future non-motorised transport (cycling) routes in the Helderberg District (IPTN, 2032)

5.3.3 Public Transport Accessibility

As part of the TOD Comprehensive Land Use Model (TODC), 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 Cape Town'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 Cape Town'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 and Feeder)

C6. Intensity: Number of people within 500 m of a station/core feeder stop

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

1 Few TAPs in the district have high accessibility; these are linked to the railway system.

2 The planned MyCiTi Phase 3 routes will extend the TAPs corridors significantly.

3 Some areas are not served by public transport (or minimally served), resulting in no overall accessibility score, largely as a result of topographical factors and limited habitation.

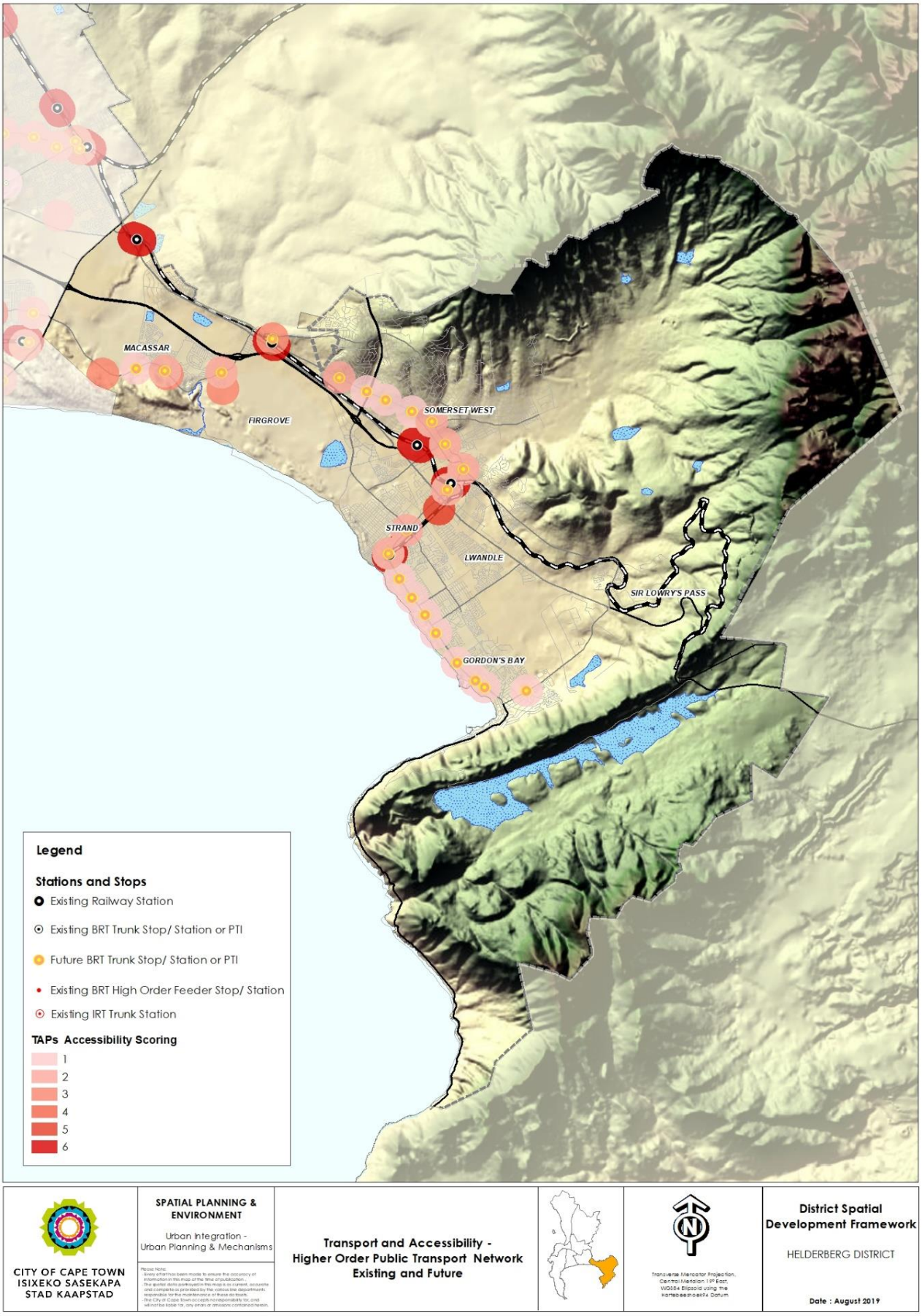


Figure 29: TOD Comprehensive Land Use Model – Transit Accessible Precincts accessibility scores across the Helderberg District (TOD Strategic Framework, 2016 & IPTN, 2032)

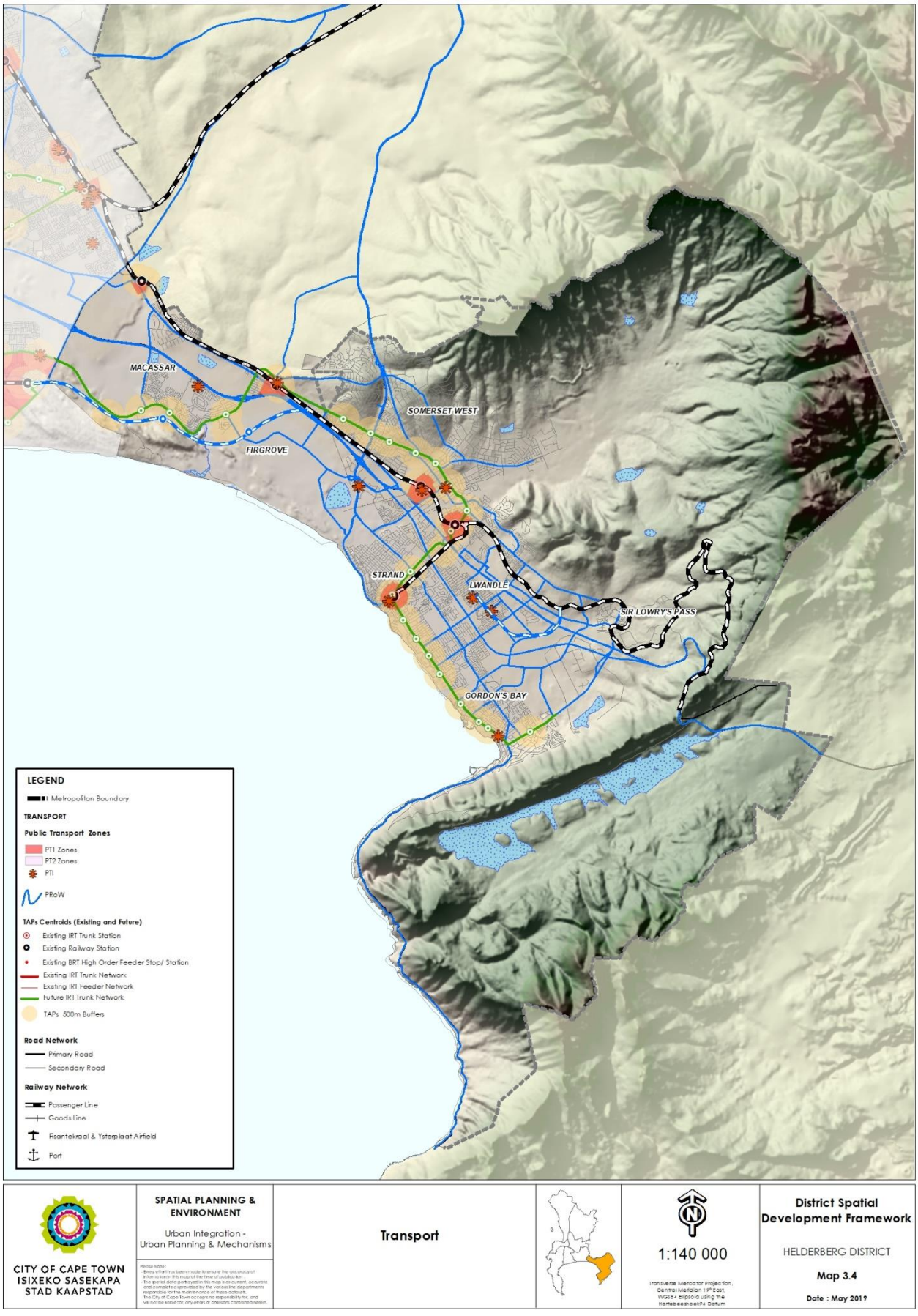


Figure 30: Composite map of existing and future public transport services and related infrastructure in the Helderberg District (TOD Strategic Framework, 2016 & IPTN, 2032)

5.4 State of Road Infrastructure

5.4.1 Existing Road Infrastructure

The district road network reflects the intensity of development, which is much denser in the central part of the district. Generally, the road network south of the N2 is more connected and areas are consequently more permeable. However, north of the N2, Somerset West is dominated by topographical barriers and modern residential estates, which create limited access points and even more limited through-routes, concentrating traffic onto the main arterials.

The **Figure 31** below provides and overview of existing, recently completed and planned roads in the district. There are no historic road schemes which need to be removed or amended.

5.4.2 Parking

A popular park-and-ride facility exists for GABS users at the Somerset West police station, initiated as part of the FIFA 2010 World Cup transport plan, which continues to meet a need. By contrast, parking pressure exists in the Strand CBD area.

5.4.3 Planned Road Infrastructure

5.4.3.1 N2 Upgrade

The N2 freeway realignment upgrading and construction is planned to start in the next 2–3 years, with new interchanges planned in Victoria Street and Onverwacht Road, according to latest feedback from SANRAL. The impact it may have on the existing network is still questioned with regard to accessibility, for example, in Main Road and Fabriek Street. The upgrade of the T2 is almost complete and will address congestion problems in the area. This upgrade is believed to also accommodate the upgrade of Main Road 108 (Gordon's Bay/ Sir Lowry's Pass Road).

5.4.3.2 Other Planned Road Upgrades

In addition to the N2 freeway upgrade, there has been significant other road construction in the district in recent years. Recently completed roads, as well as possible new or upgraded connections, can be seen in **Figure 31** below, and are not listed separately. The completion of Broadway through Strand and Gordon's Bay remains a priority, as does the duelling of Broadway from Strand Golf course to Strand Main Road. Furthermore, a number of road proposals have been made to strengthen connectivity and general mobility in the district.

However, due to budget constraints, construction is usually dependent on the development contributions from new developments. Where this is not possible or insufficient, construction will be in accordance with City priorities (for example, the Congestion Management Strategy).

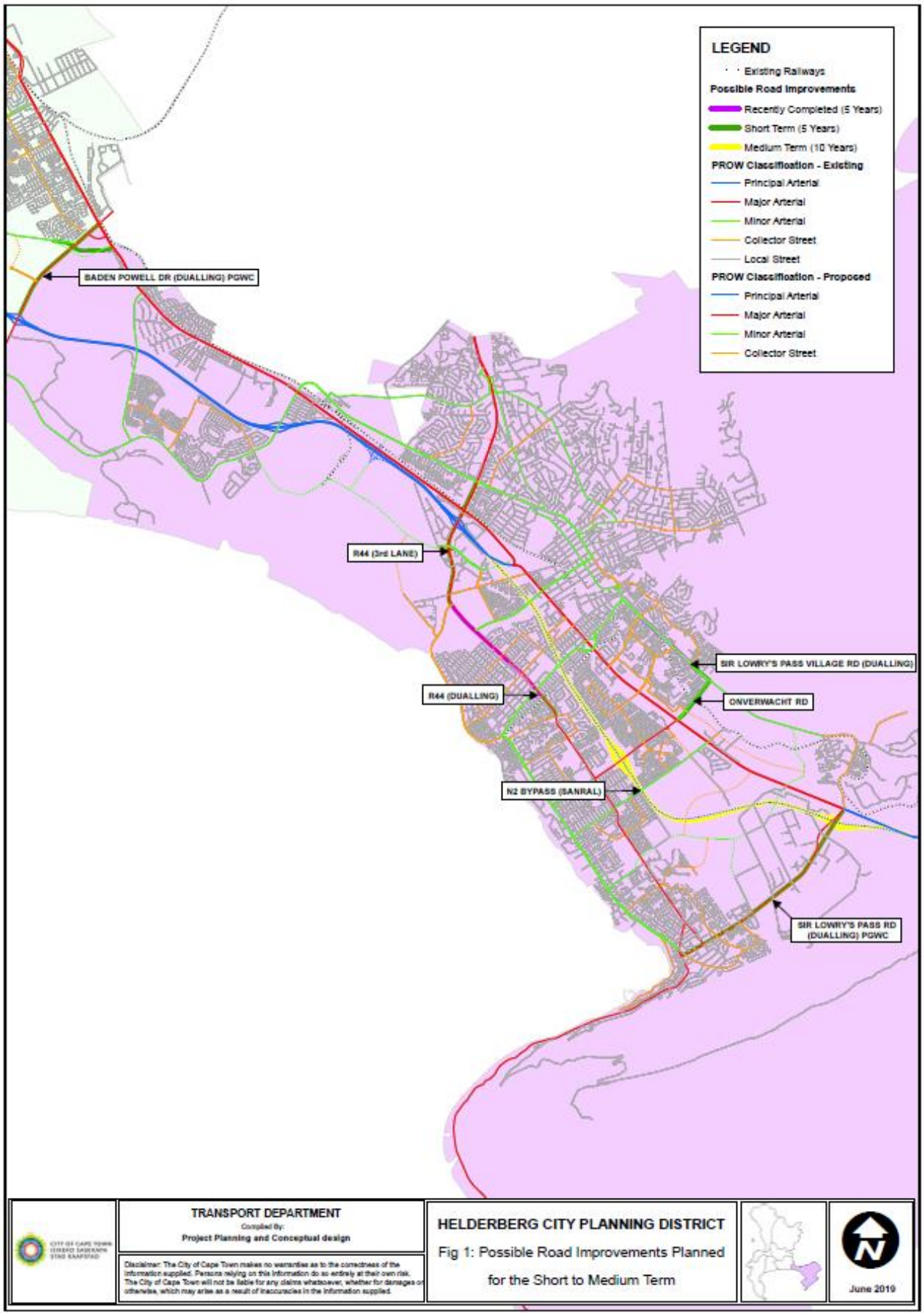


Figure 31: Existing and planned public right of way (road) upgrades and new links in the Helderberg District (CTIP, 2018)

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. Furthermore, the impact of accidents is great.

An overview of freight movement in the district is given in **Figure 32** below. The largest volumes are transported on the N2 freeway. This links the fruit-growing hinterland to the port (fruit being a significant export commodity) and related to the port. Furthermore, goods from the port and the city are further exported to other regions of the Western Cape along this route. 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 largest industrial area is also located in the Helderberg District, having easy access to inland markets. Therefore, 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.

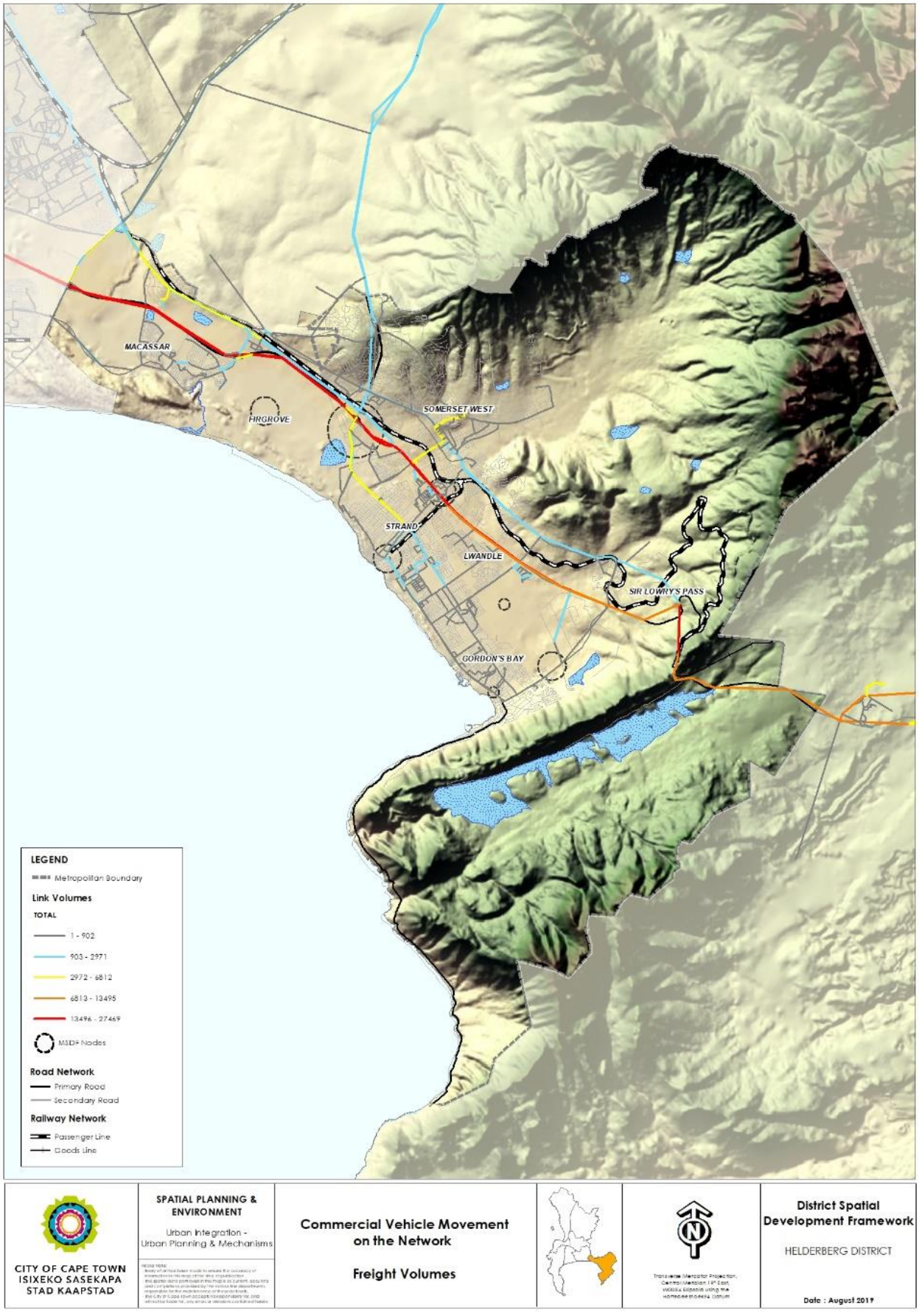


Figure 32: Distribution of freight volume in the Helderberg District

5.6 Travel Patterns

5.6.1 Current Travel Patterns

In terms of travel demand patterns, the following two features can be observed across the Helderberg District:

- Development is thinly spread, with much of the district inaccessible due to the Hottentots Holland mountain range to the south and east and the Tygerberg Hills to the north. Much of the central part of the district is under farmlands. This undermines the viability of a public transport system in these areas

- There is a good mix of trip generators and trip attractors, resulting in not only internal trips, but also a flow both in and out of the district.

5.6.2 Origin-Destination Movements for the District

In terms of metropolitan origin-destination movement, the following patterns emerge:

- There is relatively little movement out of Helderberg, but even less movement into the district, such that there are almost twice as many trips made from Helderberg to other districts as there are trips made from other districts into Helderberg.

- The greatest movement pattern in relation to the district is inbound, from the Khayelitsha, Mitchell's Plain & Blue Downs District, using public transport.

- The greatest destination districts from Helderberg are Table Bay and Tygerberg, for both public and private transport.

- Private transport trips were previously mainly to the Table Bay District, but now equally to the Tygerberg District.

- Despite Helderberg's peripheral location, there are a significant number of commuter trips to the northern and southern periphery of the city.

The above trends translate to an overall tidal movement to and from the Helderberg – people travelling out of the district for work in the morning (primarily to the Cape Town and Bellville CBDs) and back to the district in the afternoon.

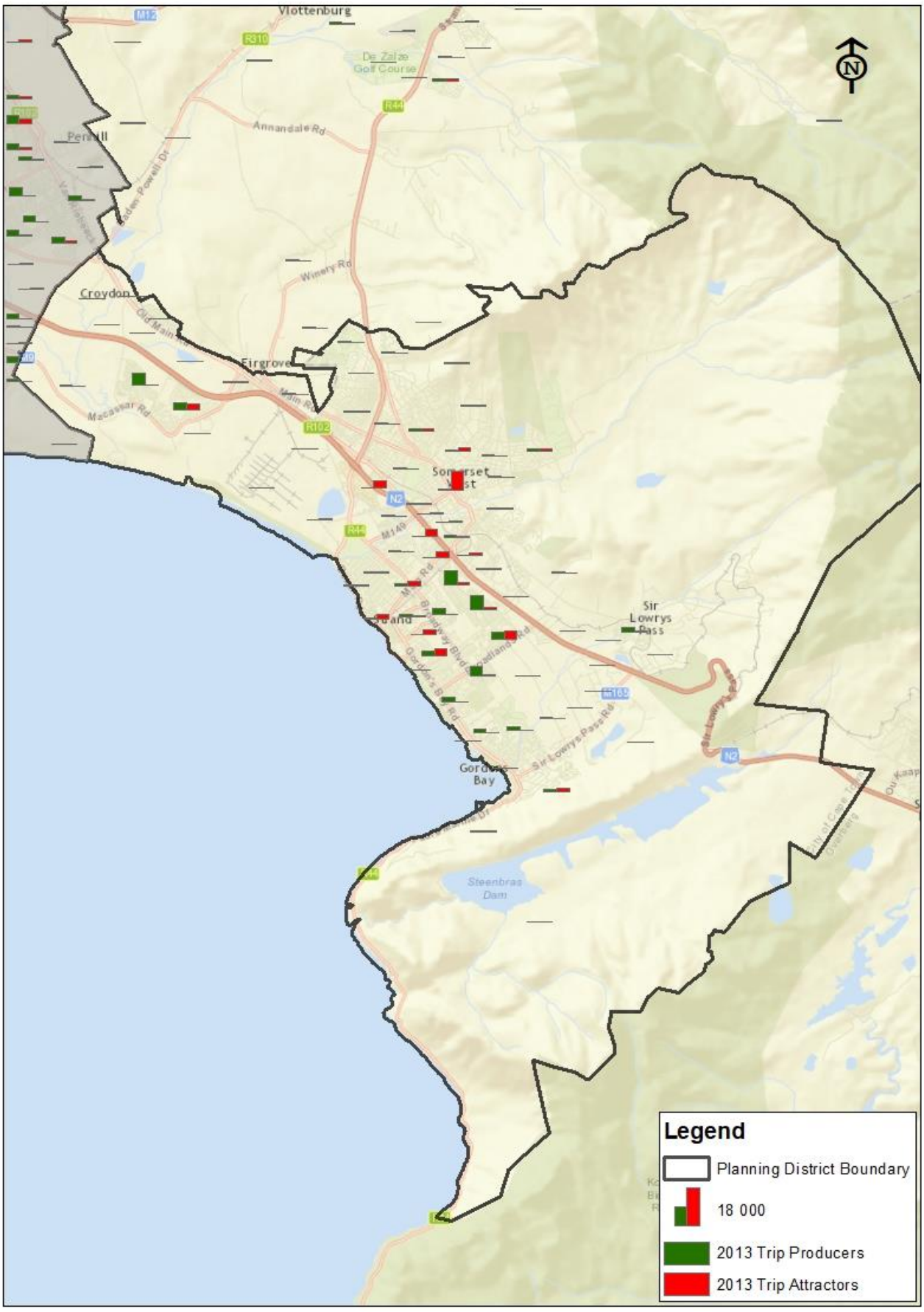


Figure 33: Trip attractors versus trip producers in the Helderberg District, 2013 (EMME Travel Demand Modelling, 2013)

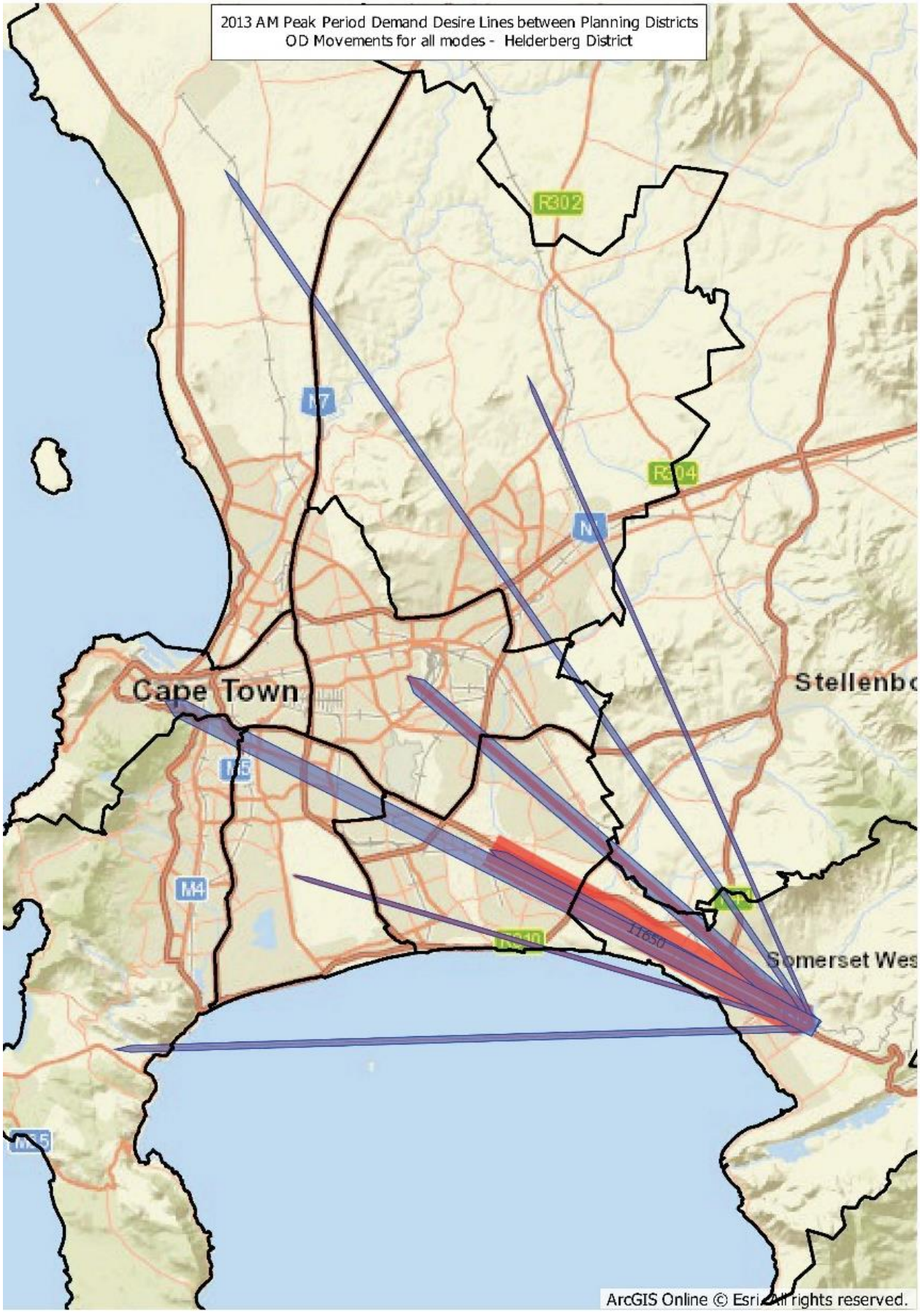


Figure 34: Origin-destination mapping of peak morning commuter trips for all modes of transport in relation to the Helderberg District, 2013 (EMME Travel Demand Modelling, 2013)

Figure 35: Origin-destination mapping of peak morning commuter trips by public transport in relation to the Helderberg District, 2013 (EMME Travel Demand Modelling, 2013)

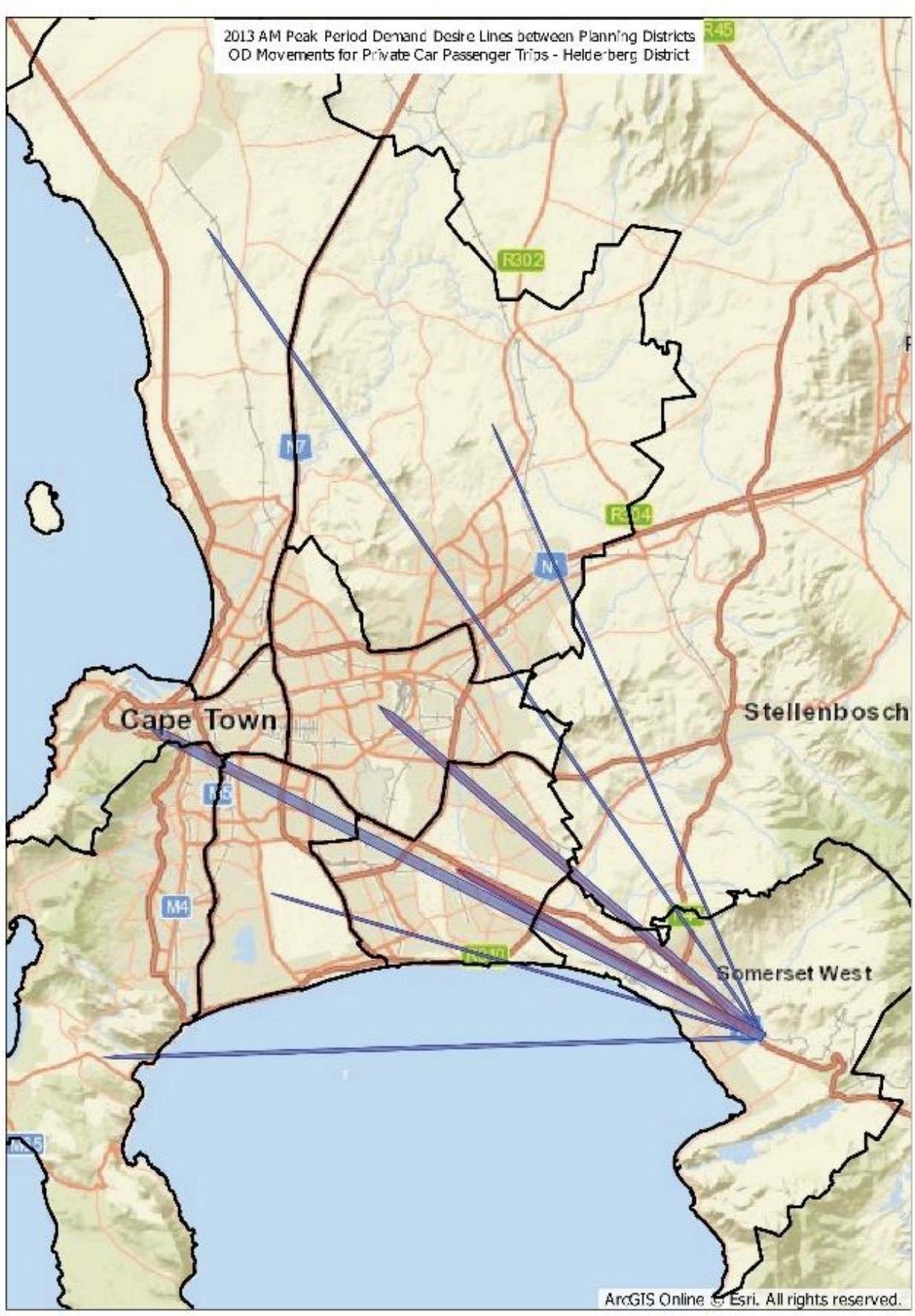


Figure 36: Origin-destination mapping of peak morning commuter trips by private car in relation to the Khayelitsha, Mitchells Plain & Greater Blue Downs District, 2013

Table 12: Travel patterns (mode of transport and destination) from and to the Helderberg District relative to other planning districts, 2013 (EMME Travel Demand Modelling, 2013)

Origin	Destination	NMT	Private car	Taxi	Bus	BRT	Train	Public transport (taxi, bus, BRT & train)	Total
Helderberg	Table Bay	0	289	3302	1768	10	4 233	9 313	**9 602**
Helderberg	Blaauwberg	0	877	1359	721	1	108	2 189	**3 066**
Helderberg	Northern	126	1 369	1099	563	0	161	1 823	**3 318**
Helderberg	Tygerberg	944	5 151	3451	2322	0	838	6 611	**12 706**
Helderberg	KMPBD	468	760	729	1040	0	1 312	3 081	**4 309**
Helderberg	Cape Flats	2	861	828	636	0	1 058	2 522	**3 385**
Helderberg	Southern	0	400	1134	707	0	1 878	3 719	**4 119**
Helderberg	**All districts**	**1 540**	**9 707**	**11 902**	**7 757**	**11**	**9 588**	**29 258**	**40 505**
Helderberg	Helderberg	5 477	6 975	6 914	2 404	0	1 749	11 067	**23 519**
Table Bay	Helderberg	0	306	89	46	0	242	377	**683**
Blaauwberg	Helderberg	0	42	85	82	1	15	183	**225**
Northern	Helderberg	79	766	446	305	1	245	997	**1 842**
Tygerberg	Helderberg	295	1 769	1 804	930	0	276	3 010	**5 074**
KMPBD	Helderberg	452	1 744	2 538	4 611	0	2 741	9 890	**12 086**
Cape Flats	Helderberg	0	709	609	606	0	740	1 955	**2 664**
Southern	Helderberg	0	256	72	71	0	646	789	**1 045**
All districts	**Helderberg**	**826**	**5 592**	**5 643**	**6 651**	**2**	**4 905**	**17 201**	**23 619**

5.6.3 Cost of Travel

The tidal nature of movement out and back into the Helderberg District discussed above results in an inefficient use of public transport and road infrastructure. This has significant costs, which can be broken down as follows:

5.6.3.1 User Costs

The newly developed Urban Development Index (UDI) measures the cost of travel for different income groups, under different travel modes, and to their top five destinations[8] 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 (of 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.

The Helderberg District is quite distinct from all the others in that there is an exceptionally high modal split in favour of private transport: more than 70% (up to 90% on the northern part of Somerset West). Thus, the majority of transport users enjoy short travel distances (as low as 5 km in the Strand and Somerset West areas), low travel times (11-12 minutes in Heldervue, Strand and southern Somerset West) and relatively low direct costs as a percentage of income (31–32% in the Heldervue, Strand and Somerset West areas for the low income group).

Even public transport users fare well, with low direct costs as a percentage of income for the low income group in the Gordon's Bay and Strand areas (8% and 10% respectively), and generally low travel times on all modes.

5.6.3.2 Operational costs

There is a high cost to operating public transport services in a sprawling urban environment. If the travel demand patterns of the district (and city as a whole) and resultant inefficient use of public transport remain at current variables, they will translate into an increase in the recurrent annual operating deficit for the whole MyCiTi BRT system by approximately R1 billion (IPTN Business Plan, 2017).

5.6.3.3 Environmental and Economic Costs

Environmental and economic costs arising out of Cape Town's tidal travel demand patterns are as follows:

- Serious constraints on economic growth and development (congestion currently costs Cape Town R2.8 billion per year);
- Air pollution; and
- CO_2 emissions and energy consumption.

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

In modelling the future land use patterns which would generate the demand for trips necessary to sustainably support the operation of Cape Town's Integrated Public Transport

[8] The top five commuting destinations were identified for each area based on employment and education patterns.

System (IPTN), an "ideal" scenario, namely the TOD Comprehensive Land Use Model (TODC) was run for the year 2032. The aim of the TODC is to balance trip attractors (non-residential land uses) and trip producers (residential land uses) in all areas. This will theoretically eliminate/minimise the need to travel long distances by locating jobs and residences in the same area. **Figure 37** below, illustrates this ideal future balance of trip attractors and trip producers, with growth in the right locations to minimise travel time.

From a transport optimisation perspective, the current and anticipated residential land uses (trip producers) 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 necessitates mixing (diversifying) land uses. Among its functions, this District Plan will determine how this is to be achieved. Consequently, the following features for the district as whole should be pursued:

- A fairly balanced growth in both trip generators and trip attractors, except on the Paardevlei site, where potential exists for a significant number of new trip attractors (job opportunities). The nature of land use development on Paardevlei will significantly alter the travel patterns in the district, for better or worse

- Apart from that, the greatest growth should be concentrated along the N2, with the farms and mountainous areas remaining undeveloped. Continued residential expansion into these areas will exacerbate travel patterns.

- Development should result in reduced travel through keeping employment **for** the district, **within** the district.

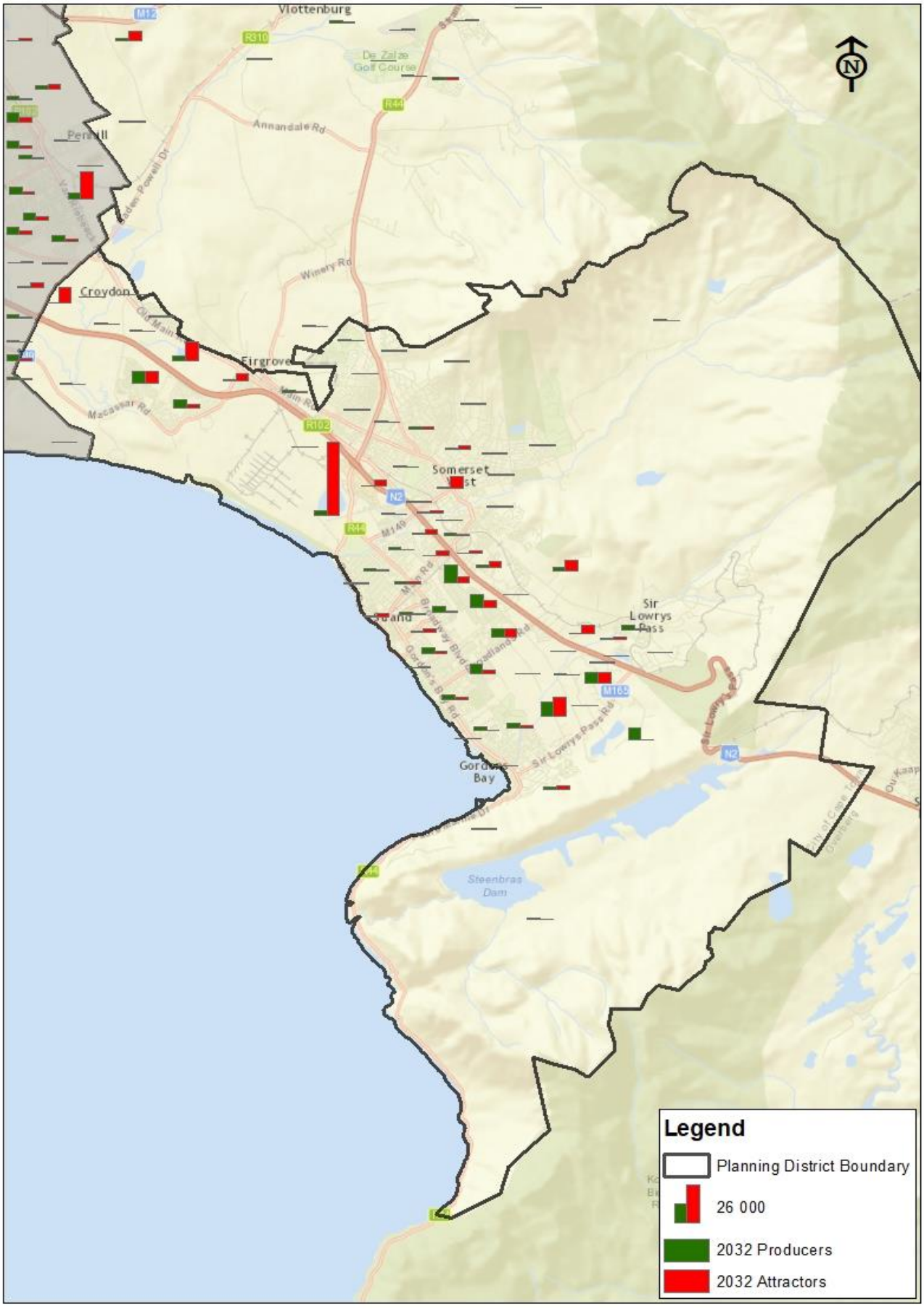


Figure 37: Balance of trip attractors versus trip producers in the Helderberg District under the TOD Comprehensive Land Use Model, 2032

5.7 Key Transport Challenges and Opportunities

- The uncertainty around the future of the N2 upgrade puts a dampener on development and means that SANRAL is unlikely to invest in any upgrades, pending the long term future being resolved.

- The decline in the rail service has impacted the district severely, as road-based public transport suffers the most acutely from the resultant congestion within the city.

- The challenge is that the urban form is characterised 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 District Plan will attempt to address these challenges, which translate to land use issues.

- The district is the "gateway" to the hinterland, with strong connections to neighbouring Stellenbosch, Grabouw, and the coastal parts of the Western Cape and beyond. Certainty around the N2 alignment, and the nature of its access to the surrounding land uses, will influence development decisions in the future.

- The relatively isolated nature of the eastern part of the district from the rest of the metropolitan area does create an opportunity for greater self-reliance. Trip attractors should be encouraged in the district – there seems to be potential for this in the areas north of the N2.

- 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 (for example, cashless payment) are evolving rapidly in the transport sector and may benefit the district.

- The need to balance the number of trip producers and attractors within this district is critical to reduce the number of long-distance commutes into the Cape Town CBD (a distance of 50 km from Gordon's Bay) and other opportunity areas.

- The expansion of new developments to the north of the N2 is hindered by lack of adequate road access. From a transport perspective, this expansion is less preferable to intensification of development within the existing urban footprint. This "dampening" of lateral expansion should be seen as an opportunity for making the existing urban area more attractive for development.

- Throughout the district, it may well be worthwhile aligning with the Resilience Strategy process, as 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

The following sections provide an overview of the state of infrastructure in the Helderberg District, based on information sourced from the 2017 Medium Term Infrastructure Investment Framework. This is illustrated in figures below, which map the current level of supply of bulk electrical, water, stormwater, wastewater and solid waste infrastructure.

6.1 Electricity

The information used for the assessment of bulk electrical infrastructure capacity is sourced from 2018 peak loads at distribution substations. The information was processed and each substation supply area classified according to its level of existing capacity. There are 114 substation supply areas in Cape Town. Of these, 82 are within the City of Cape Town's distribution area, while 38 are within Eskom's area of distribution. **Table 13** below, outlines the definitions used to classify the capacity of a substation area. The assessment was done using the eight district planning boundaries, which have different geographical delineations when compared to the substation supply areas.

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

Table 13: **Classification of electrical substation supply areas by level of existing capacity (MTIIF, 2017: 68)**

Capacity status	Definition
Severe lack of capacity	Over 100% of firm substation capacity
Slight lack of capacity	90% to 100% of firm substation capacity
Adequate capacity	70% to 90% of firm substation capacity
Spare capacity	Less than 70% of firm substation capacity

There are currently no areas within the district that experience a **slight lack of capacity**. However, the following areas have a **severe lack of capacity** in terms of bulk electrical infrastructure

- Macassar – residential and undeveloped fynbos and dune systems
- Western Paardevlei (Firgrove) – rural, with minor, isolated industrial activity
- Gordon's Bay – residential

The following areas have an **adequate capacity**:

- Eastern Paardevlei – rural
- Strand – residential and commercial, with minor industrial activity in Strand Industria

The following areas have **spare capacity**:

- The easternmost, urbanised edge of Paardevlei – predominantly residential
- The Mall Triangle – commercial
- Greater Somerset West – residential
- Asanda and Nomzamo – informal residential
- Rural Gordon's Bay
- Sir Lowry's Pass – rural and residential

In terms of planned bulk electrical infrastructure, a project has commenced which will consolidate the Eskom intake points in the district and supply the future Paardevlei development.

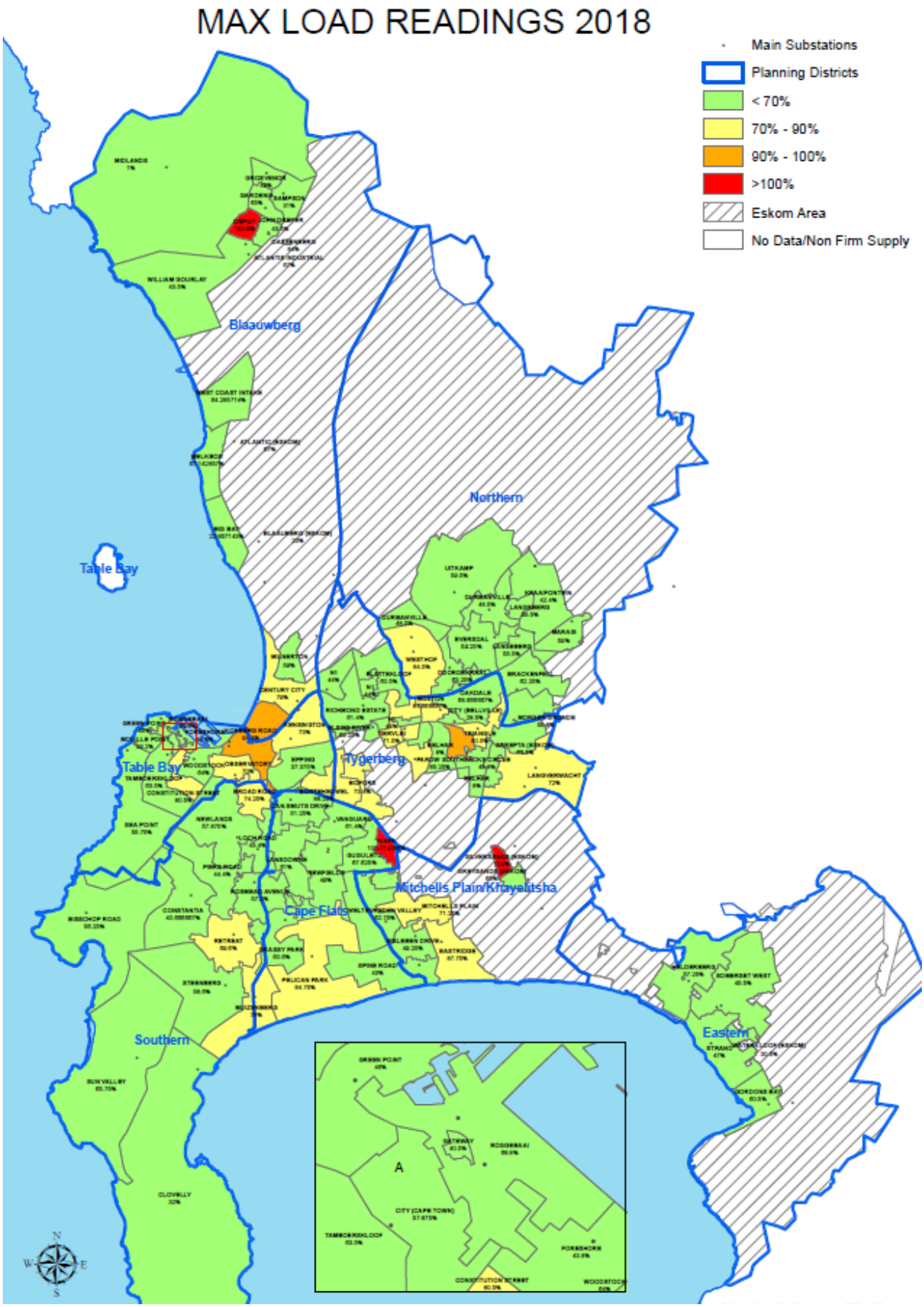


Figure 38: Peak loads of substations across the City of Cape Town electricity supply area, 2018

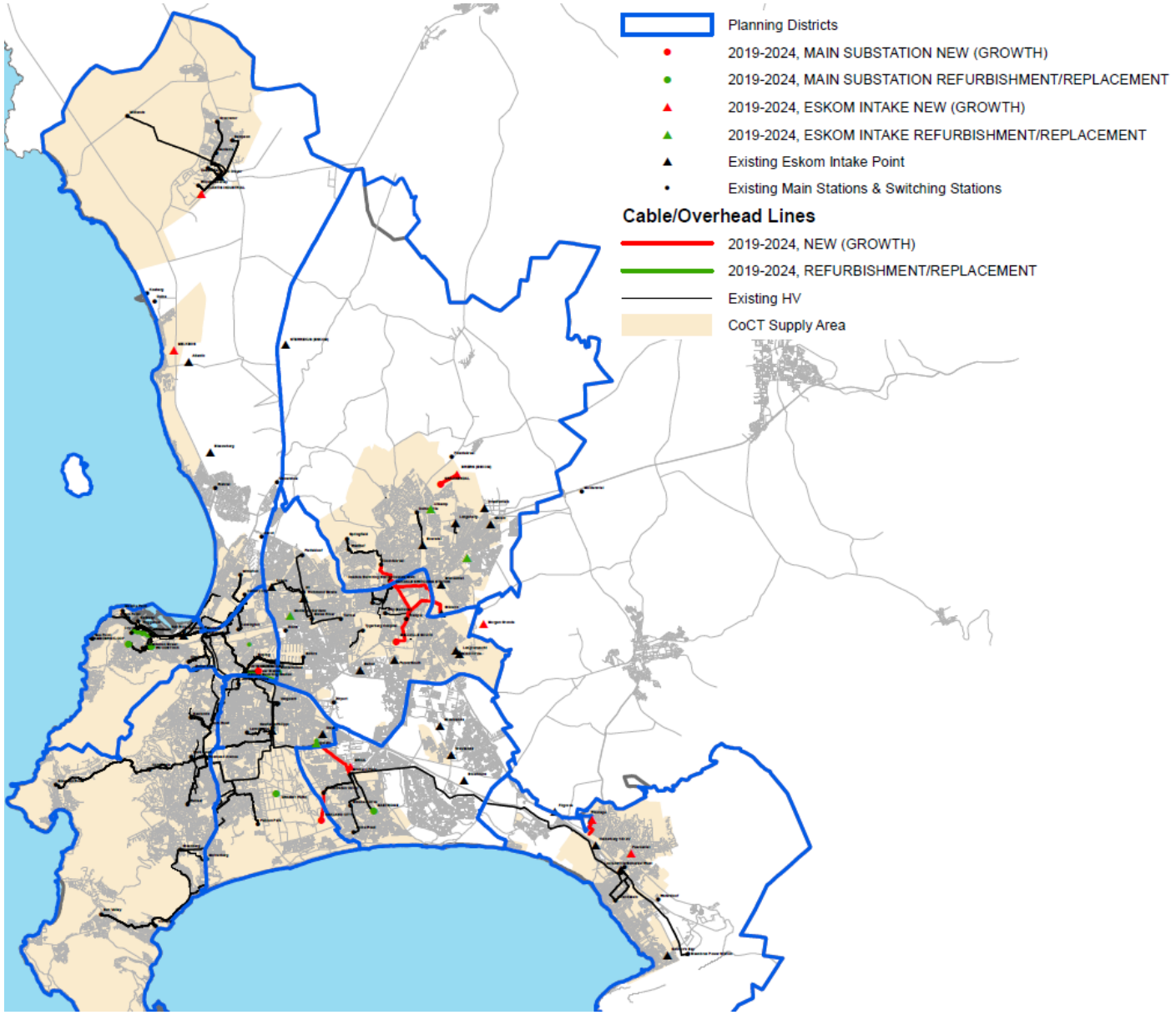


Figure 39: Proposed electrical infrastructure projects in Cape Town

6.2 Water

For the purposes of the BaAR, bulk water infrastructure includes 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)

Table 14: **Classification of bulk water supply areas by level of existing capacity (MTIIF, 2017)**

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 Helderberg District, one area is subject to a **severe lack of capacity** in terms of bulk water infrastructure:

- The Mountainside Reservoir supply zone in the Firlands, Gordon's Bay and Strand areas – rural in nature

Only the following three areas experience a **slight lack of capacity**:

- Fairview Golf Estate – residential
- Strand CBD (straddling Main road and the railway line) – residential and commercial

- Northern corner of Gordon's Bay – residential

The vast majority of the district has **adequate capacity**, including:

- Macassar – residential and undeveloped fynbos and dune systems
- The remainder of Strand and Gordon's Bay – predominantly residential, with some commercial
- Sir Lowry's Pass Village – predominantly residential
- Rural Somerset West
- Suburban areas west of the Somerset West Nature Reserve

The following areas have **spare capacity:**

- Paardevlei – predominantly rural, with residential areas on its eastern edge
- Suburban residential areas along the north-eastern edge of the N2
- Helderberg Village, Vredenberg, Vredenzicht, La Montagne, Bel'Aire, Helderberg Estate, Helena Heights and Die Wingerd – suburban residential
- Helderberg Rural, adjacent to Sir Lowry's Pass Village

6.3 Stormwater

The stormwater system of Cape Town consists of a wide range of infrastructure components. The City of Cape Town's Management of Urban Stormwater Impacts Policy (2009) defines the stormwater system as follows:

> "*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 bulk stormwater infrastructure applicable to the BaAR 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;
- Flood alleviation schemes.

No areas within the Helderberg District are currently experiencing a **slight lack** of bulk stormwater infrastructure capacity. However, the following areas have a **severe lack** of capacity:

- Macassar – residential and undeveloped fynbos and dune systems;
- Strand – residential, with commercial activity straddling Main Road, the railway line and beach front and industrial activity in Strand Industria;
- Sir Lowry's Pass – largely residential ;
- Helderberg rural (between Gordon's Bay and Sir Lowry's Pass).

The remainder of the district has **adequate capacity** in the bulk stormwater system, but there are no areas with **spare capacity**.

6.4 Sanitation

6.4.1 Wastewater

Wastewater 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))

Table 15: **Classification of bulk wastewater management areas by level of existing capacity (MTIIF, 2017)**

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 Helderberg District, there are currently no areas with a **slight lack of** capacity in terms of bulk wastewater infrastructure, However, the following area is experiencing a **severe lack of capacity**:

- Gordon's Bay – predominantly residential

The following areas have **adequate capacity**:

- Strand – residential and commercial
- The eastern (populated) portions of Paardevlei – residential
- The suburbs of Greater Somerset West, between the N2 and the Somerset West Nature Reserve – residential
- Sir Lowry's Pass – predominantly residential

Lastly, the following areas have **spare capacity**:

- Macassar – residential
- Suburbs of Greater Somerset West, west of the Somerset West Nature Reserve – residential

6.4.2 Solid Waste

Bulk solid waste infrastructure considered for the purpose of the BaAR 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 plants
- Refuse transfer stations
- Drop-off facilities (garage waste, greens, builders' rubble, recyclables, household hazardous waste)

- Buy-back centres
- The waste collection fleet (Workshop, Collection vehicles, Cleansing vehicles)
- Material recovery facilities
- Alternative treatment technologies

Table 16: Existing bulk solid waste management infrastructure capacity status, 2019

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.	a. Landfill sites are not area bound. The city only has 3 operational landfills. Due to Limited capacity at landfills, based on license conditions. b. All landfills have a limited life, per their specific license, and hence will close as the said conditions are met. c. Infrastructure, plant and equipment at all landfill sites are sustainable managed and compliant with License Authority regulated audits. d. 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 centres/ recycling facilities	No capacity	There is a huge desire to develop buy-back centres or recycling facilities, to be operated by SMMEs, 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 Councillors 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 infrastructure.

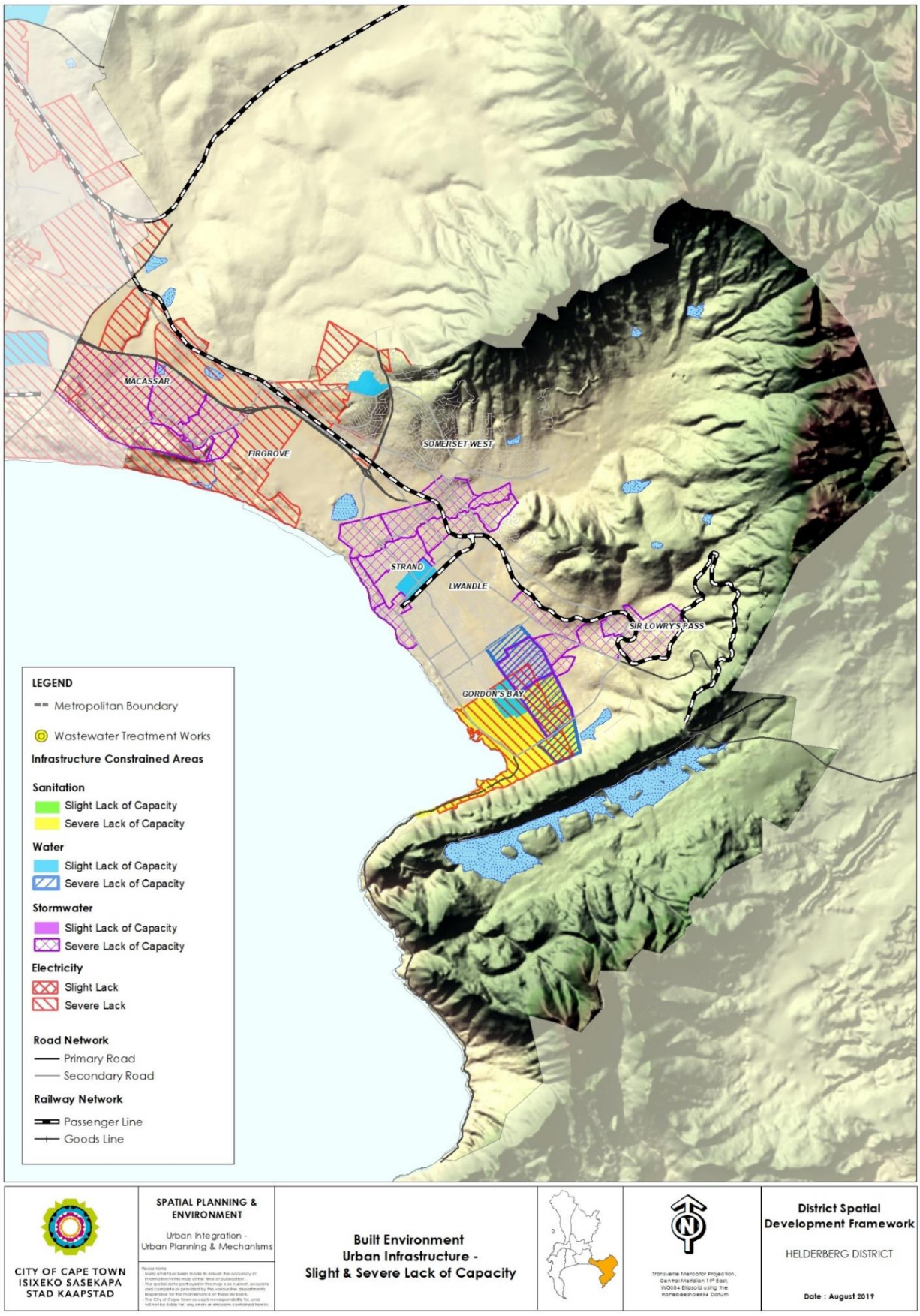


Figure 40: Helderberg District bulk infrastructure status – slight and severe lack of capacity, 2015 (MTIIF, 2017)

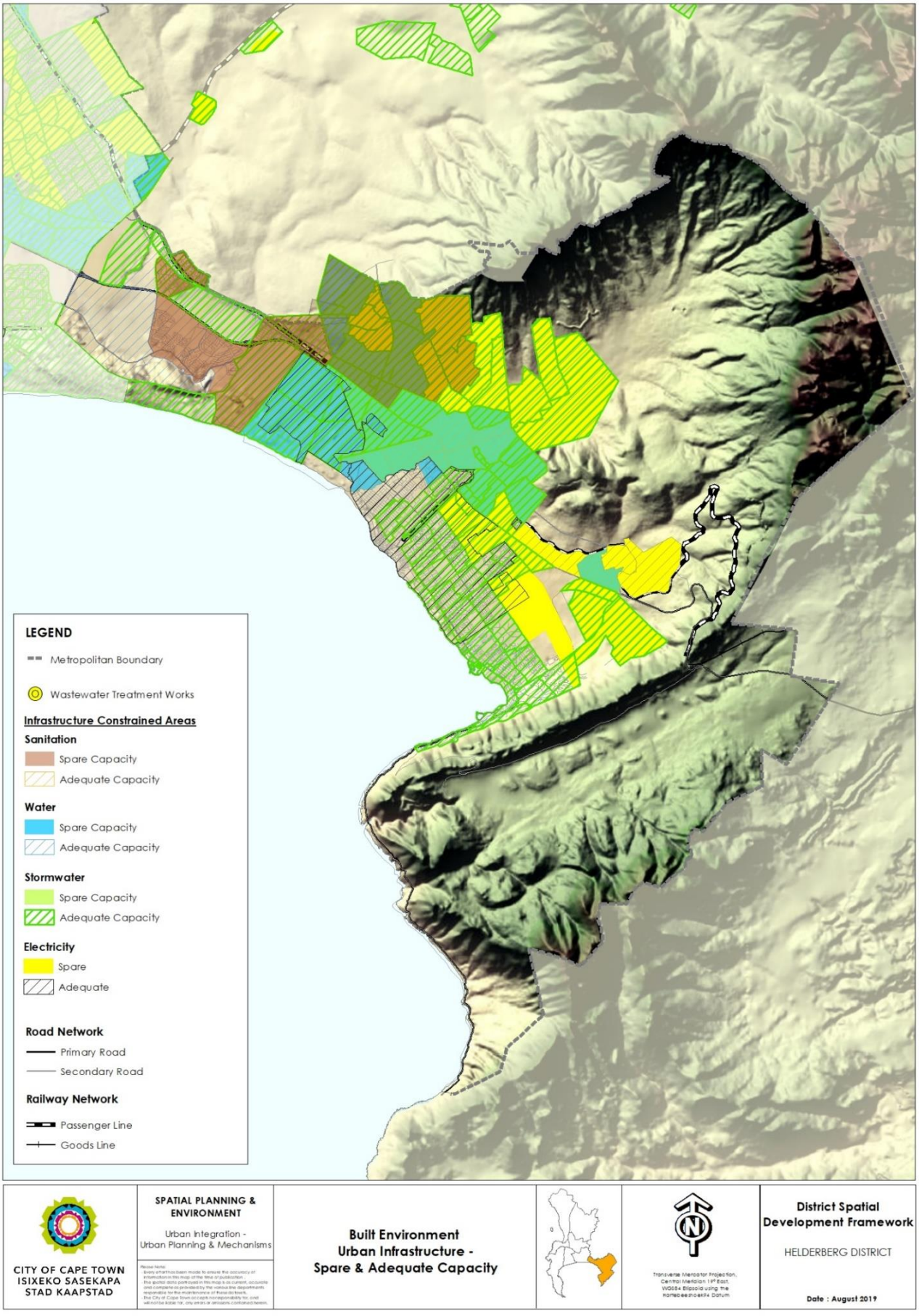


Figure 41: Helderberg District bulk infrastructure status – spare and adequate capacity, 2015 (MTIIF, 2017)

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 42** below). Housing must be integrated within areas through housing mix, typologies, design and income, and be close to transport routes supporting transit-oriented development.

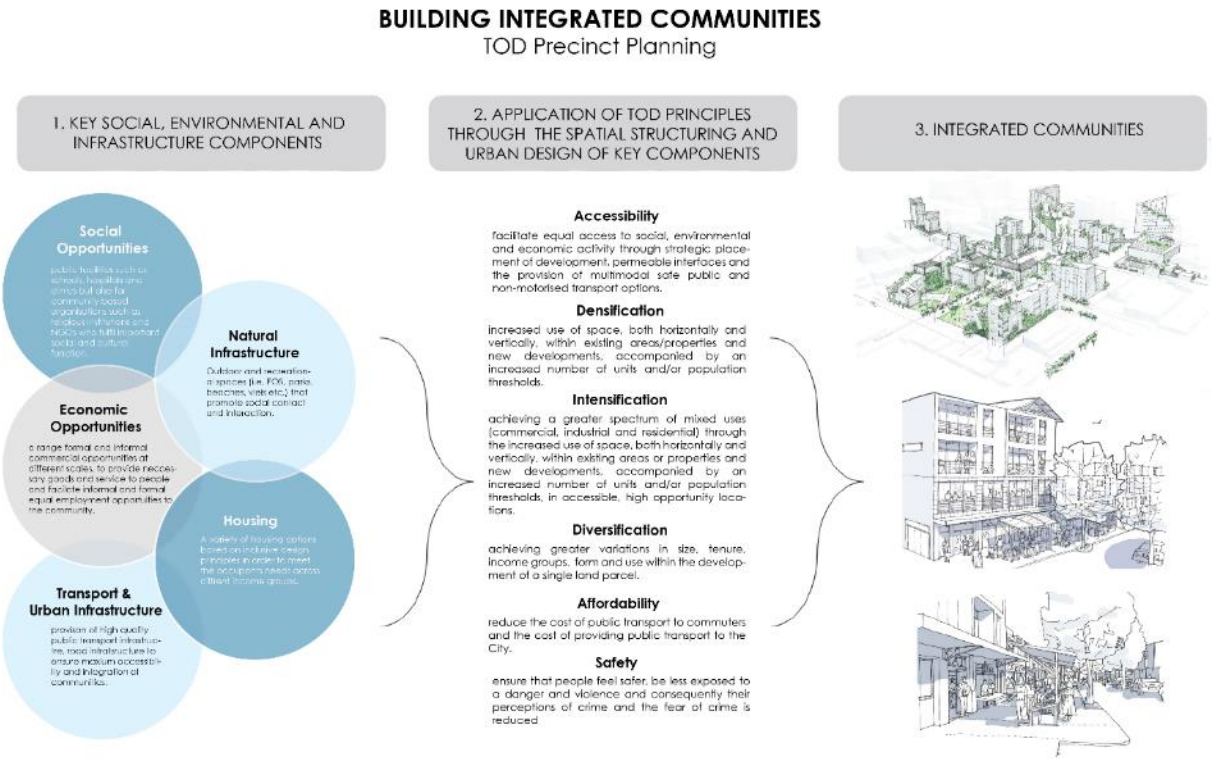


Figure 42: Overview of the concept of integrated communities in terms of Transit Oriented Development (TOD Strategic Framework, 2016)

7.1 Housing Typologies

7.1.1 Overview

As of 2011, informal dwellings account for 13.92% of the 68 739 households in the Helderberg District, sitting below the metropolitan average of 16.39%. This is the third highest proportion among the city's eight districts, followed by the Cape Flats at 19.30% and, far more significantly, Khayelitsha, Mitchells Plain & Greater Blue Downs at 39.00%. Due to the small number of households in Helderberg, however, it only accounts for 10.73% of all informal dwellings in the city. At 4.53%, the district is home to the second **lowest** percentage of freestanding informal households in the city behind Tygerberg at 3.00%. In contrast, the district contains the second **largest** percentage of informal backyard dwellings among all districts at 9.39% – only marginally smaller a percentage than Khayelitsha, Mitchells Plain & Greater Blue Downs at 10.10%.

The remaining 86.08% of households reside in formal dwellings. This percentage is comparable to most other districts, save for Khayelitsha, Mitchells Plain & Greater Blue Downs, where only 60.10% of households reside in formal dwellings. The formal dwellings in the Helderberg District comprise overwhelmingly of freestanding houses (60.06%), followed by apartments (9.37%), semi-detached houses (7.75%) and a smaller mix of cluster houses (2.73%), townhouses (2.61%) and formal backyard dwellings (1.68%). Other housing typologies make up only a negligible percentage of total district households.

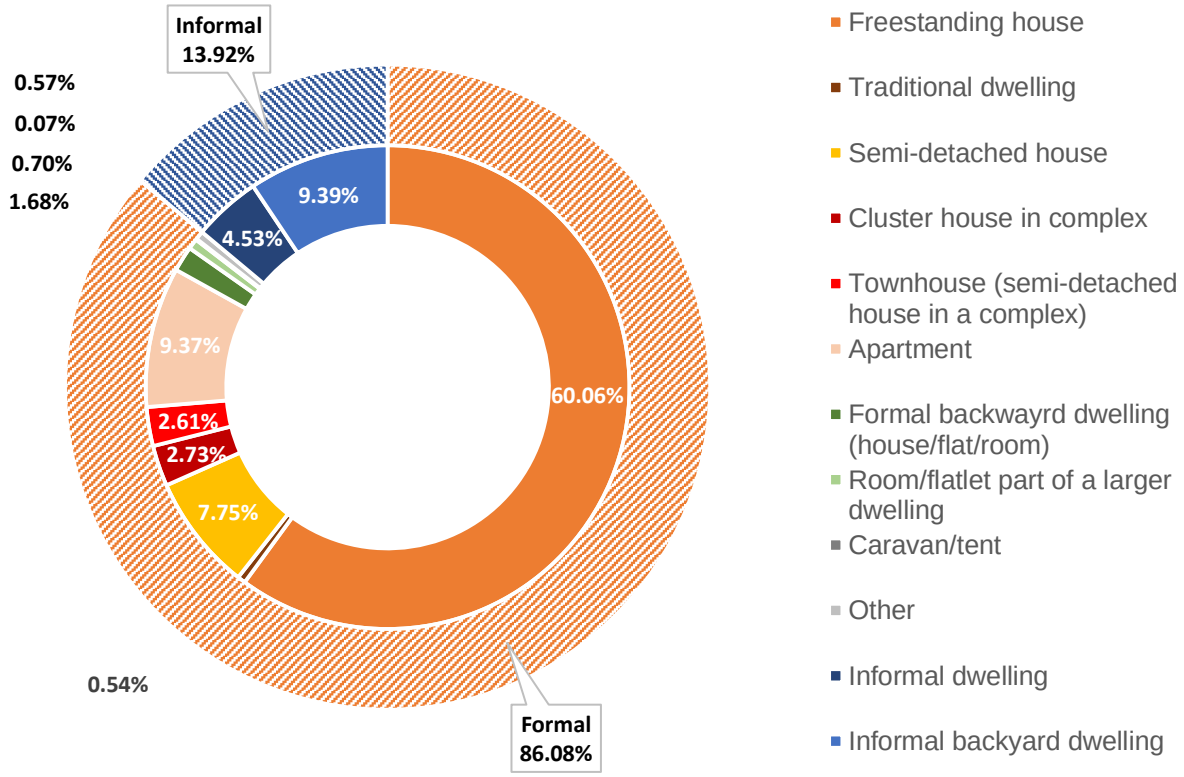


Figure 43: Helderberg District housing typology distribution, 2011 (Census, 2011)

7.1.2 Spatial Distribution

In addition to their large share of dwelling typologies, freestanding houses are also the most widely spread form of housing, constituting the majority of households in most areas of the Helderberg District. Apart from a significant presence in Weltevreden in the Strand Sub-District, semi-detached houses are concentrated most intensely in Nomzamo and Macassar. Apartments contribute greatest to the mix of dwelling typologies within the Strand Sub-District, particularly the sub-places of Lwandle (9.50%), Strand CBD (28.49%), Rome (51.46%), Guldenland (61.38%) and Van Ryneveld (67.32%). They are also present to similar degrees in several areas in the Gordon's Bay and the Greater Somerset West Sub-Districts). Lastly, cluster houses and townhouses in complexes are most prevalent in areas within Greater Somerset West (and to a smaller extent in south-eastern Gordon's Bay), reflecting the ubiquity of gated community developments in the area. Overall, the widest diversity of housing typologies is present in Strand, including areas such as Nomzamo and

Lwandle. Similar diversity is found in several isolated areas in other sub-districts, such as Macassar and Sir Lowry's Pass.

Informal backyard dwellings make up a significant proportion of households in Nomzamo (28.29%), Lwandele (20.12%) and Sir Lowry's Pass (11.69%), while also present in smaller measures (5%–10%) in several other areas, such as Macassar (8.70%). As discussed above, freestanding informal dwellings are less significant in the Helderberg and are also less widespread than informal backyard dwellings. However, freestanding informal dwellings are present in large prpportions in the following three areas: Onverwacht (59.26%), Lwandle (21.39%) and Sir Lowry's Pass (27.63%).

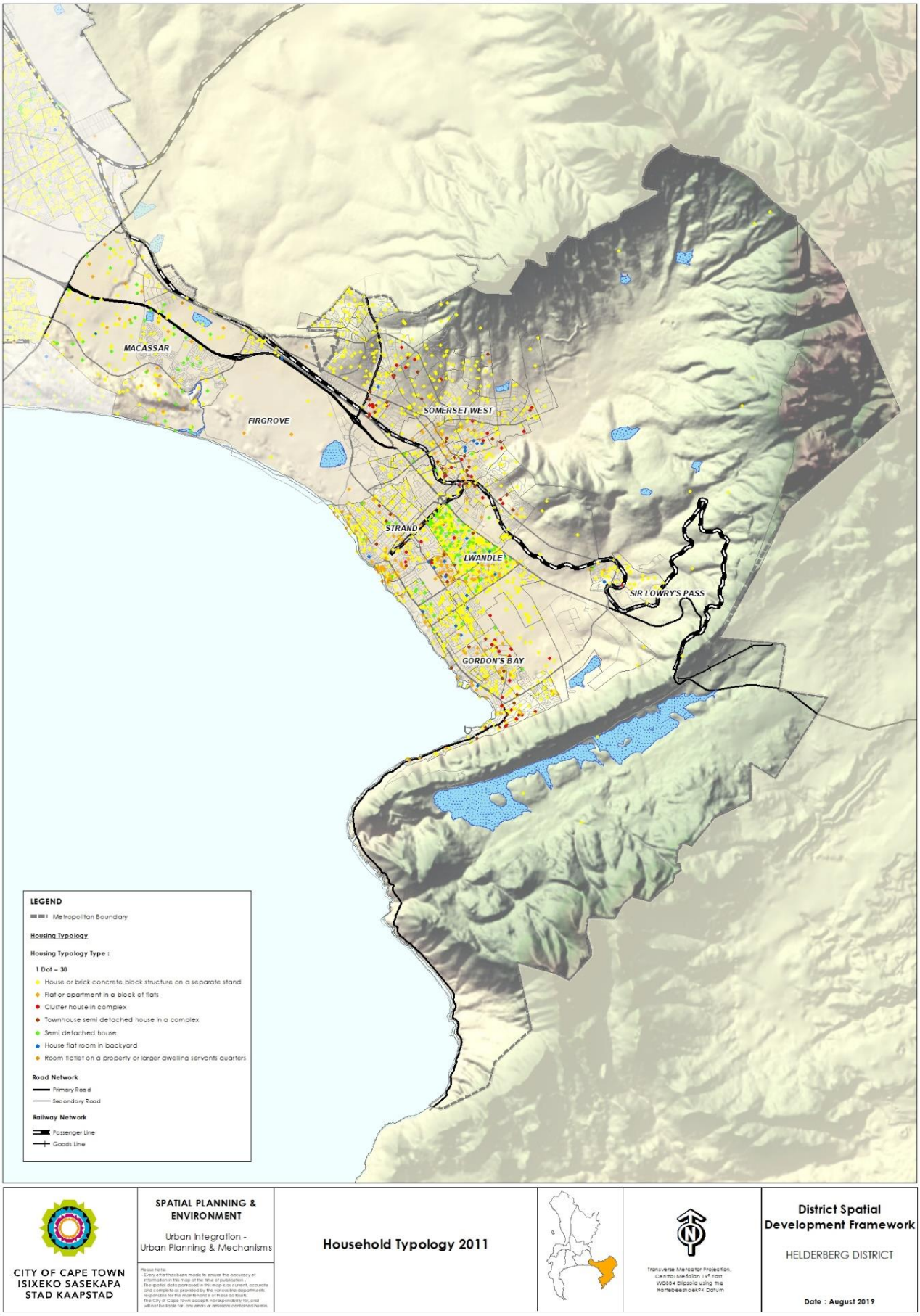


Figure 44: Distribution of major formal dwelling typologies in the Helderberg District, 2011 (Census, 2011)

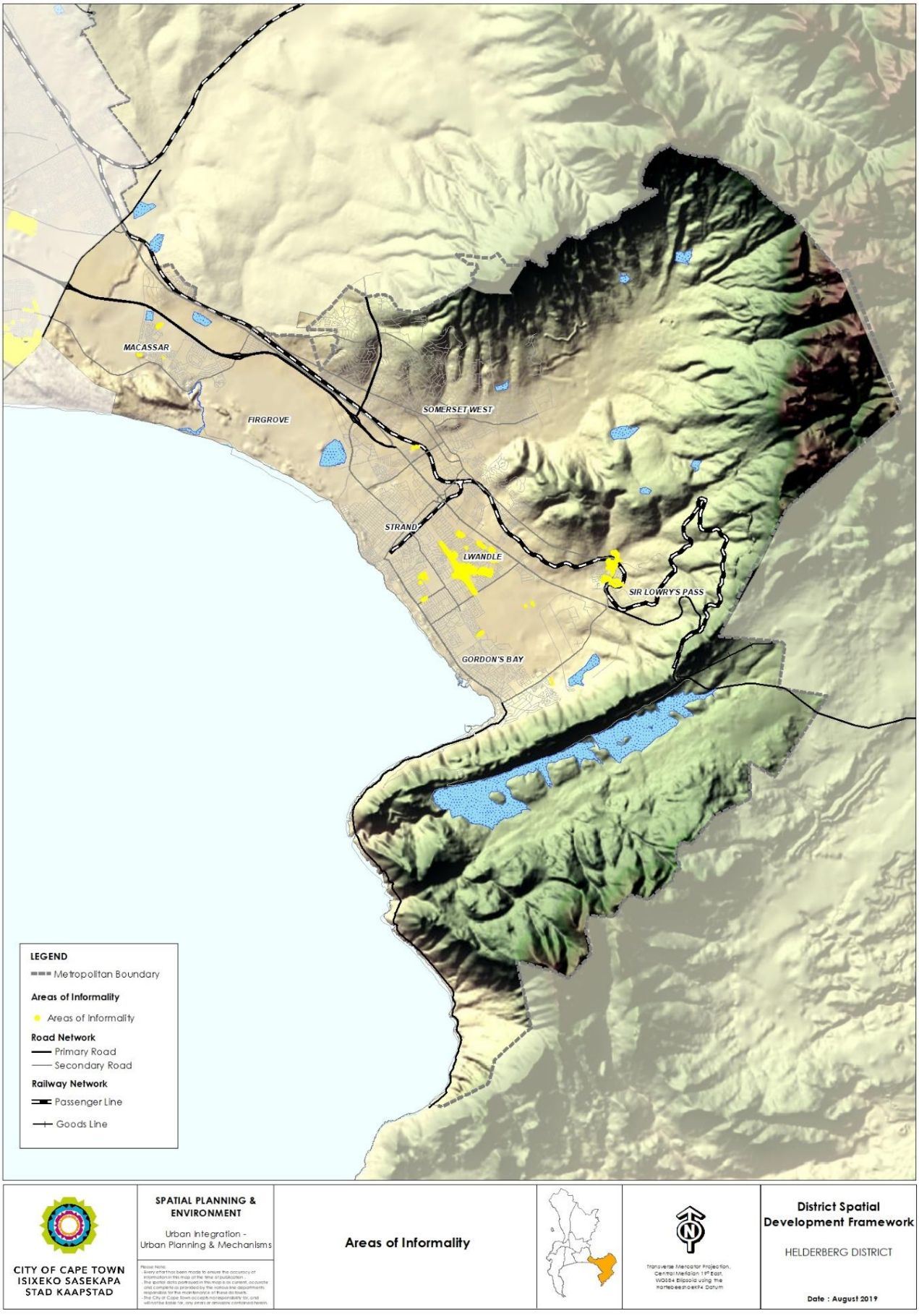


Figure 45: Distribution of informal residential areas in the Helderberg District, 2018 (CCT roof count, 2018)

7.2 Tenure Status

7.2.1 Overview

At 52.11%, as of 2011, the Helderberg District has a rate of home ownership slightly below the metropolitan average of 54.14%. This is the third lowest rate, after the Cape Flats at 50.26% and Table Bay at 42.18%. In effect, approximately 1/2 of the households in the district are owned by their inhabitants. This is made up primarily of owned and fully paid off homes, accounting for 35.51% of all households – the second largest percentage out of any district behind Khayelitsha, Mitchells Plain & Greater Blue Downs at 42.26%. The remaining 16.43% of owned homes are secured with bonds, sitting below the metropolitan average of 20.91%.

Of the remaining 47.89% of homes, which are not owned by their occupants, the significant majority (37.00%) is rented. This is the third **highest** rate of rented homes in the city, behind Blaauwberg at 38.23% and Table Bay at 47.11%. In contrast, only 8.69% of homes, the third **lowest** percentage among districts, are occupied rent-free. This speaks to a relatively healthy rental market in the area.

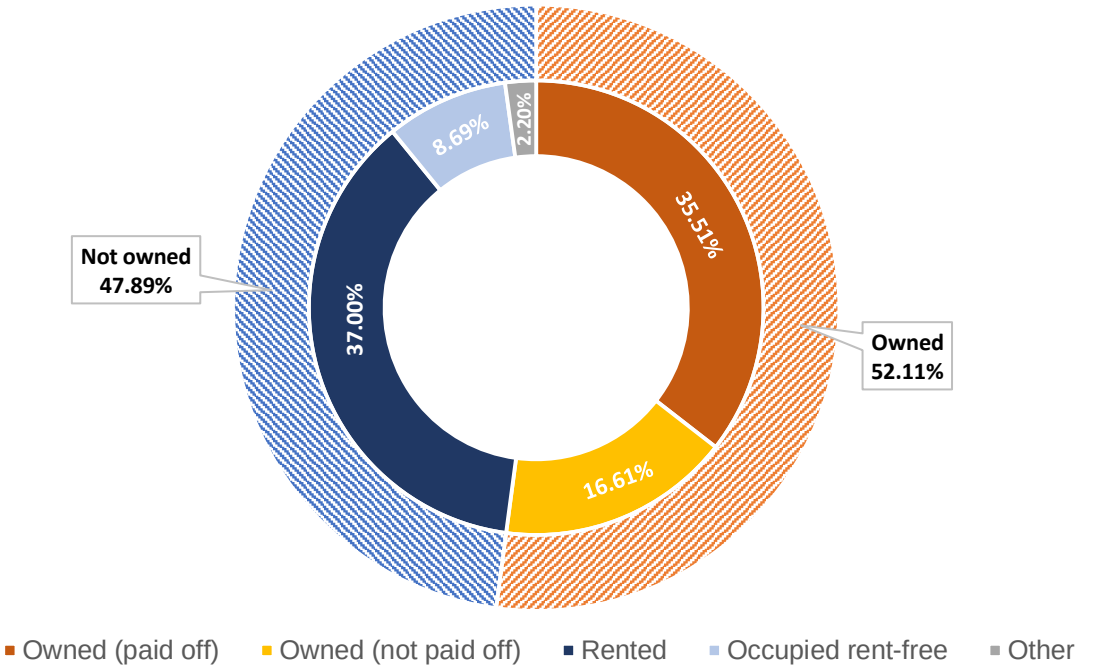


Figure 46: Helderberg District distribution of household tenure status, 2011 (Census, 2011)

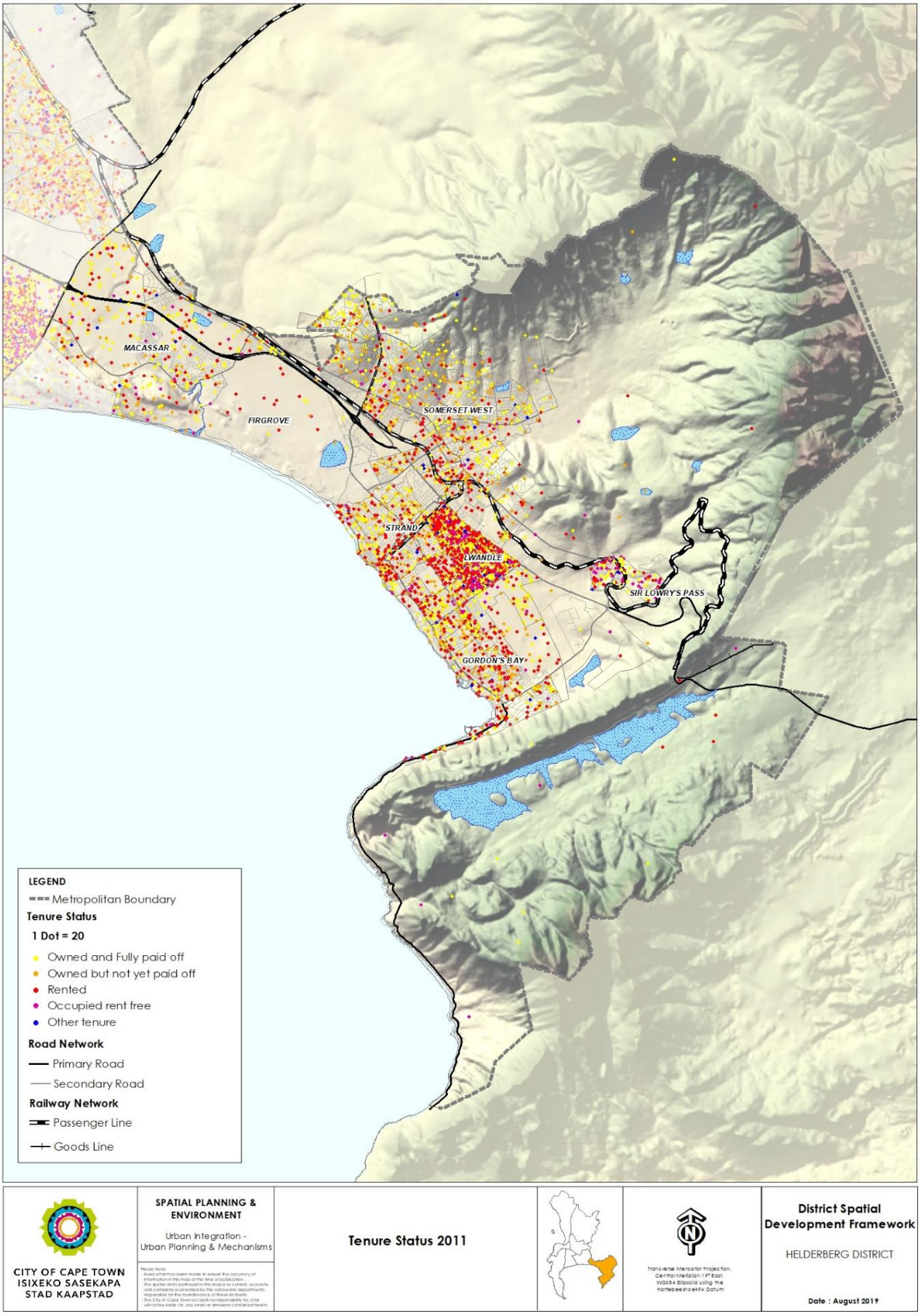


Figure 47: Distribution of household tenure status in the Helderberg District, 2011 (Census, 2011)

7.2.2 Spatial Distribution

The spatial distribution of household tenure status across the Helderberg District is more varied than that of dwelling typology. Still, there emerge certain trends. Areas with high rates of owned and paid off homes primarily consist of freestanding houses. These areas are concentrated most strongly in the south-eastern portion of Greater Somerset West, where the rate of owned and paid off homes sits primarily in the range of 40%–50%, but reaches as high as 86.35% in Helderberg Village. A similar proportion is observed in Macassar, where about 1/2 (49.08%) of homes are fully owned and paid off. Generally lower percentages are observed in Strand and Gordon's Bay, where paid off home ownership primarily ranges from 30%–40% and 20%–30%, respectively. Overall, the majority of bond-secured home ownership in the district occurs in Greater Somerset West, accounting for 30%–40% of households in the majority of areas. As with paid-off home ownership, this corresponds very closely with freestanding houses and also reflects the higher incomes of households in this sub-district.

Rental shows the opposite distribution. Rented homes are primarily concentrated in Strand and Gordon's Bay, with the highest percentage occurring in the Fairview Golf Estate in Gordon's Bay at 90.49%. Furthermore, over 1/2 (55.04%) of the homes in Firgrove Rural, making up the bulk of the Paardevlei Sub-District, are rented. Significant numbers of rented homes are also found in the southernmost areas of Greater Somerset West. There is an almost direct correlation between apartment housing typologies and rented homes. Rental tenure status is also associated with an especially wide variety of housing typologies (including freestanding, semi-detached and informal backyard) in Nomzamo, where almost 1/2 (49.60%) of the households rent their homes.

Lastly, rent-free occupation is by far the least widely distributed tenure type. It is found primarily in the rural areas of Greater Somerset West, Sir Lowry's Pass and Gordon's Bay, making up approximately 1/4 (27.56%) of all households. Apart from these, it is highly present in areas of high informality, namely Nomzamo, Lwandle and Sir Lowry's Pass. Within these areas, a respective 15.38%, 23.50% and 32.37% of households do not pay any rent.

7.3 Housing Demand

7.3.1 Limitations of Housing Demand Data

- 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.

7.4 Housing Supply

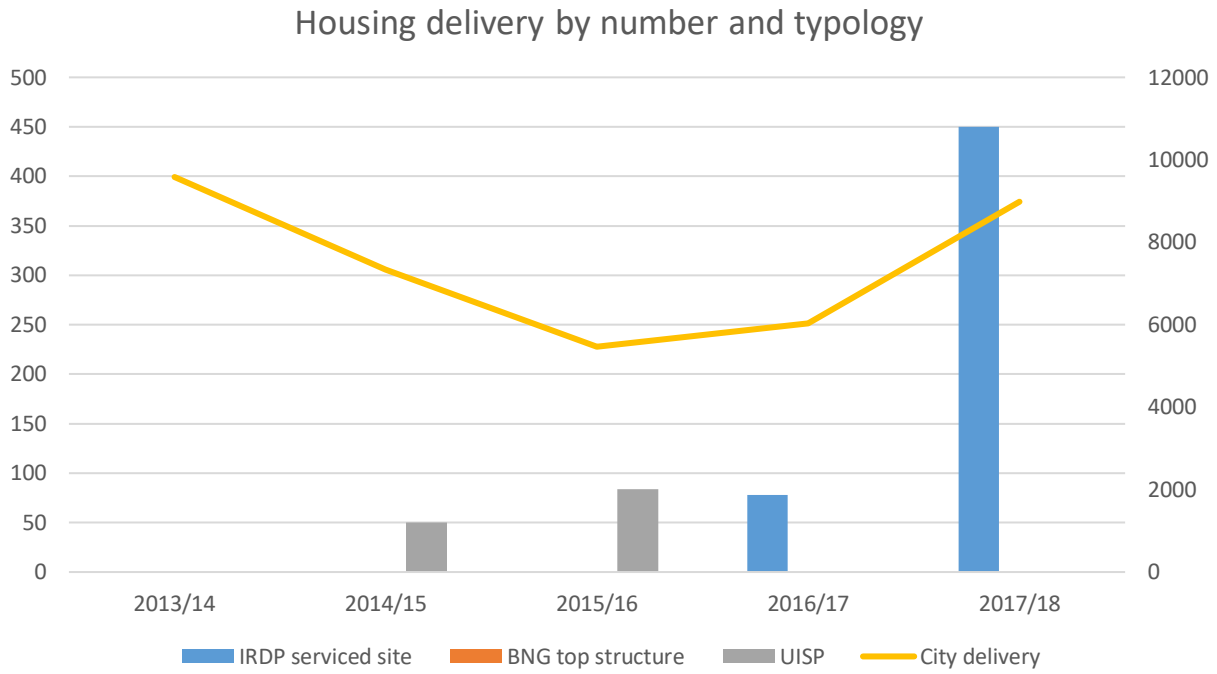


Figure 48: Housing delivery by number and typology in the Helderberg District, 2013/14 – 2017/18 (Human Settlements Department)

7.4.1 Limitations of Housing Supply Data

- UISP – persons who are beneficiaries within an 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. However, a person's eligibility criteria are 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.

- Social housing: Social housing refers to affordable rental housing. 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.

- Community Residential Units (CRU): Affordable rental targeting the R0 – R3500 income group, but the City will allow households to access this programme if they earn up to R10 000 – however households above R3500 must pay additional rental amounts according to what they earn.

- Land Restitution and Institutional: There is one example of land restitution in the Cape Flats District – Erf 3053 Lotus River. There has only been one institutional housing programme (a rent to buy option) and this was in Harmony Village in Mitchells Plain/Khayelitsha District – the target income group for this programme is R3500 and below.

- Upgrading of Informal Settlements Programme (UISP): Upgrading of informal settlements by means of in situ upgrading, or relocation to greenfield sites. This programme gives households access to municipal services, or the incremental development of a top structure.

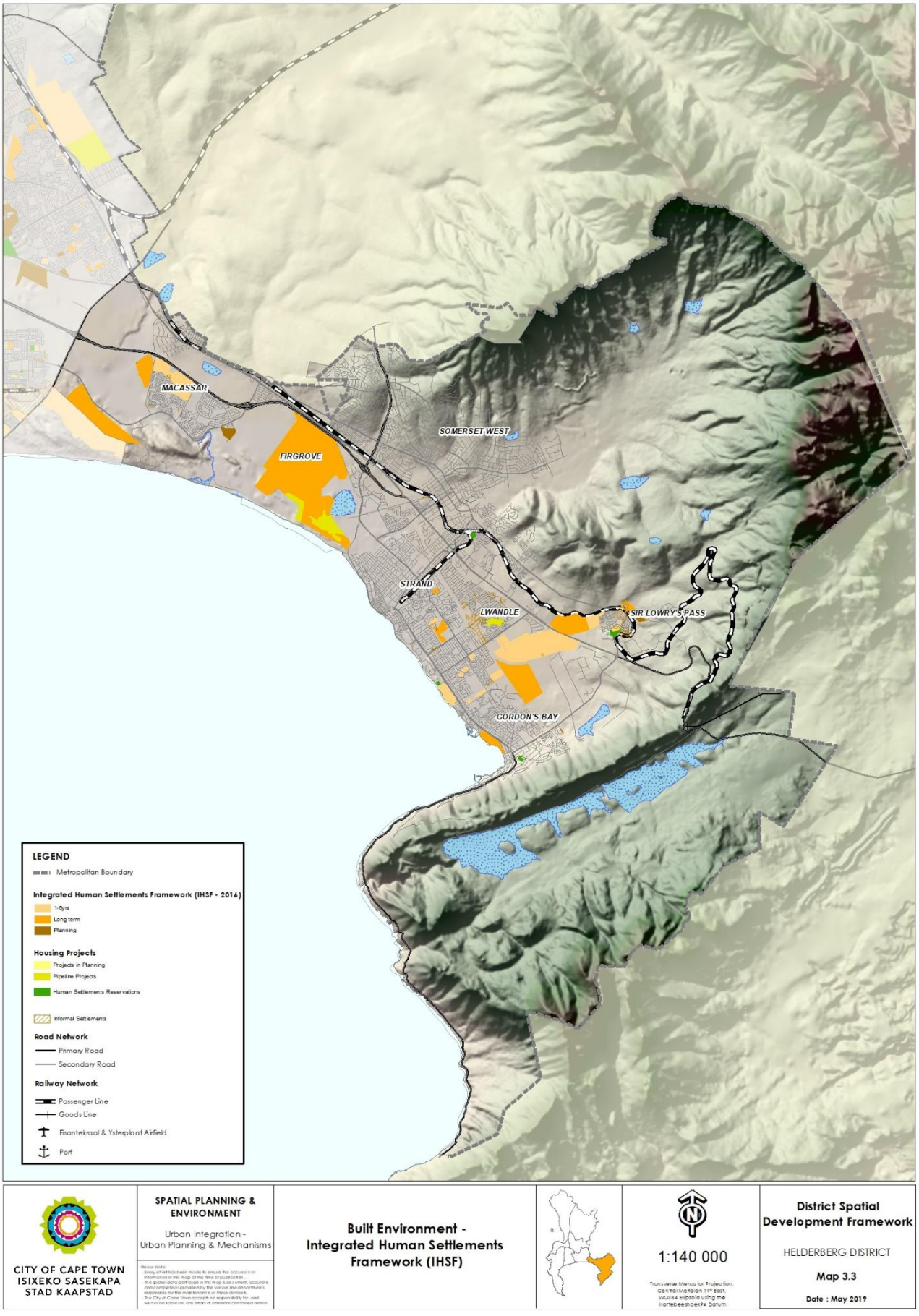


Figure 49: Status of Integrated Human Settlements Framework (IHSF) projects in the Helderberg District

7.5 Key Opportunities and Constraints

Human settlements is not just about the development of housing, but also about the development of integrated, liveable communities. A key constraint to human settlements implementation across the City has been a lack of integrated planning of budget cycles, which impacts on the prioritisation of projects by various City Directorates. This has undermined the attempt to create integrated communities in some areas of the City – e.g. social facilities might not always be integrated into housing developments.

The development of integrated human settlements also 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, high density developments than the large-scale, single dwelling 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, and remains an ongoing challenge – particularly as it relates to the upgrading of informal settlements.

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 the redirection of resources to respond to land invasions. 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 dedensification becomes necessary in order to enable formalisation of areas.

8 PUBLIC FACILITIES

The following sections provide an overview of the current supply of public facilities and the demand of new facilities in the Helderberg District, accounting for the anticipated growth in population and required densification and intensification of land use in line with city policy.

8.1 Education

The data used in this section only relates to state schools and exclude any private schools or Early Childhood Development centres (ECDs). This data also does not include the current status of school infrastructure or the level of utilisation of the facilities (i.e. capacity considerations), which could also impact on the level of education services that can be provided. The information is based on 2011 figures obtained from the City of Cape Town's Department of Community Services and Health extracted from the revised 2011 Census.

In total, there are approximately 37 public education facilities in the Helderberg District: 26 primary and 11 secondary schools. All operational Grade R (pre-primary) facilities are assumed to be within existing state primary schools. The assumed standard capacity ratio for each category of schooling is as follows:

- Grade R: 30 learners per class;
- Primary schools: 40 learners per class; and
- Secondary schools: 40 learners per class.

8.1.1 Supply

Table 17 below indicates the current number of pupils served and unserved based on capacity constraints within 5 km of the school.

Table 17: Number of pupils served within 5 km of a school by category, 2011 (Revised Census, 2011)

Level of schooling	# of schools	Unserved children	Served children	% served children	Metro average % served	Total potential pupils
Grade R	26	2 663	1 034	27.98	58.46%	**3 697**
Primary school		1 028	21 055	95.34%	96.23%	**22 083**
Secondary school	11	2 836	12 331	81.30%	81.71%	**15 167**

Total	**37**	**6 527**	**34 420**	**88.12%**	**-**	**40 947**

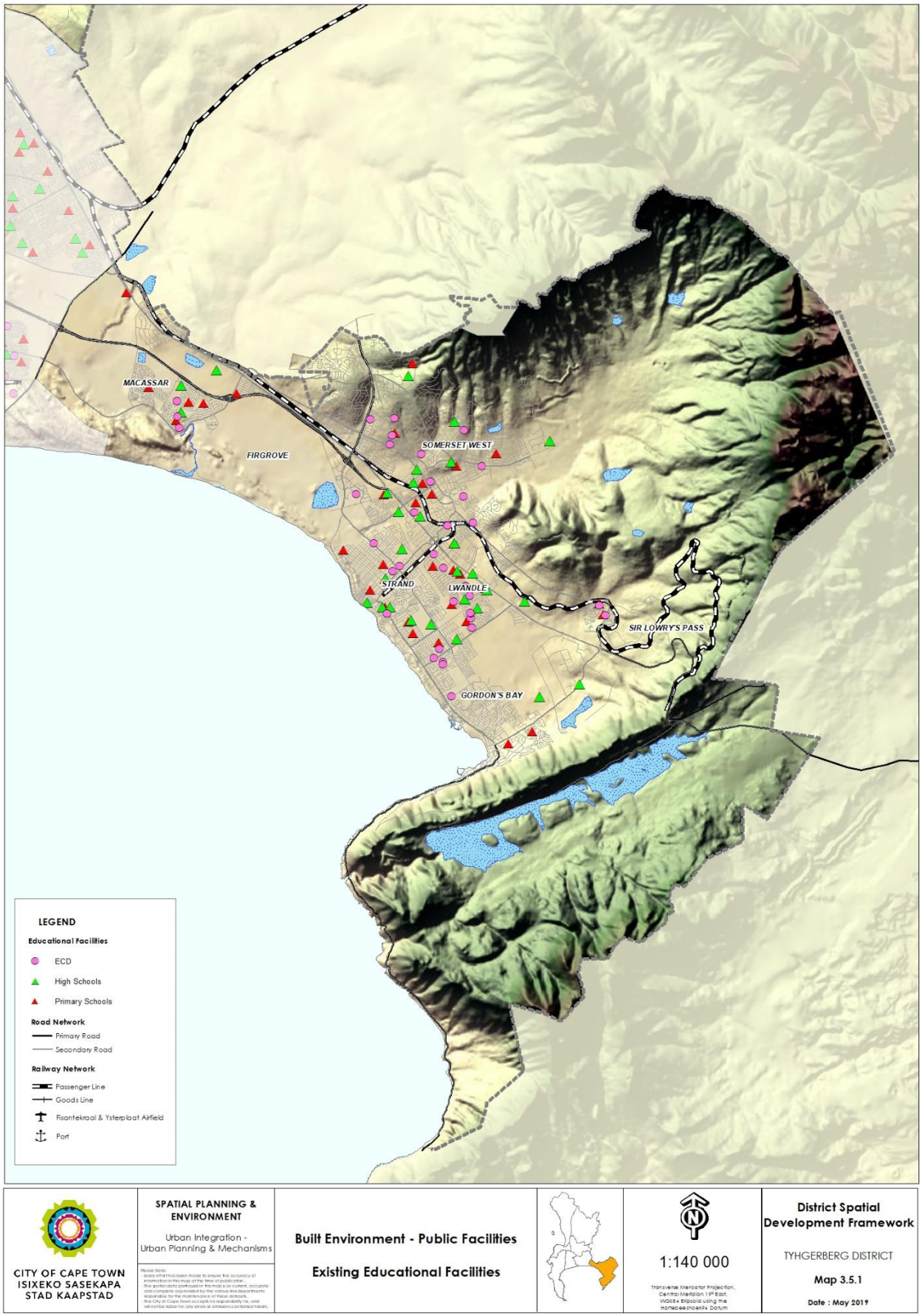


Figure 50: Spatial distribution of existing public education facilities in the Helderberg District, 2011

From the **Table 17** above, it is concluded that, based on the number of school-going-aged children in 2011, the Helderberg District is performing significantly worse in Grade R education than the rest of the city. As of 2011, approximately 28% of children in the district have access to Grade R education, compared to the metropolitan average of 58%. By contrast, the district and metropolitan statistics for primary schools are more similar at approximately 96%. The same holds true for secondary schools, which serve approximately 81% of pupils in the district – equivalent to the metropolitan average. Overall, the district serves approximately 88% of its total estimated school-going-aged population of 40 947.

8.1.2 Proximity and Accessibility

Table 18 below, expresses the distances travelled to school by pupils of different categories. It provides an overview of the accessibility of schools in relation to the number of pupils that they serve. From this, it can be concluded that as of 2011, 45% of pupils have access to a school within 1 km, 33% between 1 km and 2 km and 18% between 2 km and 5 km from their homes. In total, approximately 78% of school-going-aged children in the district live within 2 km of a school.

Table 18: Travel distance of pupils to schools, 2011 (Revised Census, 2011)

Level of schooling	Number of pupils			Percentage of pupils		
	<1km	<2km	<5km	<1km	<2km	<5km
Grade R	1 633	1 416	590	44.17%	38.30%	15.96%
Primary School	11 834	7 201	2 845	53.73%	32.69%	12.92%
Secondary Schools	5 113	4 865	4 084	33.62%	31.99%	26.86%
Total	**18 580**	**13 482**	**7 519**	**45.40%**	**32.94%**	**18.37%**

Increasing the percentage of pupils within 1 km of a school requires higher-density development around existing schools, with an increased capacity where needed and/or more schools dispersed within the area. The former may be a more affordable option, requiring less land, but will likely lead to management and capacity challenges in individual schools.

At approximately 12%, there is still a high number of pupils who are unserved by school facilities. However, this does not appear to be related to the accessibility of these facilities and is more likely subject to available capacity of existing schools, the preference of schools (relating to subject choice), family movement patterns and networks, among other factors.

Although the age distribution of the population has remained fairly consistent between 2001 and 2011, the overall district population has been growing at the second largest average rate among the eight metropolitan planning districts (5.12% per annum between 2001 and 2018) (see **Chapter 2: Demographics**). This rapidly increasing population will likely lead to an increase in the requirement for educational facilities. It should be noted, however, that there are various private schools within the district that also services pupils, who are in most cases not constrained by physical proximity, and that a number of pupils travel outside of their residential area for education.

The following are gaps in information relating to educational facilities within the district:

1. Building programme since 2012
2. Capacity of the schools i.e. number of learners vis-à-vis number of class rooms;
3. Current programmes for upgrades / enlargement of existing schools or new schools;
4. Original of leaners per school – is it possible to determine how many learners are actually from outside an area or travel to schools outside, i.e. should all areas provide the standard ratio or are more learner moving outside their residential area;
5. MOD (Mass Opportunity Development) centre schools – and the interrelationship between schools for say joint use of facilities;
6. Underutilized land:
    a. What schools are not optimally using their land and could dispose of them
    b. Can schools use city facilities and then potentially dispose of their underutilized and under-maintained facilities.

8.2 Healthcare

Medical facilities encompass all public clinics, district and regional hospitals and private hospitals in the city. As of 2011, the Helderberg District has approximately eight operational Primary Health Care (PHC) facilities.

The **Table 19** below provides an overview of the number of people served and unserved per Health District in Cape Town. There is a clear indication that facilities are very well distributed across the city and that service problems are more likely related to issues of service capacity than travel distance. Without any change to the capacity of current facilities, 76% of the dependent population can be accommodated by PHC facilities within 2.5 km of their places of residence, while 87% can be served within 4 km. In terms of specific areas, however, as of 2011, the Metro South-East, growth areas and periphery of city experience limited capacity.

Table 19: Number of people served and unserved by PHC facilities across the city by Health District, 2011 (Revised Census, 2011)

Health District	Served within 1 km	Served within 2.5 km	Total pop. served < 4 km	Unserved at 2.5 km	Unserved at 4 km
Eastern	124 591	293 590	340 318	123 921	77 193
Khayelitsha	137 005	365 782	380 892	23 584	8 474
Klipfontein	141 920	254 875	304 550	53 421	3 746
Mitchells Plain	176 769	355 486	408 558	111 255	58 183
Northern	77 501	131 893	164 707	86 074	53 260
Southern	104 918	233 113	298 098	122 325	57 340
Helderberg	157 084	414 251	450 234	45 512	9 529
Western	96 657	192 573	218 930	143 207	116 850
Percentage	**34%**	**76%**	**87%**	**24%**	**13%**
Grand total	**1 016 444**	**2 241 562**	**2 566 286**	**709 299**	**384 574**

Figure 51: Spatial distribution of existing health care facilities across the Helderberg District, 2011

8.3 Community Facilities

These encompass all public and communal facilities in the city, including libraries, halls, community centres, post offices, magistrate courts, fire stations, police stations, municipal offices and cemeteries. Specific attention will be given to the distribution of community halls, libraries and fire stations.

Gaps in information relating to the above facilities are as follows:

- Fire stations service statistics for 2011 at a metropolitan level and need to be disaggregated per district.
- Spatial representation of the facilities.

8.3.1 Municipal Halls

As of 2011, the Helderberg District has approximately 10 municipal halls, which include both civic centres and multi-purpose centres. The following key assumptions relating to this section were made:

- Demand: Entire population
- Access distance: 5 km

The service capacity of each hall is related to hall grading as follows:

- Grade A = 60 000 people
- Grade B = 30 000 people
- Grade C = 20 000 people
- Grade D = 15 000 people
- Grade E = 10 000 people

Table 20: Number of people served and unserved by existing municipal halls within 5 km of their households in the Helderberg District, 2011 (Revised Census, 2011)

District	Served	Unserved	% Served	Total population
Helderberg	195 069	22 261	89.76%	217 329

Table 20, above, illustrates that the Helderberg District has sufficient supply of municipal halls, with nearly 90% of its population being served by municipal halls within 5 km of their places of residence.

8.3.2 Libraries

As of 2011, there are seven community libraries and one regional library within the Helderberg District. Key assumptions regarding libraries include:

- The entire population of Cape Town is deemed to be users of public library services;
- Larger facilities can accommodate a maximum of 120 000 people per facility;
- Accessible distance limits are set at 5 km for community and 10 km for regional libraries; and
- All regional facilities also serve as community facilities, but not *vice versa.*

Table 21: Number of people served and unserved by community and regional libraries within 5 km of their households in the Helderberg District, 2011 (Revised Census, 2011)

Type	Unserved	Served	% served	% served metro	Total population
Community	36 512	180 528	77.55%	76.50%	217 039
Regional	97 322	12 000	55.22%	63.04%	217 322

Table 21, above, provides an overview of the proportions of the district population served and unserved by community and regional libraries. As of 2011, the community libraries in the district serve 77.50% of its population. This is comparable to the metropolitan average population served by community libraries (76.50%). In terms of the population served by regional libraries, the Helderberg District seems is under-performing when compared to the city as a whole, as it served slightly over 55% of its population, compared to the metropolitan average of 63%.

8.3.3 Fire Station

Table 22, below, indicates fire stations service statistics for 2011 at a metropolitan level (this has yet to be disaggregated per district). According to these statistics, 89% of the metropolitan area, representing 95% of the population, is served by fire stations.

Table 22: Metropolitan fire station service statistics, 2011

Risk category	Area served (ha)	% Area served (ha)	Population served	% Population served	Area unserved (ha)	Population unserved
A- High	3800	51.91	22709	53.35	3520	19858

B- Moderate	280	100.00	5566	100.00		
C- Low	91460	93.96	3352266	98.09	5880	65274
D-Rural	111500	88.89	72427	98.52	13940	1088
E-Special	1280	27.95	29834	24.45	3300	92196
Total	**208320**	**88.66**	**3482803**	**95.13**	**26640**	**178417**

As of 2011, there are three fire stations serving the entire Helderberg District, namely Somerset West, Strand and Macassar. **Table 23**, below, indicates the area and population served per fire station. Collectively, the three fire stations cover 18 640 ha and serve a population of 206 983 out of the total (2011) district population of 217 329. This means that approximately 95% of the Helderberg population is served by a fire station.

Table 23: Number of people served per fire station within the Helderberg District, 2011 (Revised Census, 2011)

Station name	Station #	Area served (ha)	Population served	% Population served	% metro population served
Somerset West	4751	12 980	87 018	40.04%	2.37%
Strand	4334	2 620	85 794	39.48%	2.34%
Macassar	5200	3 040	34 171	15.72%	0.93%
Total	-	18 640	206 983	95.24%	5.64%

Figure 52: Spatial distribution of community facilities across the Helderberg District, 2011

8.4 Recreational Facilities

8.4.1 Sports Facilities

Sports facilities are categorised into Municipal Multi-Code Sports Grounds (MMSGs) and school sports grounds. As of 2011, the Helderberg District has approximately 34 sports facilities, consisting of 10 municipal sports grounds and 24 School sports grounds.

The following assumptions have been made in this section:

- A maximum threshold of 10 km is used as an acceptable distance between place of residence and sports grounds in the analysis.
- School sports fields are also considered as additional supply.
- Only outdoor ball sports facilities are analysed.
- A capacity threshold of 0.2 ha/1 000 people for formal ball sports facilities to provide sufficient facilities to meet the needs of residents is used in the final analysis
- Pools and single-code facilities (e.g. tennis courts and bowling greens) have been excluded, even though these form part of the 0.2 ha/1 000 people provision standard.

Table 24, below, provides an indication of the number of sports grounds located within the Helderberg District in comparison to the metropolitan total. Following on from this, **Table 25**, applies the supply standards outlined above to these sports fields in order to determine the total supply of sports facilities in terms of the population they can cumulatively serve. From this, it can be concluded that the Helderberg District is adequately served with sports facilities in terms of the number and size of facilities provide for its current population. It should also be noted that approximately 34% of the total area used for sport facilities are located at schools.

Table 24: Number of sports grounds in the Helderberg District versus the metropolitan area, 2011 (Revised Census, 2011)

Planning district	Municipal Multi-Code Sports Grounds		School Sports Fields		Municipal + Schools
	No. of grounds	Total size (ha)	No. of fields	Total size (ha)	Total hectares available
Helderberg	10	60	24	31	91
Cape Town	147	784	445	429	1213

Table 25: Supply of sports facilities in the Helderberg District versus the metropolitan area, 2011 (Revised Census, 2011)

Planning District	Total population	Total sports facilities supply (municipal & school) (ha)	Total supply-people equivalent (municipal & school)	Total Supply-people equivalent (municipal only)
Helderberg	218 005	91	455 000	300 000
Cape Town	3 664 441	1213	6 065 000	3 920 000

The **Table 26** below provides an overview of the accessibility of sports facilities as reflected in relation to the number of people they serve. It can be seen that approximately 83% of the population is located within 2 km of a municipal sports ground and approximately 89% of the population is located within 2 km of a school sports ground. Therefore, the majority of Helderberg's population lives within close proximity (2 km radius) of sport grounds. Consequently, it can be inferred that the Helderberg District is well served by sports grounds, both in terms of capacity and accessibility.

Table 26: Travel distance to sports facilities and the number of people served by them, based on capacity and distance constraints, 2011 (Revised Census, 2011)

Type	0-1km	1-2km	2-5km	5-10km	Total
Population served by MMSG	67 377 (30.9%)	88 467 (41%)	50 974 (23.5%)	10 616 (5%)	218 005 (100%)
Population served by school sports fields	162 328 (74.5%)	7 201 (3.3%)	37 849 (17.4%)	10 627 (4.8%)	218 005 (100%)

8.4.2 Parks

In analysing the state of the current supply of parks, the following key assumptions are made:

- Parks include developed open space (hard and soft spaces).
- Any facilities with entrance fees are excluded.
- Nature reserves are excluded, although specific picnic areas within reserves are valid for inclusion.
- The following provision standards apply:

- 0.35 ha /1 000 people for community parks at a 1.5 km accessibility threshold
- 0.15 ha /1 000 people for district parks at a 20 km accessibility threshold

The **Figure 53** illustrates that as of 2011, at a metropolitan level, there is good access to community parks, with 90% of the city's population living within 1.5 km of a community park. However, when taking into consideration the provision ratio of community parks, the service coverage stands only at 61% of the total metropolitan population. Areas of unserved population are thus evidence of a lack of park capacity to serve local demand, as opposed to poor accessibility.

As with community parks, **Figure 54** illustrates that there is a relatively good spatial distribution of district parks across the city. The vast majority of residents (90%) live within the travel distance standard of 20 km. Despite high level of accessibility of district parks at a city-wide level, on a district scale, the population of Atlantis and the majority of the Helderberg District lives further than 20 km away from a district park. Demand, rather than an actual undersupply of; i.e. the spatial provision of district parks does not align with population density patterns.

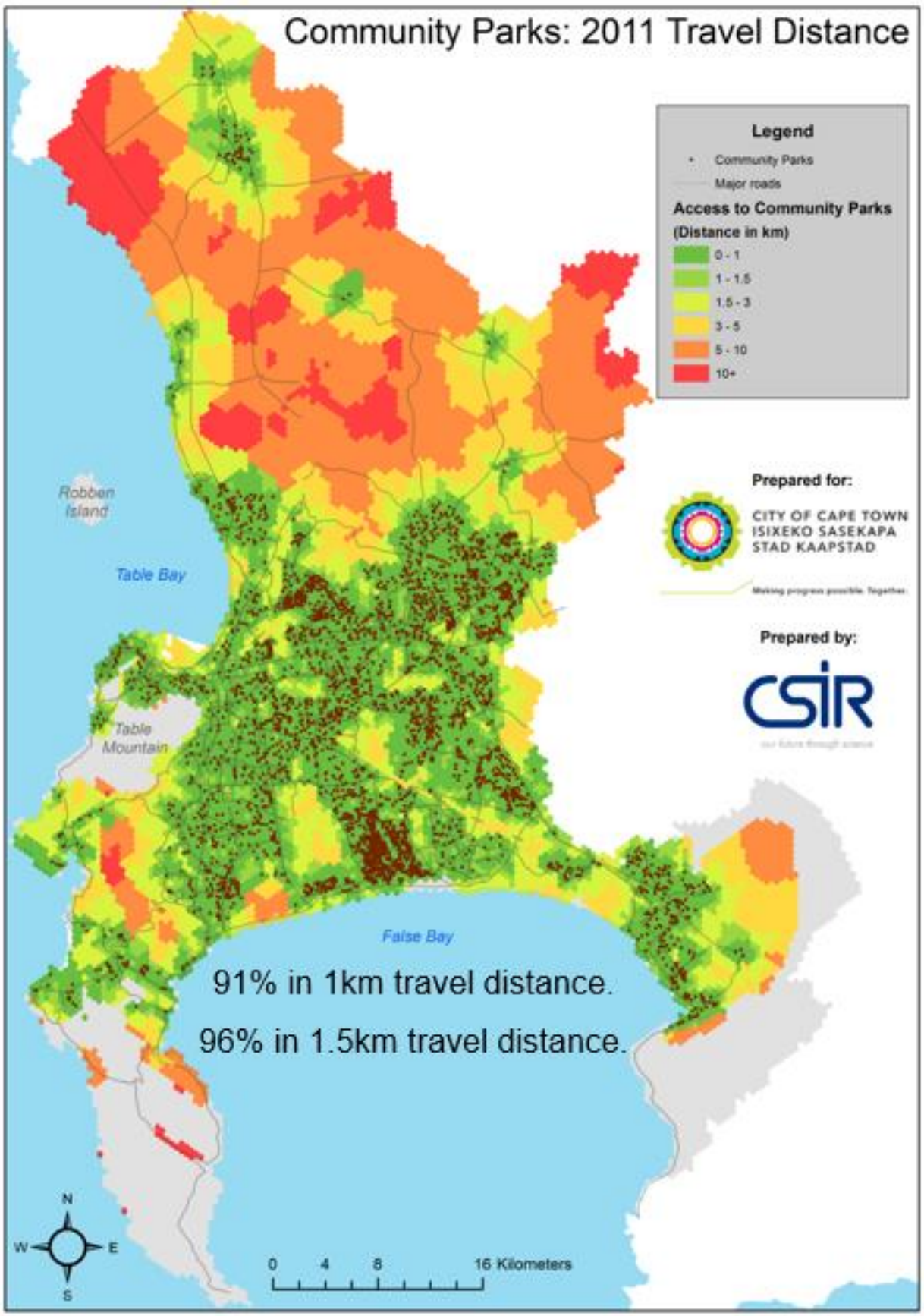


Figure 53: Travel distance to community parks across the metropolitan area, 2011 (CSIR from Revised Census, 2011)

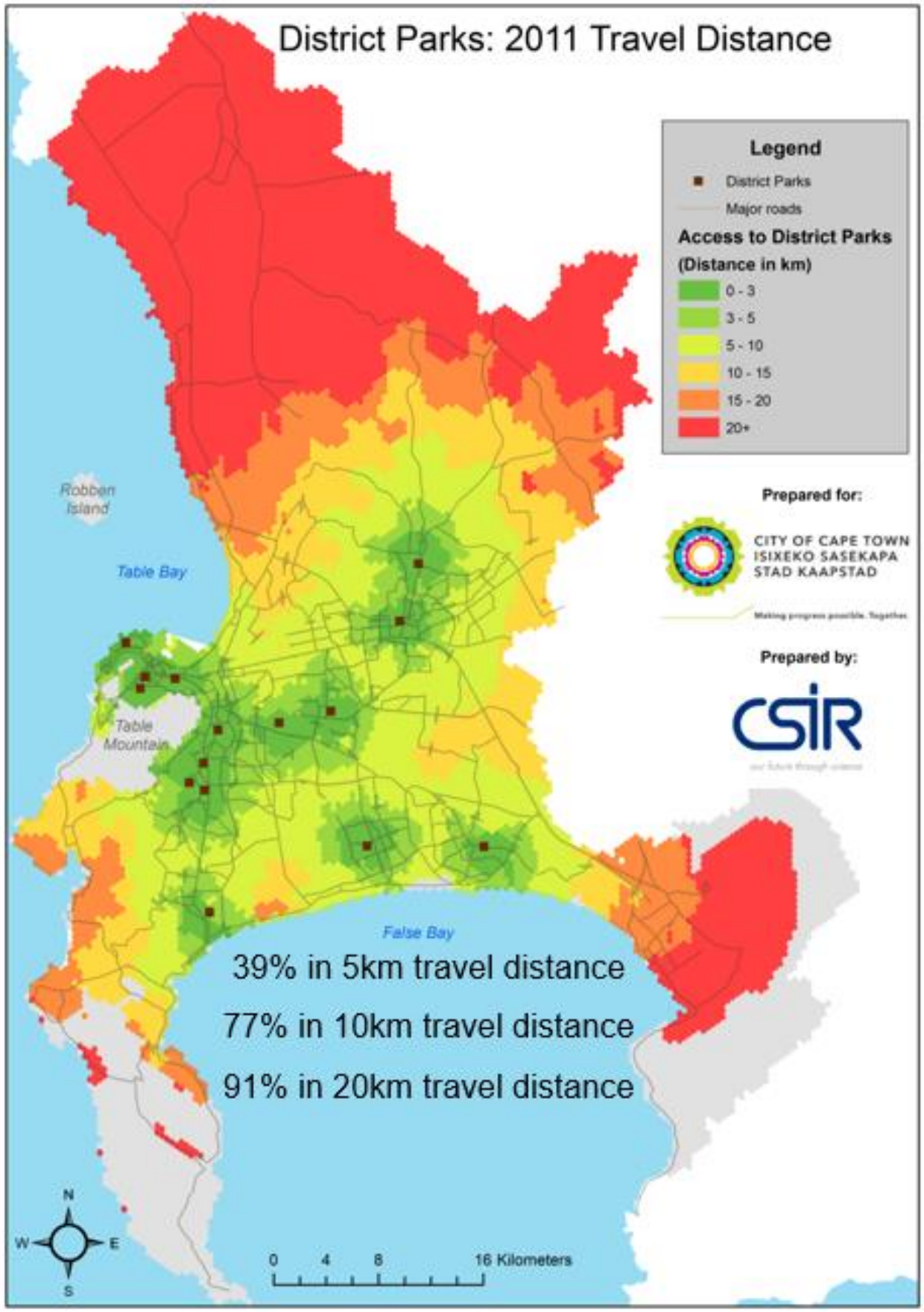


Figure 54: Travel distance to district parks across the metropolitan area, 2011 (CSIR, from Revised Census, 2011)

In light of the metropolitan information above, **Table 27**, below, further breaks down the service coverage statistics of parks in the Helderberg District. As of 2011, the Helderberg District has approximately 239 community parks and no district parks. It can be seen that community parks serve approximately 62% of the population. In light of the complete lack of district parks in the district, 0% of the population is served by a district dark.

The rapidly increasing population of and number of housing developments in Helderberg will necessitate the development of new or optimisation of existing facilities. However, there is currently a significant gap in in qualitative information available on the quality and management of parks.

Table 27: Number of people served and unserved by parks in the Helderberg District, 2011 (Revised Census, 2011)

Park type	Unserved	Served	% Served	Total population
Community Parks	84 646	135 684	62.43%	217 331
District parks	217 331	0	0.00%	217 331

8.5 Key Opportunities and Constraints

8.5.1 Opportunities

- 90% of the Helderberg District population lives within 5 km of a municipal hall. These can form the centres of civic nodes, integrating other, mutually supporting social facilities to contribute to social development in the district.
- The vast majority of Helderberg's population lives within 2 km of either a municipal or school sports facility. The abundance of sports facilities can be integrated with the development of new parks to create more varied, active and safer recreational nodes.

8.5.2 Constraints

- There is a poor level of access to Grade R education.
- A relatively large proportion (12%) of the school-going-aged population is not served by schools. This appears to most likely be an issue of school capacity, rather than physical proximity of schools.
- The existing lack of educational capacity (see above) will likely be exacerbated by the district's rapidly growing population (5.12% per annum between 2001 and 2018).

- There is poor access to passive recreation. Only 62% of the Helderberg District population is served by community parks and the majority of the population lives more than 20 km away from a district park.

- Between 2001 and 2018, the Helderberg District population has experienced rapid population growth at 5.12% per annum. If this trend continues, it will put significant additional pressure on the provision of new and optimisation of existing social facilities.

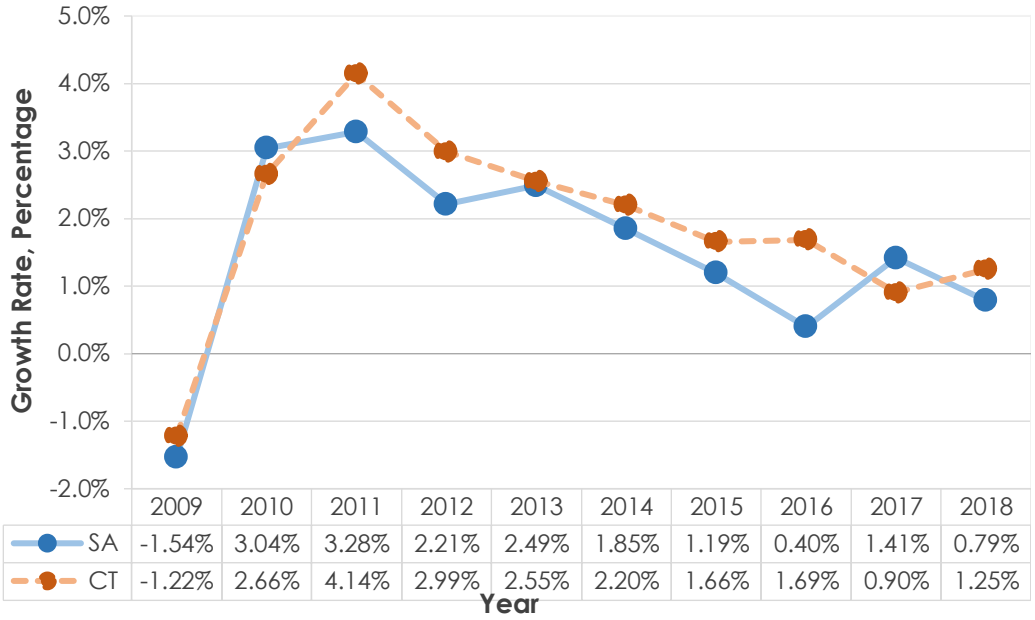
D: STATE OF THE ECONOMY AND PROPERTY MARKET

9 THE ECONOMY

9.1 Macro-Economy

9.1.1 Macro-Economic Indicators

Economic performance in Cape Town largely mirrors trends at the national level, though often exceeding the national GDP. Between 2009 and 2018, Cape Town's real GDP growth has averaged at 2.09%, outperforming South Africa's average Real GDP growth of 1.67% during the same period. However, both figures still from part of an overall downward trend, as illustrated in **Figure 55**. Deviations in these trends are observed from 2016, which may be attributable to the recent drought conditions faced in the region.



	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 55: Average annual Gross Domestic Product (GDP) growth in South Africa vs. Cape Town, 2009-2018 (IHS Markit, 2019)

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[9] (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

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

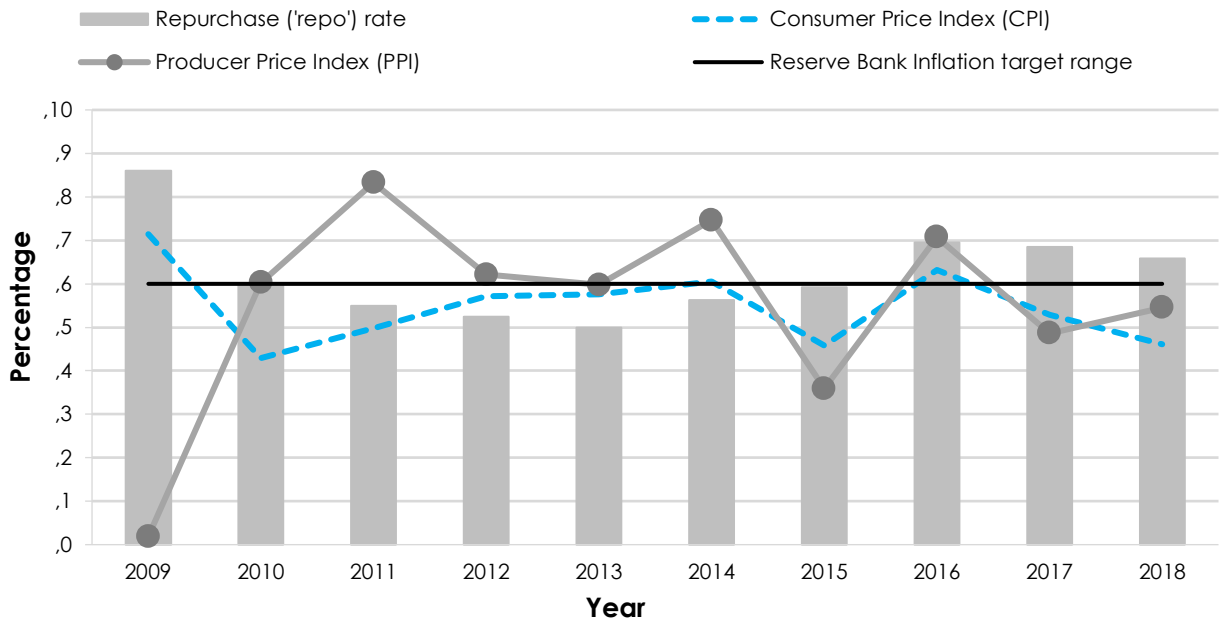


Figure 56: Consumer Price Index (CPI), Producer Price Index (PPI) and repurchase rate trends against the Reserve Bank inflation rate target, 2009–2018 (Statistics South Africa 2018–2019 & SARB, 2018–2019)

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 in Figure 56 above, the CPI and the PPI varied slightly around the reserve bank upper inflation target rate of 6%.

In 2016, inflation (6.33%) exceeded the upper limit of the target. 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 has been 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.

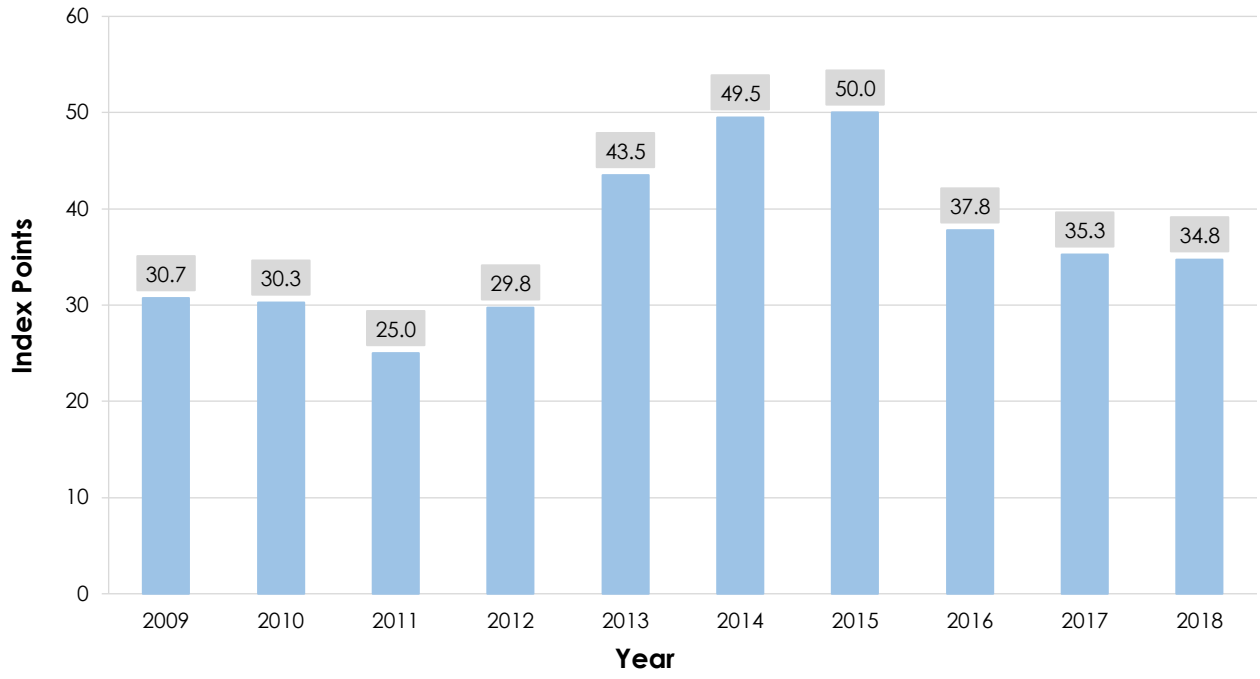


Figure 57: Building Confidence Index (BCI) trends in Cape Town, 2009–2018 (Bureau for Economic Research (BER), 2018 & FNB/BER BCI, 2018)

Figure 57, above, shows the First National Bank (FNB)/Bureau for Economic Research (BER) composite Building Confidence Index (BCI) for the ten-year period from 2009 to 2018. The BCI records the percentage of architects, quantity surveyors, contractors and manufacturers of building material who are either satisfied with or wary of the prevailing business conditions (BER, 2018).

The FNB/BER composite 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 BCI 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).

9.1.2 Macro-Property Market

Figure 58, 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.

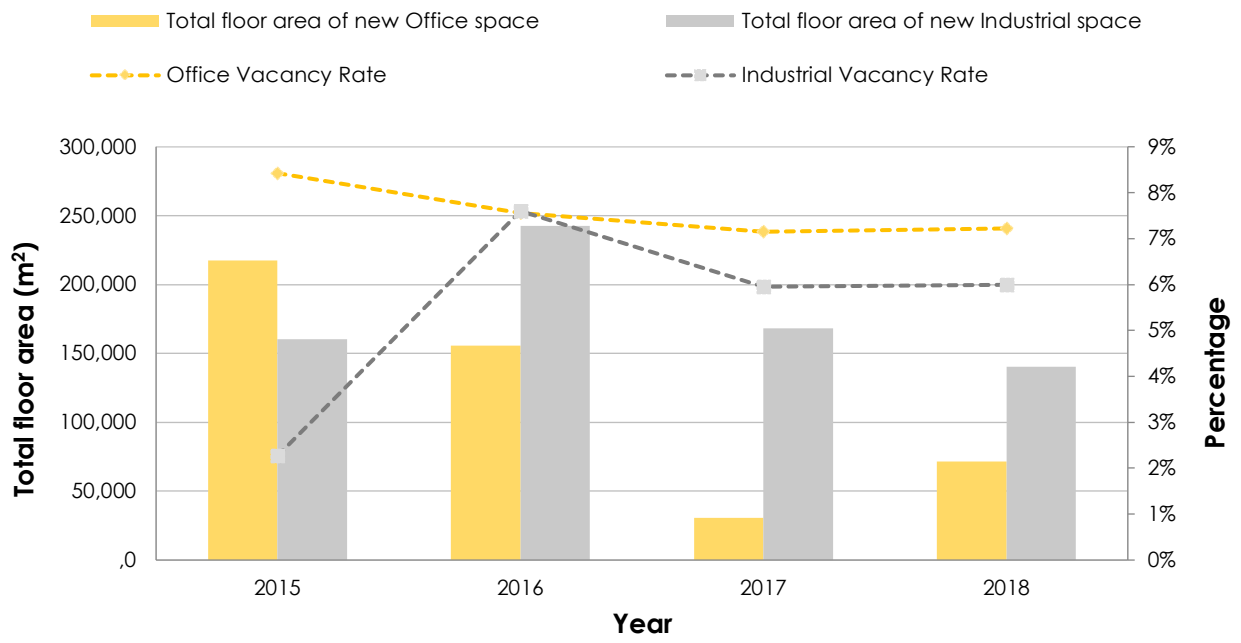


Figure 58: Cape Town new building completions and vacancy rates for office and industrial space, 2009–2018 (Transport Business Support Department & South African Property Owners' Association (SAPOA), 2019)

Between 2015 and 2016, 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[10] (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 figures show 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.

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

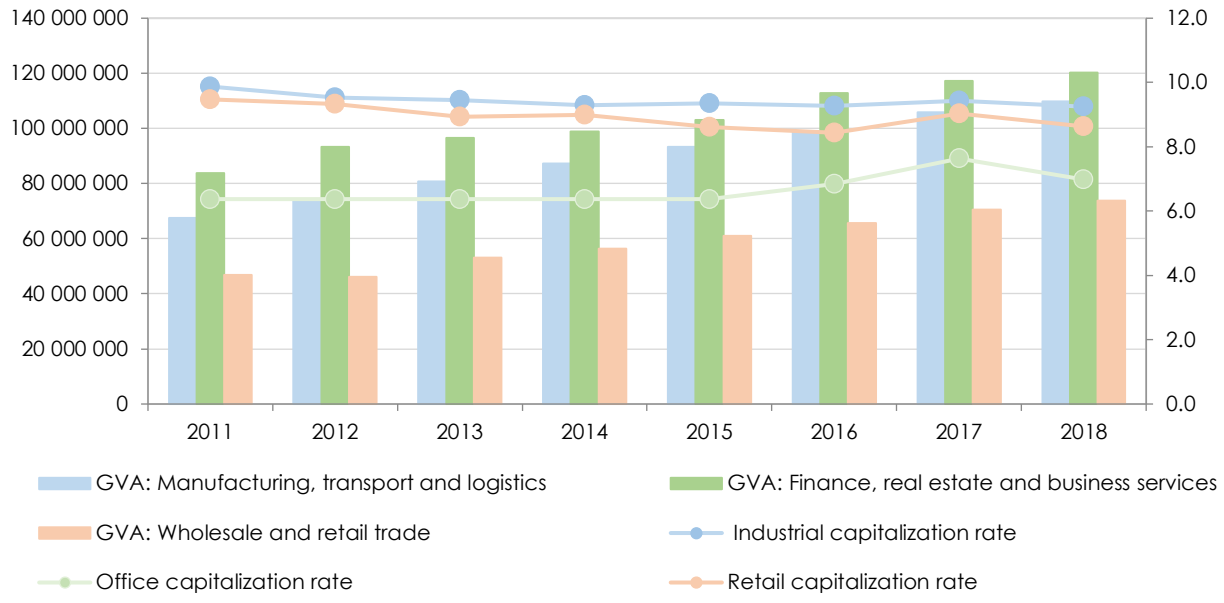


Figure 59: Cape Town Gross Value Added (GVA) and capitalisation rate (cap rate) trends, 2011–2018 (IHS Markit, 2019 & South African Property Owners Association (SAPOA), 2019)

Figure 59, above, shows the industrial, office and retail capitalisation rates as well as the Gross Value Added (GVA) for the finance and business services; manufacturing, logistics and transport; and whole sale and retail trade sectors. The 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 59**, the cap rates for office, industrial and retail property in Cape Town follow a similar trend between 2011 and 2015. From 2016 to 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.

9.2 District Analysis

9.2.1 Economic Characteristics

As of 2018, the largest contributor to the gross geographic product (GGP) at current prices for Cape Town is the Table Bay District (28.9%), an area characterised 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. The Tygerberg District, with a GGP share of 22.1%, is the second largest district economy and is largely dominated by finance, insurance, real estate and business services.

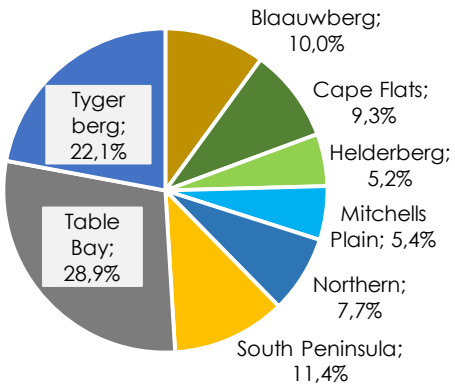


Figure 60: Gross Geographic Product (GGP) contributions per district at current prices, 2018 (IHS

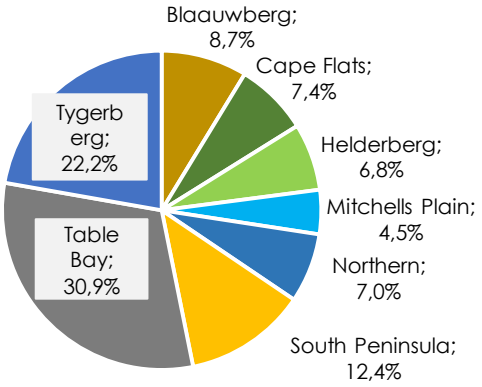


Figure 61: Employment contributions, 2018 (IHS Markit, 2019)

The top three districts in terms of employment are Table Bay (30.9%), Tygerberg (22.2%), followed by South Peninsula (12.4%). By contrast, the Khayelitsha, Mitchells Plain & Greater Blue Downs District has the lowest employment share at 4.5% (71 800 jobs). 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.

9.2.2 Economic Performance

Despite being one of the smallest contributors to GGP, the Blaauwberg District saw the fastest rate of economic growth in Cape Town between 2009 and 2018 at 2.8% – higher than the metropolitan 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 10-year period, lower that the metropolitan average. The Helderberg District had the highest employment growth rate at 2.6%, closely followed by Blaauwberg at 2.5%, both areas surpassing the metropolitan average employment growth rate of 1.6% over the 10-year period.

Figure 62, below, plots the average economic growth rates of districts on the horizontal axis and average employment growth on the vertical axis. The size of the bubble represents the relative size of the economy as measured by GGP in 2018.

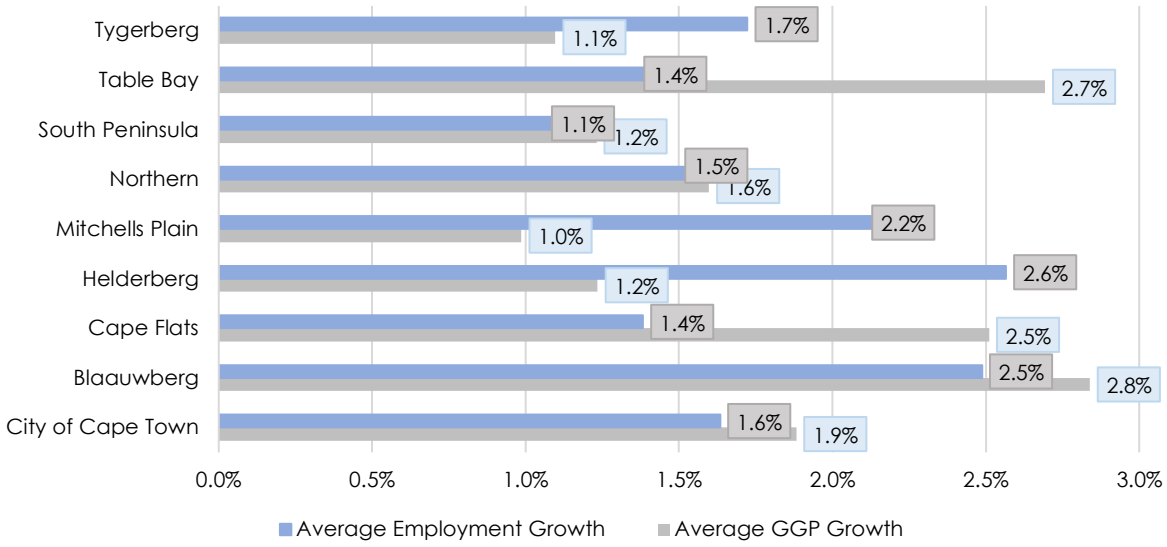


Figure 62: Average annual economic growth rate per district, 2009–2018 (IHS Markit, 2019)

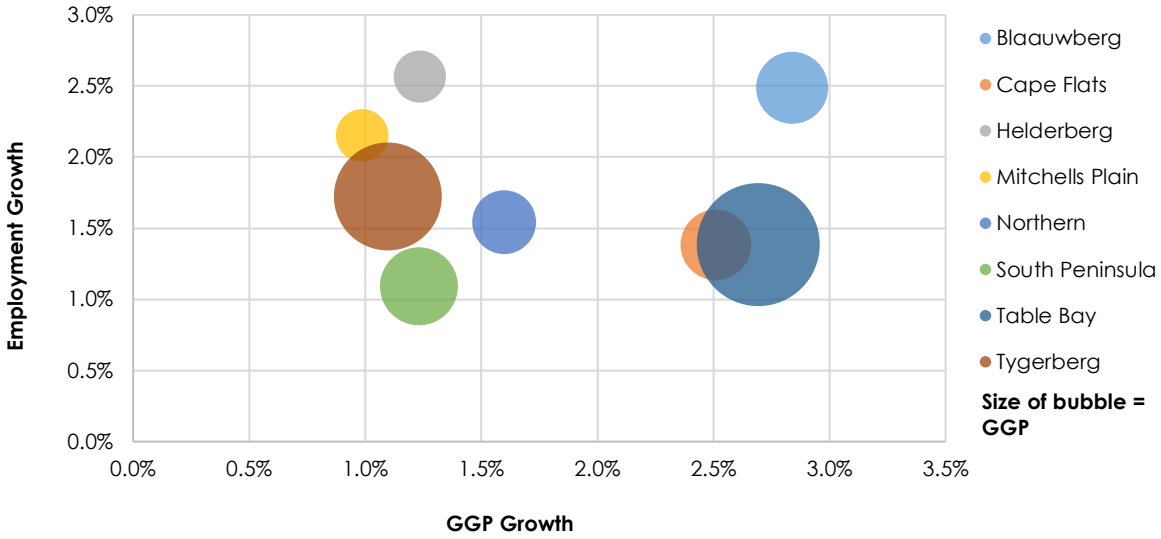


Figure 63: Economic performance district comparison, 2018 (IHS Markit, 2019)

9.2.3 Sectoral Trends

From Figure 64 and **Figure 65** below, it is clear that Table Bay is the main contributor to the total gross value added (GVA) of most economic sectors in Cape Town, followed by the Tygerberg District. Table Bay's contribution is especially pronounced in the transport (34.7%) and trade (30.6%) sectors. 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.[11] 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. By contrast, Khayelitsha, Mitchells Plain & Greater Blue Downs shows 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). Employment trends, for the

[11] The mining figures are for all districts are almost insignificant

most part mirror the output trends, although Tygerberg is seemingly more labour-intensive (contributing more to employment than GVA) than the Table Bay District.

The Figure 64 and **Figure 65** below demonstrate the output sizes as well as total employment (number of people employed) across all sectors by each planning district. As observed, 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.

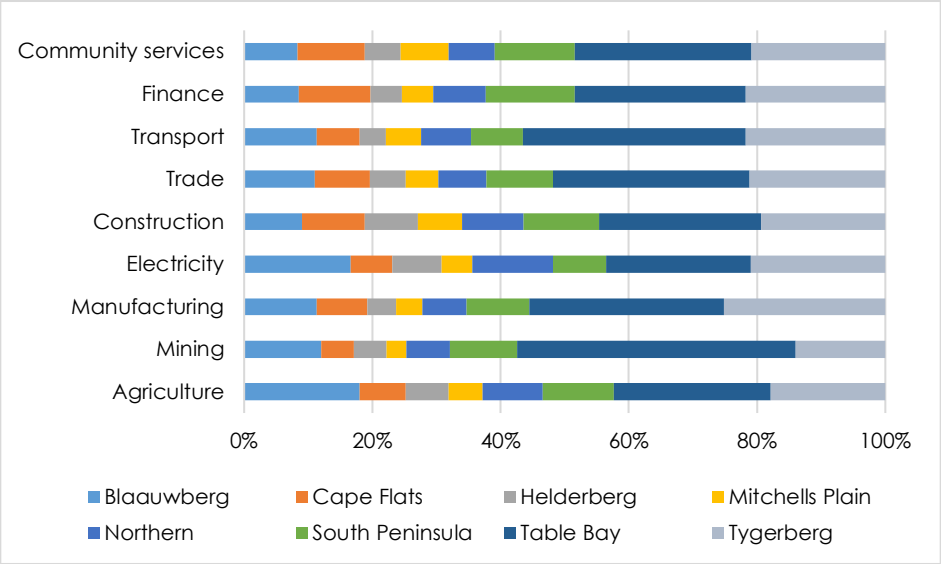


Figure 64: Gross Value Added (GVA) contribution per district by sector, 2018 (IHS Markit, 2019)

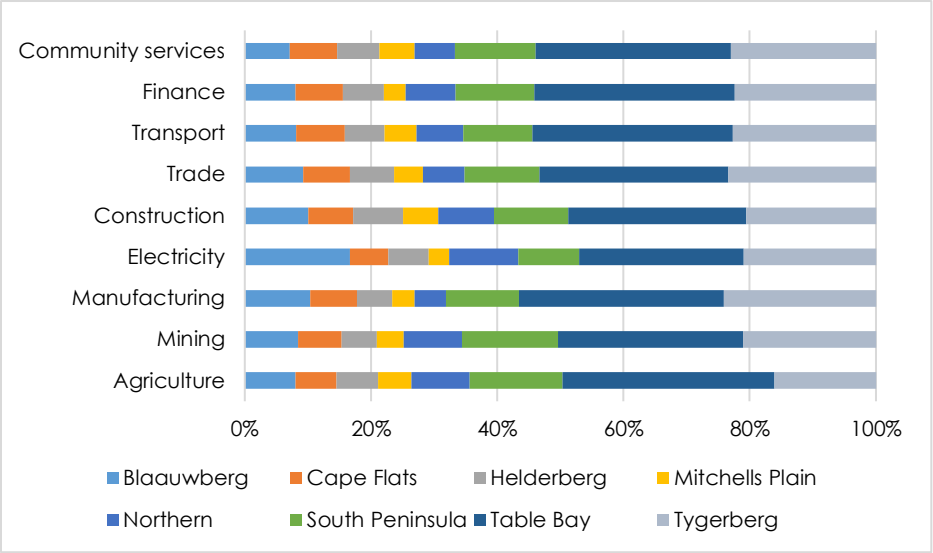


Figure 65: Employment contribution to Cape Town per district by sector, 2018 (IHS Markit, 2019)

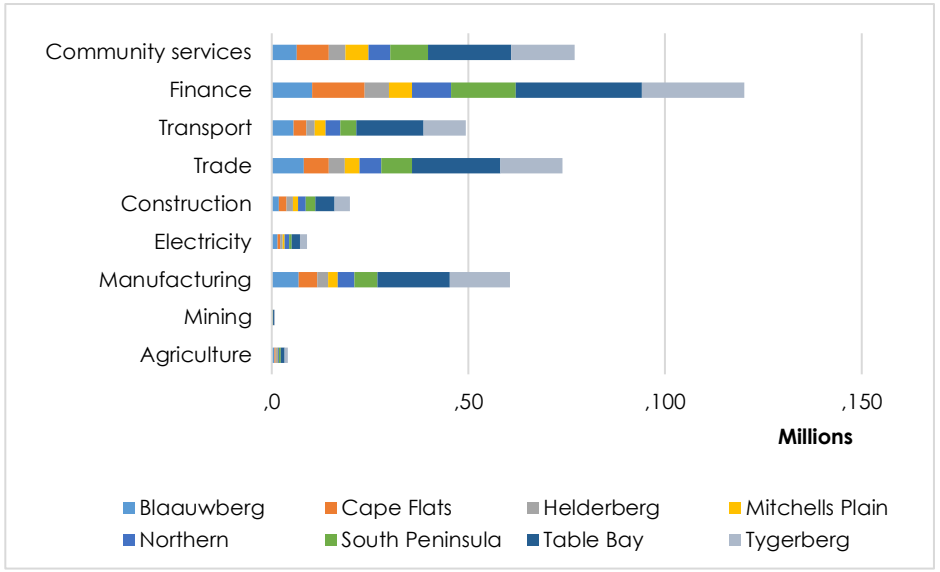


Figure 66: Gross Value Added (GVA) per district by sector, 2018 (IHS Markit, 2019)

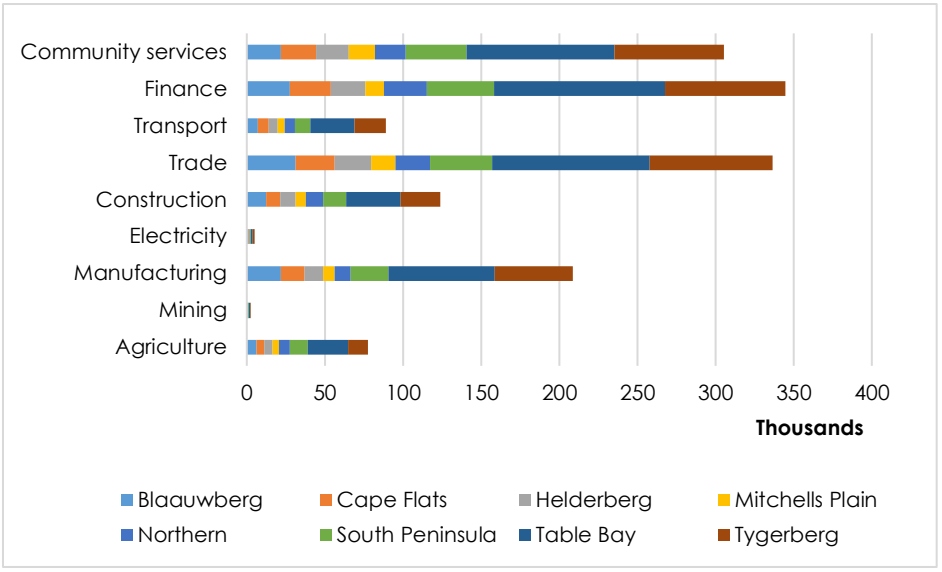
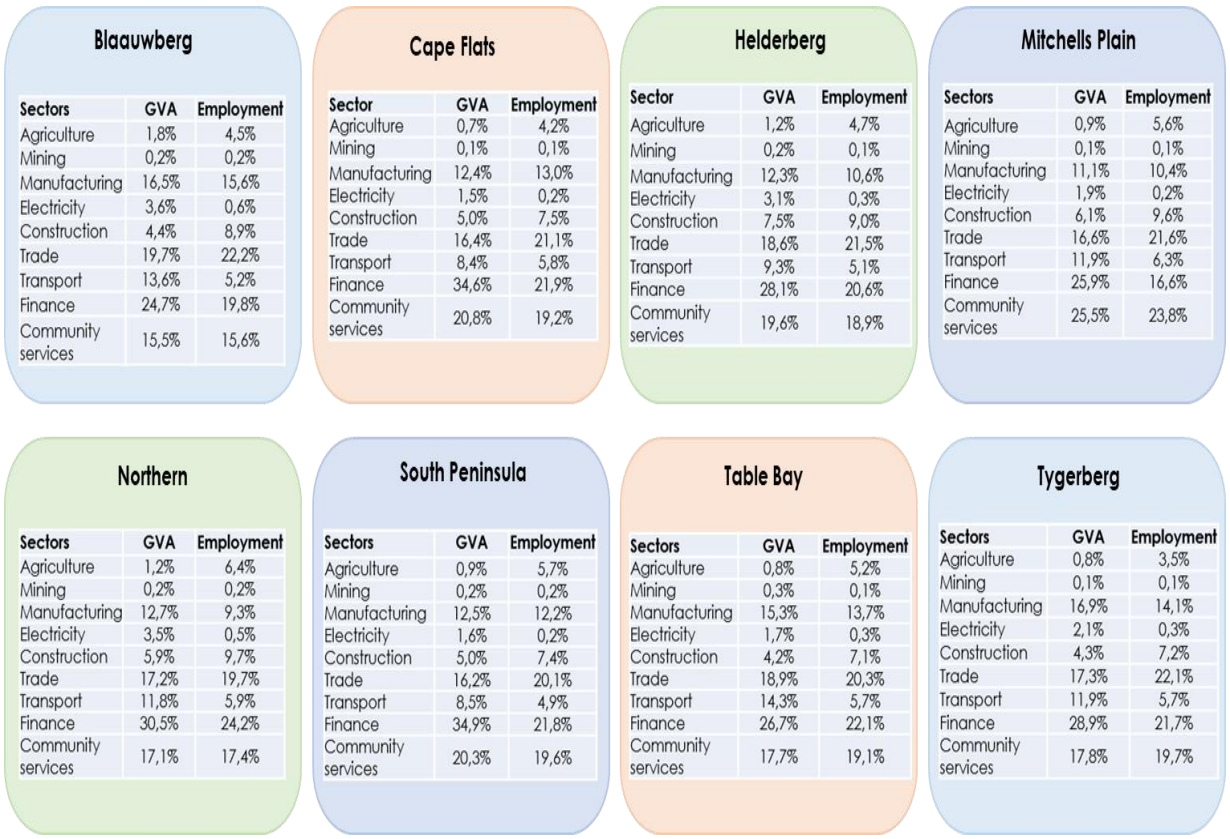


Figure 67: Total employment by sector, 2018 (IHS Markit, 2019)



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 68: Gross Value Added (GVA) and employment contributions per district, 2018 (IHS Markit, 2019)

The **Figure 68** above illustrates the sectoral GVA and employment shares within each of the eight planning districts. It is apparent that the smaller district economies (Cape Flats, Khayelitsha, Mitchells Plain & Greater Blue Downs) tend to be less diversified than the larger district economies, with proportionally less contribution from the manufacturing sector and greater reliance on community services[12]. Among the productive sectors, manufacturing is relatively more important to Tygerberg's economy, while agriculture is relatively more important to the economy of Blaauwberg.

While analysis at a broad sectoral level is useful, it is too aggregated to adequately understand the nuances of a regional economy. As such, **Table 28** undertakes a location quotient (LQ) analysis, utilising the more detailed two-digit Standard Industrial Classification (SIC) codes. By comparing the relative share constituted by an industry in its respective district economies to its share in the city-wide economy, LQ analysis provides an indication of the relative importance of industries to the district economy as compared to the Cape Town economy as a whole. The table ranks the top five industries by LQ. It is important to note that having the highest LQ does not necessarily mean an industry is the largest contributor to the district economy nor that it is most strongly represented in that district. Caution should also be exercised when considering non-tradable sectors within small economies. For instance, the fact that education has the highest LQ in the Khayelitsha, Mitchells Plain & Greater Blue Downs and Cape Flats Districts is more a

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

reflection of the weak economy in those areas than an indicator of them having a comparative advantage in education over other districts.

Table 28: Top five sectors by location quotient in each district (detailed SIC)[13], 2018 (IHS Markit, 201

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

[13] Sectors with a gross value added (GVA) share of 0,5% to Cape Town's economy were excluded from the ranking of sectors by location quotient.

	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

9.2.4 Development Indicators

Table 29: Human Development Index (HDI)[14] across the eight metropolitan planning districts, 2009, 2014 & 2018 (IHS Markit, 2019)

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

[14] 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).

Table Bay	0,77	0,80	0,81
Tygerberg	0,70	0,73	0,74

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 (high level of human development) (United Nations, 2018). As illustrate in **Table 29** above, as of 2018, the South Peninsula (0.81), Table Bay (0.81) and the Northern district (0.80) have "very high human development". Khayelitsha, Mitchells Plain & Greater Blue Downs is the only district with a medium HDI at 0.66. This demonstrates the unequal access to education, health, employment as well as other resources within Cape Town, largely due to income gaps, location and poor public transport systems, which limit access to opportunities.

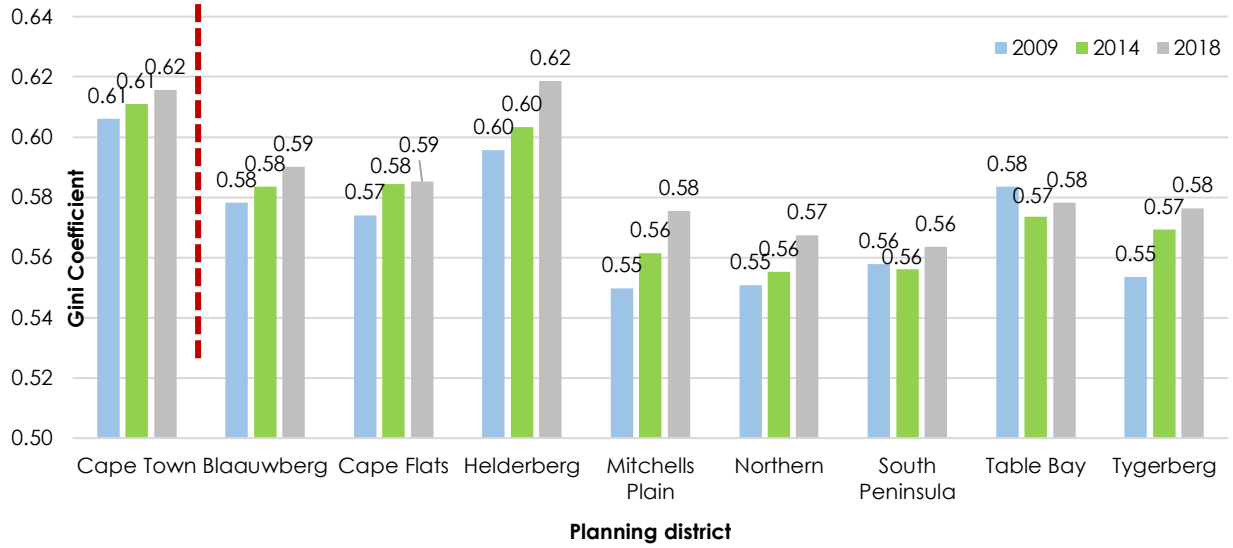


***Figure 69: Gini Coefficient levels across the eight metropolitan planning districts, 2009, 2014 & 2018* (IHS Markit, 2019)**

The Gini Coefficient is measure of income inequality. The coefficient ranges from 0, which represents "absolute equality", to 1, which represents "absolute inequality" (Statistics South Africa, 2014). As of 2018, out of all the districts, the South Peninsula has the lowest measure at 0.56 and Helderberg the highest at 0.62. More broadly, it is concerning to observe an overall increase in income inequality over time present across all districts. This illustrates that income inequality is still a major challenge within the City of Cape Town, not only between but within planning districts.

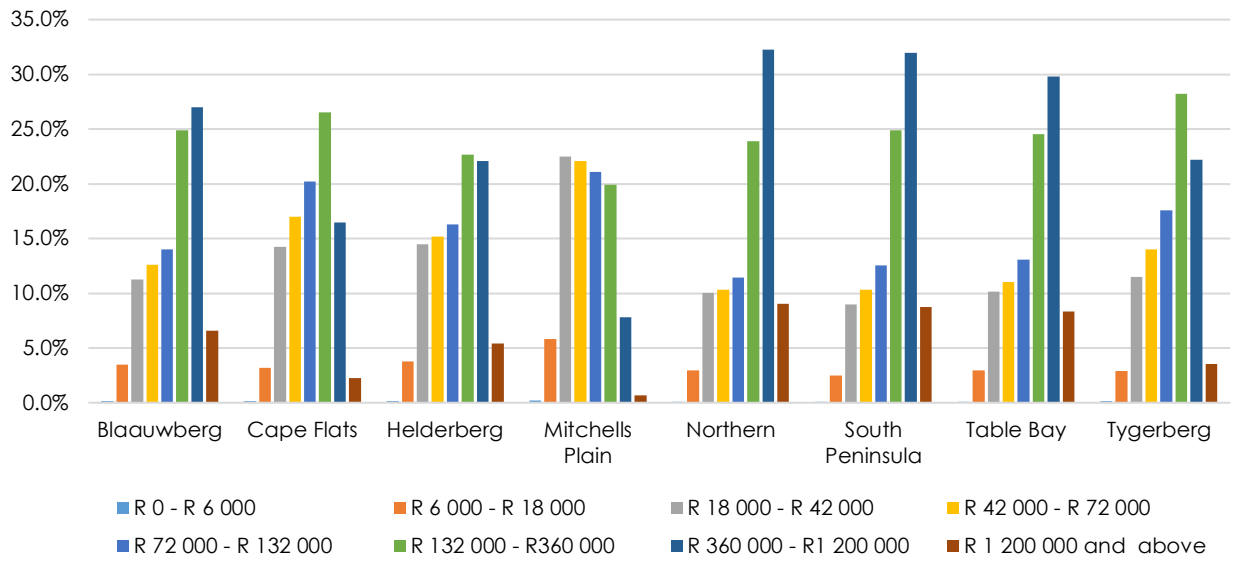


Figure 70: Number of households by income category across planning districts, 2018 (IHS Markit, 2019)

As of 2018, there are a total of 1 315 015 households in Cape Town, the majority of which are located in the Khayelitsha, Mitchells Plain & Greater Blue Downs District (29.19%), followed by Tygerberg (16.03%) (see **Chapter 2: Demographics**). Khayelitsha, Mitchells Plain & Greater Blue Downs is predominantly residential in nature; thus it intuitively 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 record the highest percentage of households in upper annual income bands (R132 000 and above). Tygerberg has the largest share of households (28.2%) with an annual income between R132 000 and R360 000, while the Blaauwberg, Northern, Table Bay and South Peninsula Districts all have their highest share of households in the R360 000 to R1 200 000 band.

9.3 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 and defines it broadly as comprising of people working in establishments employing less than five 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, providing opportunities for otherwise marginalised members of society.

9.3.1 Size of the Informal Economy

As of the second quarter of 2019, Statistics South Africa estimates that 220 000 people are employed in Cape Town's informal economy. This constitutes 13.3 % of Cape Town's workforce, a significant amount. Importantly, the benefit of the sector is predominantly in low-income communities, where it accounts for an estimated 5% reduction in the poverty rate.[15] **Figure 71** further illustrates that the number of jobs in the informal economy has grown from 2015 to 2019, as has the share of jobs which are informal.

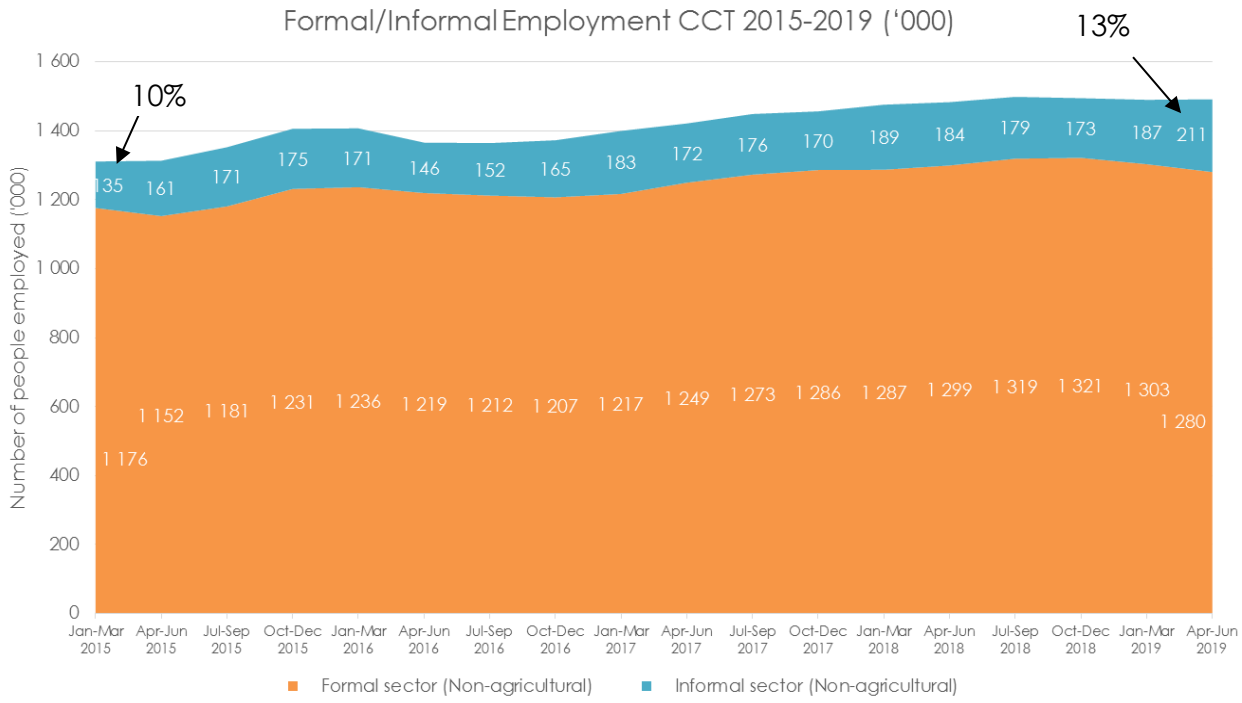


Figure 71: Cape Town formal versus informal economy employment trends, 2015–2019 (Statistics SA Quarterly Labour Force Survey, 2019)

[15] GHS 2013

9.3.2 Employment Distribution

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

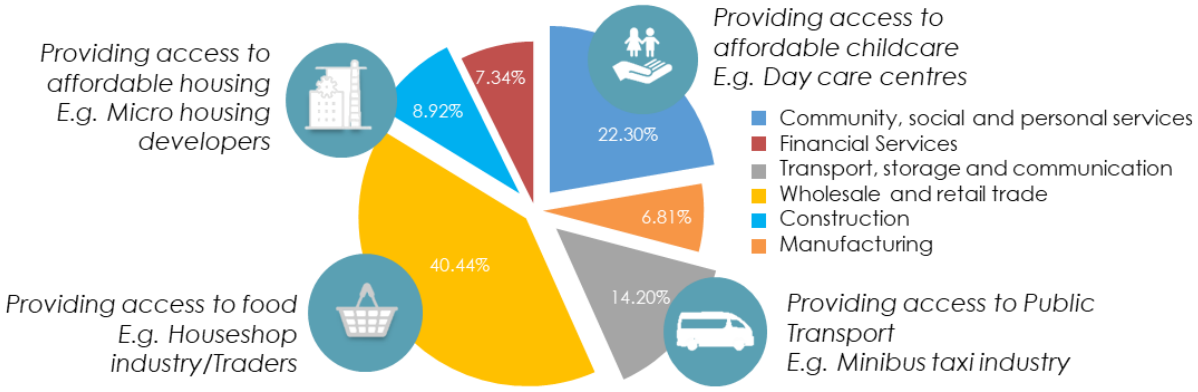


Figure 72: Industry distribution of informal economy employees in Cape Town, 2019 (Stats SA, QLFS Q2, 2019)

9.3.3 Opportunities and Constraints

As long as the population of Cape Town grows (through natural growth and in-migration) at a higher rate than formal jobs are created, the informal economy will be an important avenue for generating employment, sustaining livelihoods and reducing poverty. This is particularly true in a scenario where the majority of people moving to the city or young residents entering the labour force is either unskilled or semi-skilled. The informal economy has the potential to provide transitional employment for people migrating to the city and new entrants to the labour force and, in some cases, to provide sustained livelihoods. However, there is a risk that many informal economy participants may become stuck in low productivity, survivalist activities, with few prospects for upward mobility.

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

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 enterprises. Most informal businesses battle to access growth markets and the capital required to diversify and scale up their activities. As a result, they are often left to compete fiercely for market share at the local level, servicing lower-income consumers, leading to low and precarious profit margins[16]. This creates 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 a lack of

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

security 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 the realities of the informal economy. The costs associated with regulatory compliance are a disincentive to formalisation, which may severely hamper the growth of informal enterprises and their access to formal avenues of support, such as loans.

A key challenge for Cape Town in supporting informal sector development is the scarcity of data on the size, location and activities thereof. Lack of information about the lived realities of those working informally and their priority needs is also a challenge. **For this reason, further studies are being undertaken to assist in the preparation of the District Plan.**

10 PROPERTY MARKET

10.1 Measuring Property Market Performance

The figures and table below depict the change between in average capitalisation (cap) rates, operating costs, market rental and vacancy rates per non-residential market segment in the Helderberg District between 2012 and 2018. This gives an indication of how strong different property market segments have performed. An analysis and explanation of the data follows in the next section.

A cap rate is a type of measurement used in evaluating an investment, indicating **risk** and the **potential rate of return** for a prospective property. It expresses the ratio of stabilised annual net operating income to purchase price. Thus, it measures income after deduction for operating expenses and normal vacancy, but before deducting financing charges and income taxes (Ambrose & Nourse, 1993: 221). **A low cap rate implies lower investment risk and higher property value, while a high cap rate implies higher investment risk and lower property value.** The cap rate is thus considered to be a good indicator to assess general property market performance, as it is influenced by a number of endogenous and exogenous factors, namely:

- **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; you can include rent for parking and other factors.

- **Net operating income (NOI):** This is the annual income generated by an income-producing property after deducting all operating expenses.

- **Operating expenses:** Expenses needed to 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 and is typically used in multi-unit properties.

- **Growth** in sales.

- **Operating expenses:** Expenses needed to operate the property which includes property taxes, rental property insurance, management fees, repairs, maintenance and miscellaneous things like accounting and legal fees.

- **Supply vs. demand:** This is how many properties are available in the area and, typically, where there is lower inventory (supply) and high demand, cap rates tend to be lower.

- **Property type/Asset class:** This is the type of property such as multifamily, apartment building, industrial or commercial property and 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**

10.2 Key Observations and Trends

10.2.1 Non-Residential

Table 30: Helderberg District non-residential property market indicators, 2012–2018 (City of Cape Town Non-Res Market Research, 2018)

Market segment	Year	Average cap rate (%)	Average operating cost (R/m²/month)	Average gross market rental (R/m²/month)	Average vacancy rate (%)
Industrial	**2012**	10.5%	R 5.18	R 27.04	3.5%
	2015	9.9%	R 6.89	R 35.72	5.8%
	2018	9.7%	R 9.80	R 65.94	3.9%
Retail	**2012**	11.0%	R 10.67	R 55.69	3.5%
	2015	9.5%	R 14.94	R 69.06	5.0%
	2018	11.0%	R 31.20	R 204.55	4.8%
Office	**2012**	10.4%	R 19.68	R 74.98	5.0%
	2015	10.0%	R 20.97	R 88.87	8.0%
	2018	10.2%	R 29.00	R 173.18	6.2%

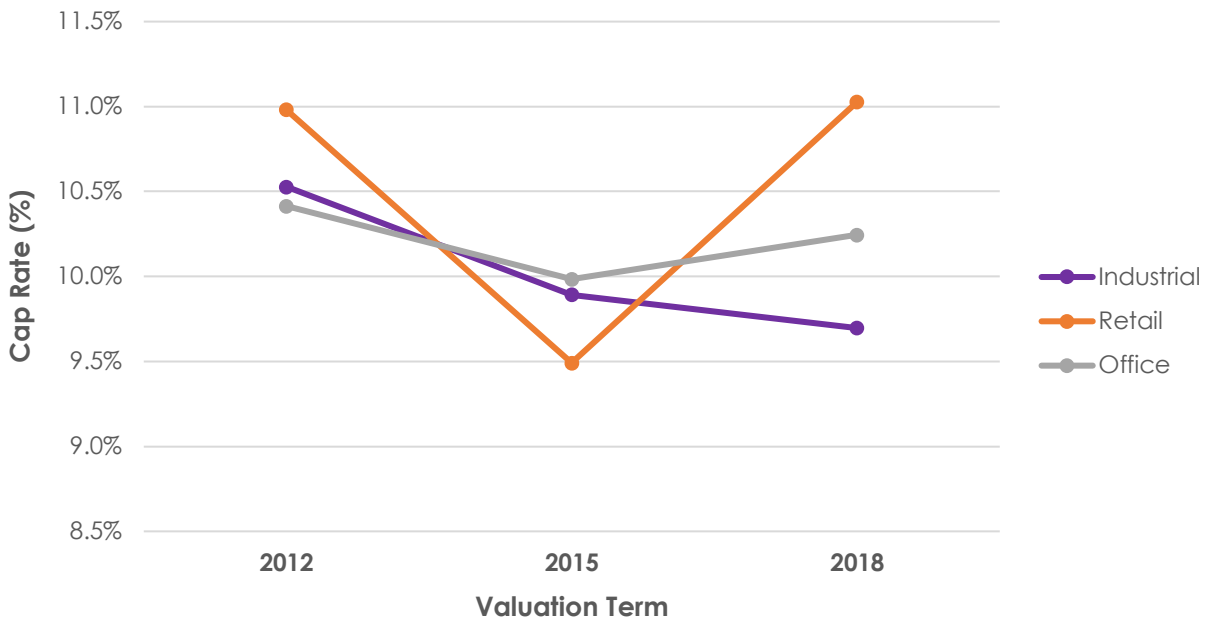


Figure 73: Helderberg District average cap rate trend per non-residential market segment, 2012–2018 (City of Cape Town: Non-Res Market Research, 2018)

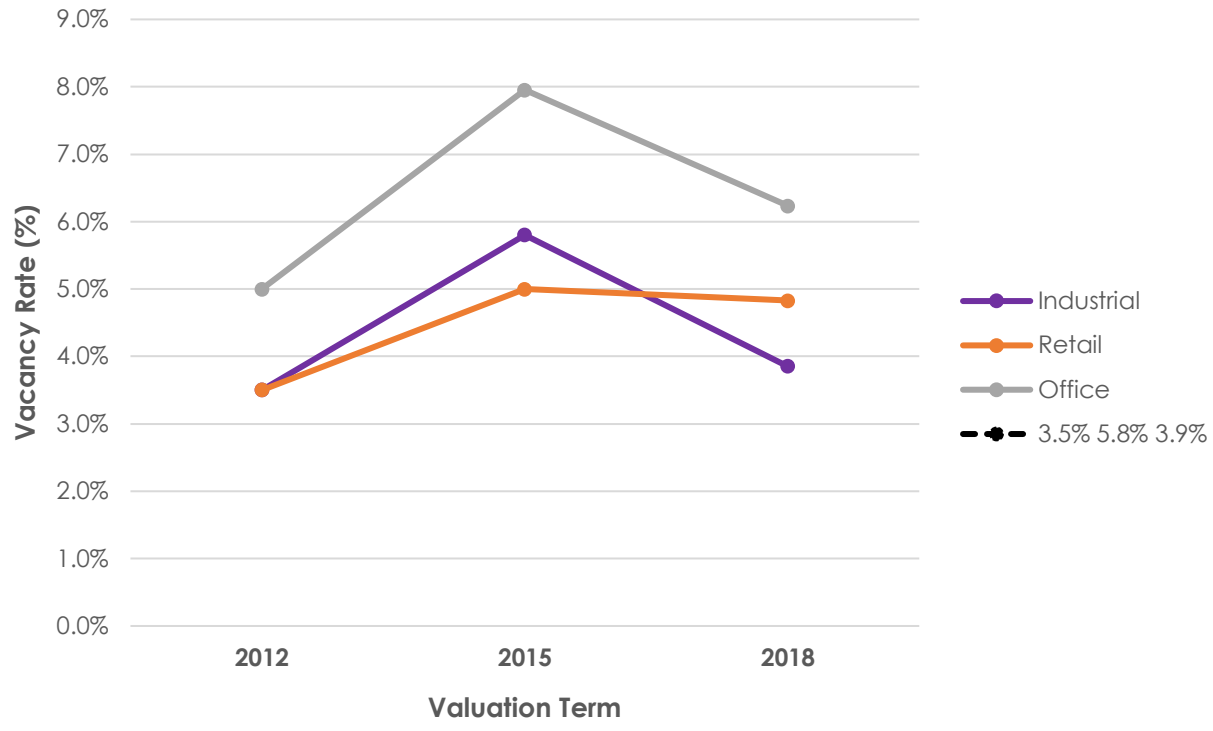


Figure 74: Helderberg District average vacancy rate trend per non-residential market segment, 2012–2015 (City of Cape Town Non-Res Market Research, 2018)

10.2.1.1 Industrial:

Within the Helderberg District, industrial is the only non-residential market segment to show consistent improvement in performance over time. This is expressed by its steadily declining cap rate from 10.5% to 9.7% between 2012 and 2018, which suggests decreasing risk associated with investment in the sector and increasing property value. This is due in no small part to the low operating costs of industrial land uses relative to retail and office. As of 2018, the industrial sector also has the lowest average vacancy rate, at 3.9% relative to retail at 4.8% and office at 6.2%. While the district did see a marked spike in the average vacancy rate of industrial property from 3.5% in 2012 to 5.8% in 2015, it proceeded to decrease significantly to 3.9% by 2018. This suggests an increase in the supply of industrial space, which was subsequently taken up. Such a trend is supported by the almost 100% rise in property prices (average gross market rental) between 2015 and 2018, representing a possible rise in demand as space is taken up. The above trends all point towards an industrial property market with potential for growth in the Helderberg District.

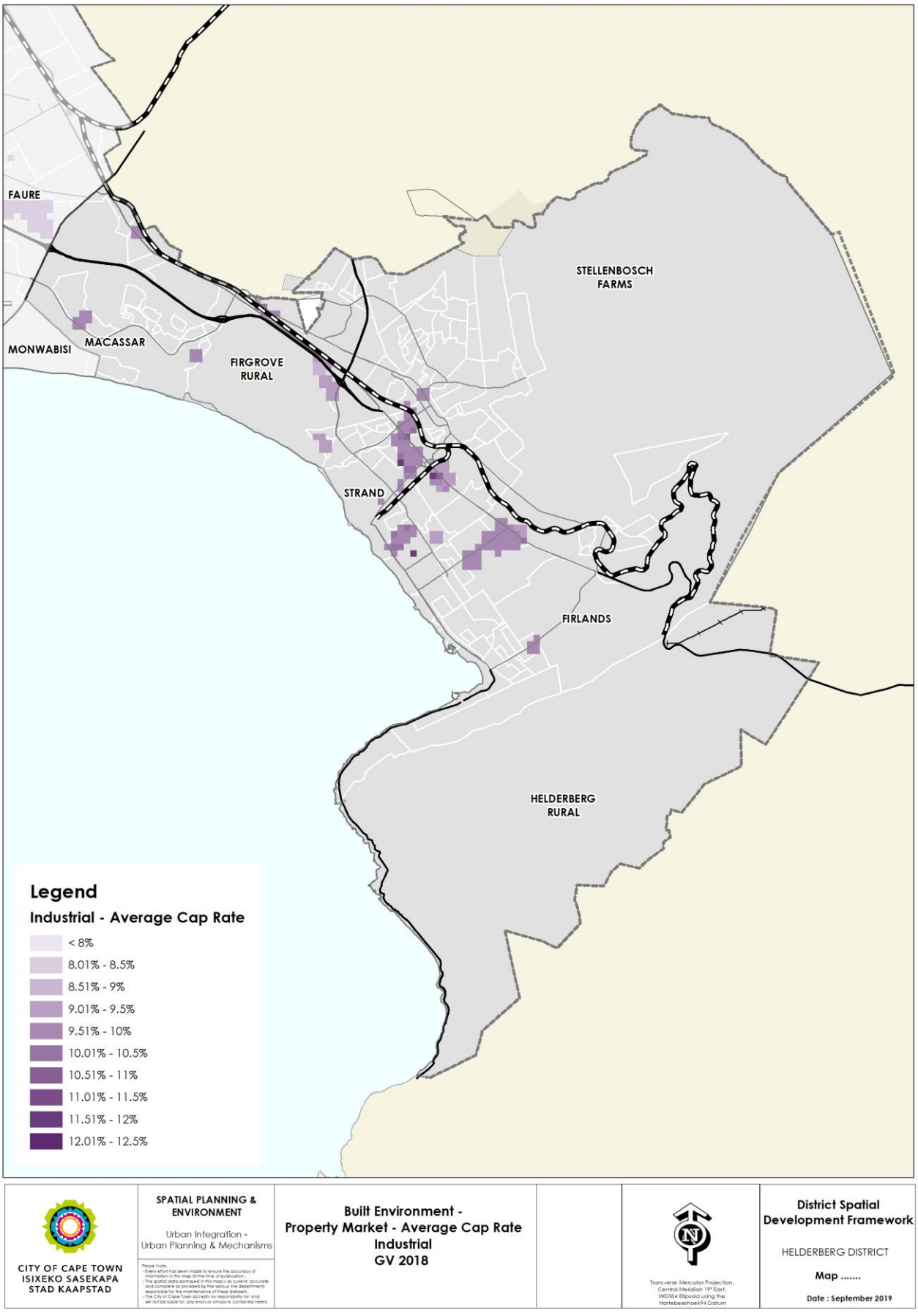


Figure 75: Helderberg District average capitalisation rates per 4 ha grid: industrial property

In spatial terms, industrial potential is greatest in the following areas:

- The Somerset Mall industrial park (north-eastern corner of Firgrove Rural), where cap rates range from 8.51% – 9.50%;
- The Paardevlei hospital complex (south-eastern corner of Firgrove Rural), with cap rates from 9.01% – 9.50%; and
- The Somerset West Business Park (north-eastern corner of Strand, east of the railway), with cap rates primarily from 9.01% – 9.50%.

Larger industrial nodes of slightly greater investment risk (lower rates of investment return) include the following, with cap rates ranging primarily from 9.51% – 10.0%:

- Gants Plaza (north-east corner of Strand, west of the railway line):
- Overwacht industrial park (south-eastern corner of Strand): and
- Broadlands industrial park (between Strand and Firlands)

10.2.1.2 Street-Front Retail:

In comparison with other non-residential market segments, street-front retail is generally performing worst. As of 2018, it has the highest average cape rate at 11.0% . Though this decreased to 9.5%, the lowest among the three sectors, in 2015, it rose sharply to 11.0% again by 2018. This rise in investment risk is reflected by the average street-front retail vacancy rates. Average vacancy rates increased significantly from 3.5% in 2012 to 5.0% in 2015. Past this point, average vacancy remained relatively unchanged, decreasing only marginally to 4.8% in 2018. This points to a relative increase in street-front retail stock (whether through new construction or tenants moving out), which has since gone unoccupied, indicating a lower degree of investor confidence in the sector. One possible contributing factor is the average monthly operating costs of street-front retail property, which more than doubled from 2015 to 2018. At the same time, street-front retail property value (average gross market rental) has increased drastically, almost tripling between 2015 and 2018.

Despite generally high investment risk in street-front retail across the district, there is still significant potential in this market sector in and around Somerset Mall, where average cap rates reach as low as 7.51%. Average cap rates of street-front retail property in the remainder of the district are overwhelmingly in excess of 10.0%, reaching as high as 12.0%, even in seemingly well-located areas, such as along Strand Main Road and the Strand railway line.

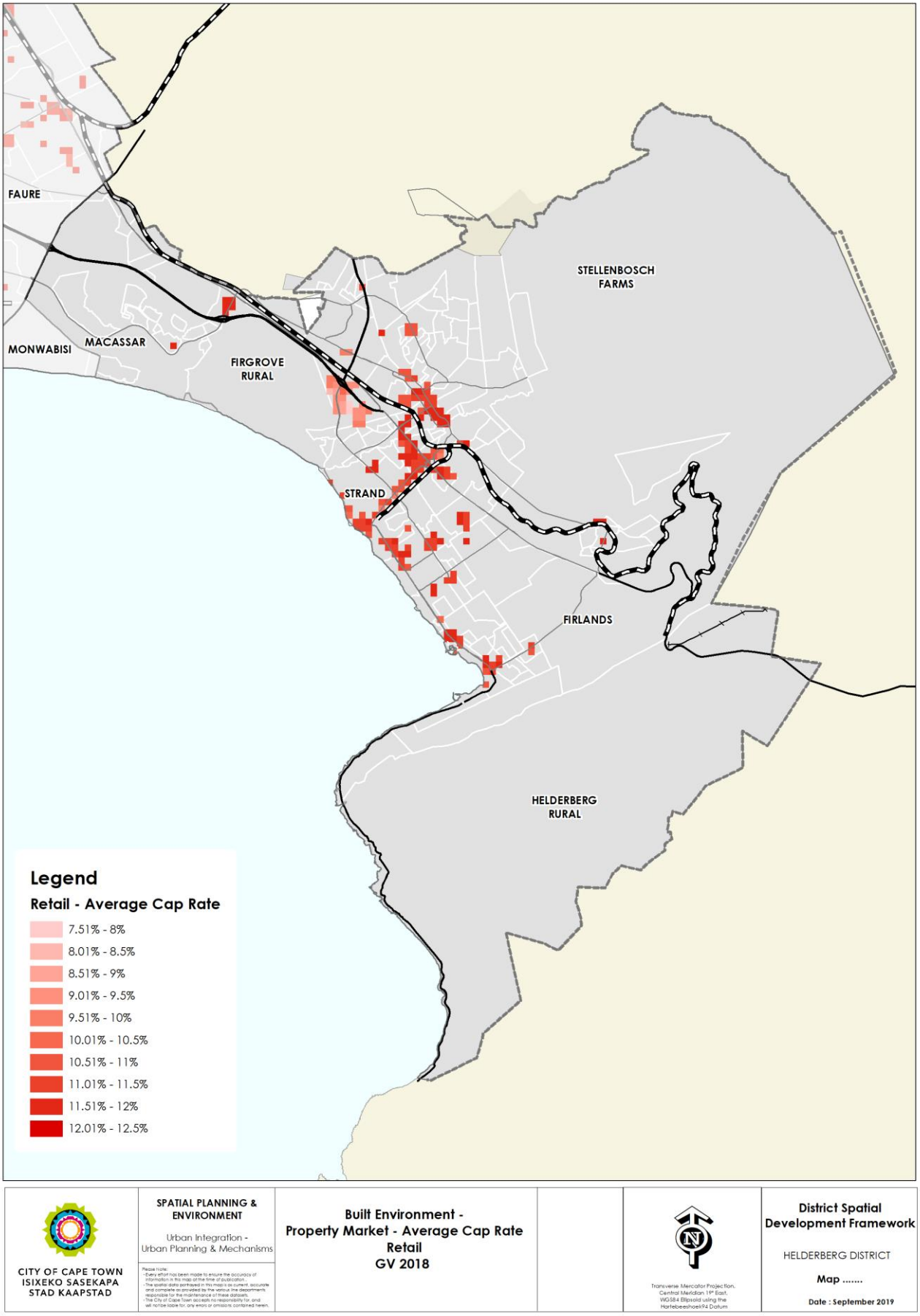


Figure 76: Helderberg District average cap rates per 4 ha grid: street-front retail property

10.2.1.3 Office:

Of the three major non-residential property market sectors, office has had the most consistent cap rate over time. Its average cap rate has fluctuated minimally between 2012 and 2018. With an average cap rate of 10.2% as of 2018, the sector is currently performing better than on-street retail (11.0%), but worse than industrial (9.7%). By contrast, the office sector saw the sharpest rise in average vacancy rate between 2012 and 2015 of all three non-residential property market sectors, from 5.0% to 8.0%. However, as with industrial, the average vacancy rate again decreased significantly, to 6.2%, between 2015 and 2018, indicating a positive uptake of available office stock. This decrease in the average vacancy rate between 2015 and 2018 coincided with an approximately 50% increase in average operating costs, which was eclipsed by an almost 100% increase in property value (average gross market rental).

Spatially, office is the least clustered of the three main non-residential property market sectors. Disregarding smaller pockets of office property across the district, it is concentrated primarily in the following several areas:

- The Paardevlei hospital complex (south-eastern corner of Firgrove Rural);
- Somerset Mall (north-eastern corner of Firgrove Rural);
- Somerset West (north-east of Strand); and
- Strand CBD and along Marine Drive.

Of these areas, the best performing is Somerset Mall, with cap rates primarily in the range of 9.0% – 9.51%. By contrast, the largest and worst performing office node in the district is that of Somerset West, with cap rates primarily in the range of 10.51% – 11.0%.

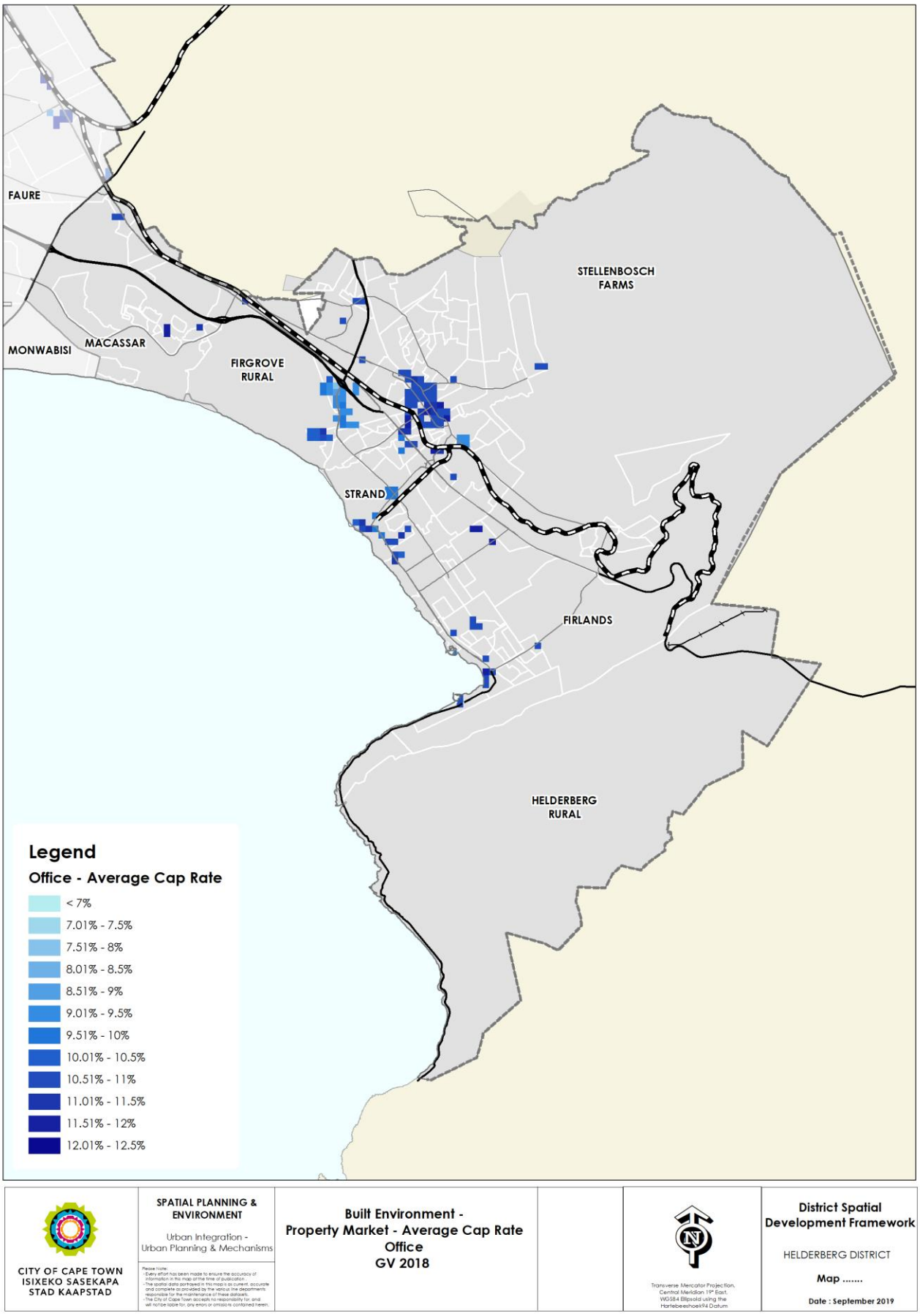


Figure 77: Helderberg District average cap rates per 4 ha grid: office property

10.2.1.4 Change in Value

Between 2012 and 2018, changes in non-residential property values did not occur equally across the District. The area of greatest significance to emerge out of this pattern in that of Somerset Mall, which generally saw growth in non-residential property values between 80% and in excess of 100%. This is linked to a combination of well-performing industrial, street-front retail and office property markets, positioning it as the area providing the greatest diversity of economic opportunities in the District.

Other large areas that have seen high growth in non-residential property values (>100%) include:

- South-eastern Strand, linked to street-front retail and office property along Gordon's Bay Drive (R44) and industrial property in the Onverwacht industrial park; and
- Somerset West Business Park, along the N2, linked primarily to industrial property and a lesser degree of street-front retail.

Additionally, there have been several smaller, isolated pockets of non-residential property that have seen similar high (>100%) growth in value. These include:

- Macassar;
- Strand Golf Course;
- Somerset West CBD, along Main Road;
- Firlands; and
- Nomzamo.

Of these areas, the growth observed in Macassar, Strand Golf Course and Firlands does not generally appear to be linked to existing industrial, street-front retail or office property. That observed in Somerset West CBD is linked primarily with street-front retail and office property, whereas that observed in Nomzamo is linked primarily with street-front retail activity. More moderate and varied growth in non-residential property prices occurred in the following areas:

- The remainder of Somerset West along Main Road (20–80%), associated with street-front retail and office property;
- The remainder of Strand, including Gants Plaza industrial park, the Main Road corridor and Strand CBD (20–50%);
- The Broadlands industrial park (5–30%); and
- Gordon's Bay (0 – >100%), linked to a modest mix of industrial (to the north-east), street-front retail and office property.

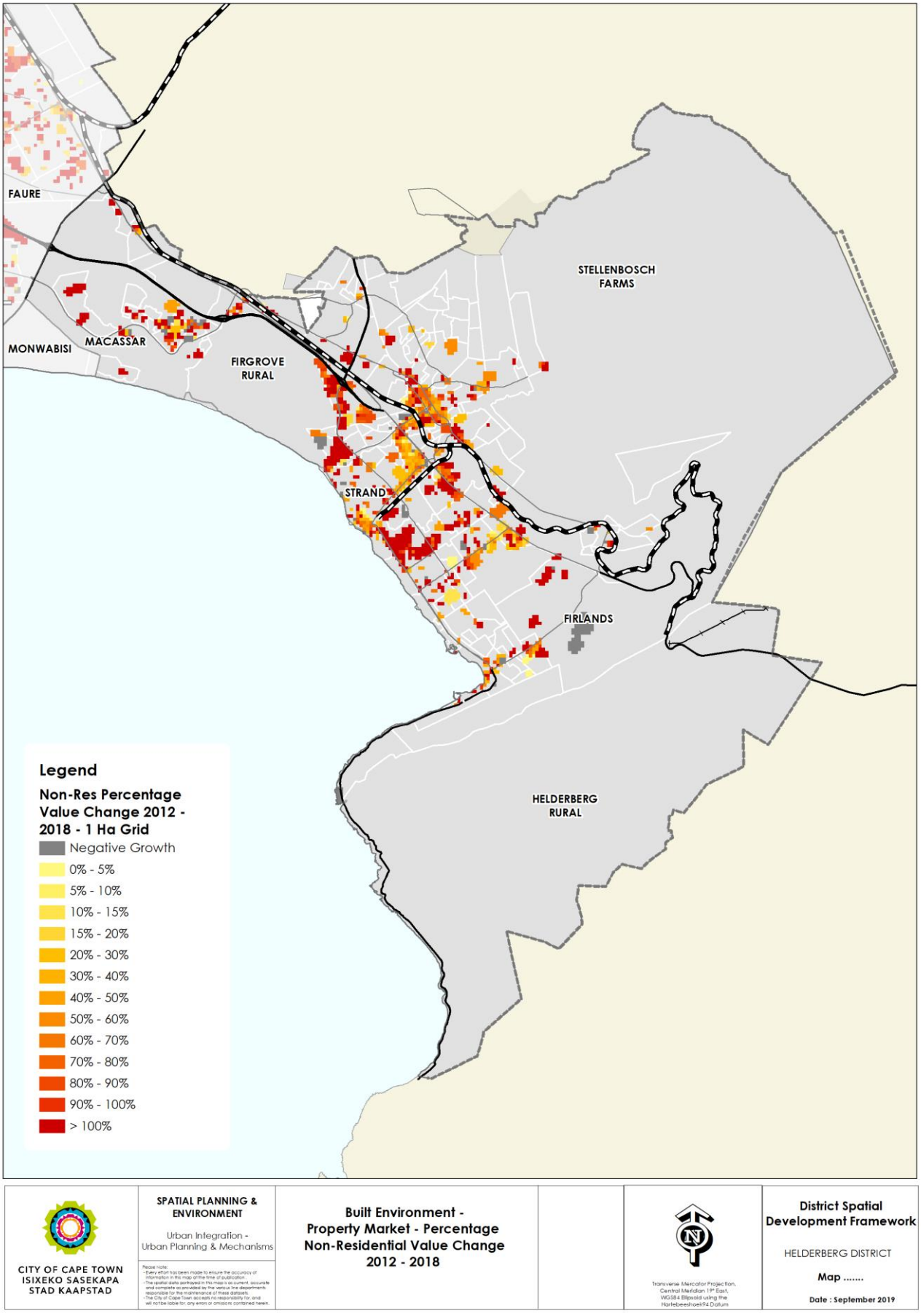


Figure 78: Helderberg District change in non-residential property values, 2012–2018

10.2.2 Residential

10.2.2.1 Sales

Between 2009 and 2018, the overwhelming majority of residential property sales in the District were made in Strand and areas to the south-east (such as Weltevreden, Rusthof, Gustrow, Sercor Park), where sales ranged between 8 000 and 14 000. The second largest number of residential property sales during this period occurred in select areas within Gordon's Bay, specifically Gordon's Bay Central and Mountainside (along Clarence Drive), where sales ranged between 3 000 and 5 000. Average property values of both Strand and Gordon's Bay lie towards the middle of the metropolitan spectrum. Residential property values in Strand are primarily in the range of R2 800/m^2 – R4 000/m^2, while Gordon's Bay displays a larger distribution of property values, ranging from R2 300/m^2 to R7 500/m^2. The above observations point to a relatively active property market in Strand and Gordon's Bay, accommodating a range of middle-income brackets, which would benefit from greater investment and support (e.g. public transport infrastructure and promotion of compatible non-residential land uses).

By contrast, suburban neighbourhoods of higher residential property values north of Macassar and in Somerset West, north of the N2 and Helderberg railway line, generally saw relatively few property sales between 2009 and 2018. These include:

- Established and developing private residential estates north of Macassar;
- Castle View Estate and Somerset Ridge;
- Bel Aire; and
- Neighbourhoods flanking the Helderberg Nature Reserve.

Between 2009 and 2018, total residential property sales in these areas reached a minimum of 101 and a maximum of merely 1 200. At the same time, average property values in these areas range from R4 000/m^2 to R16 000m^2 . This points to a more exclusive property market, accessible only to those in considerably higher income brackets. Development in many of these areas are also less optimally located in terms of the conservation of ecosystems, public transport accessibility and supporting non-residential land uses and occurs at unsustainably low densities.

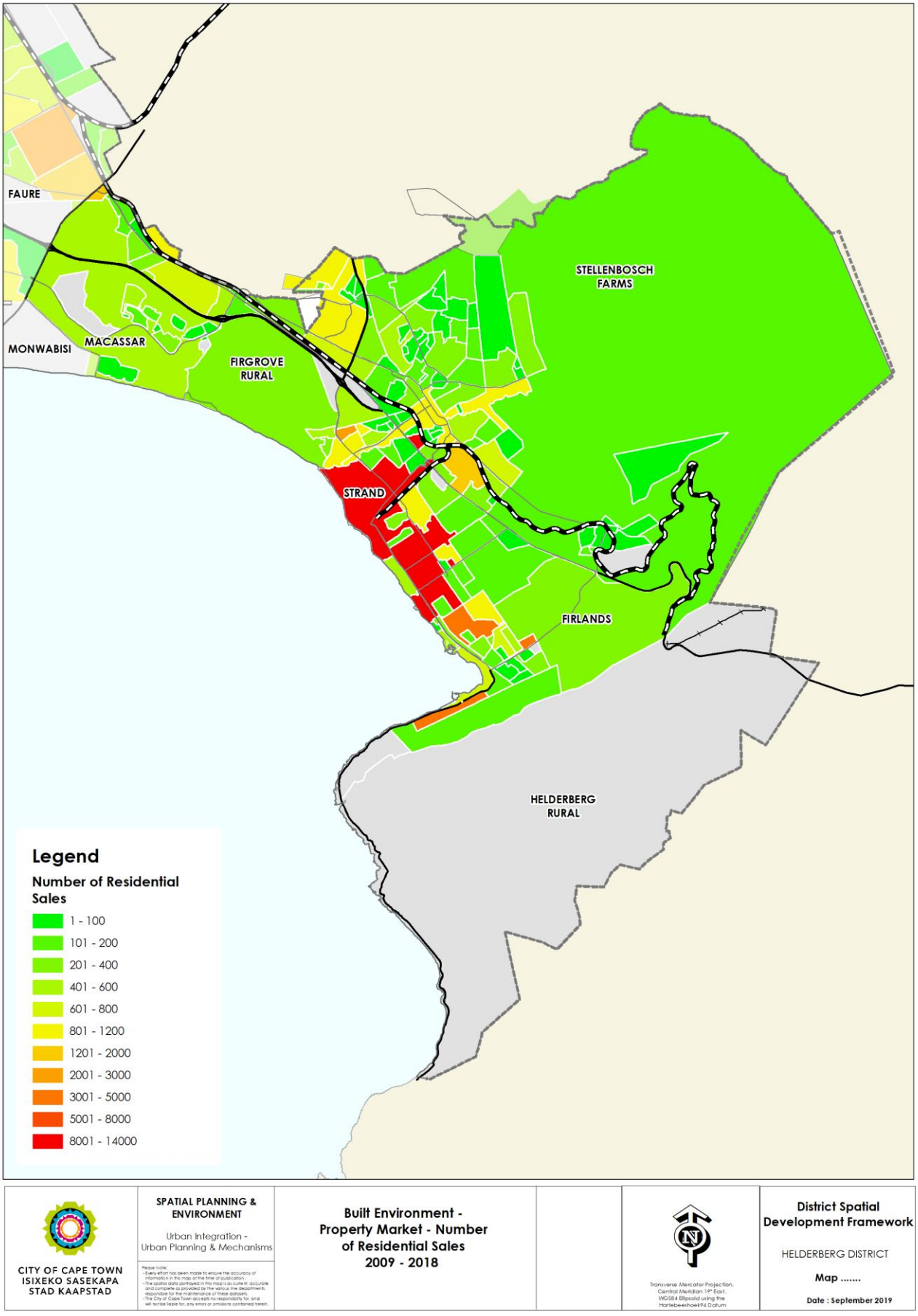


Figure 79: Helderberg District residential property sales by sub-place area, 2009-2018

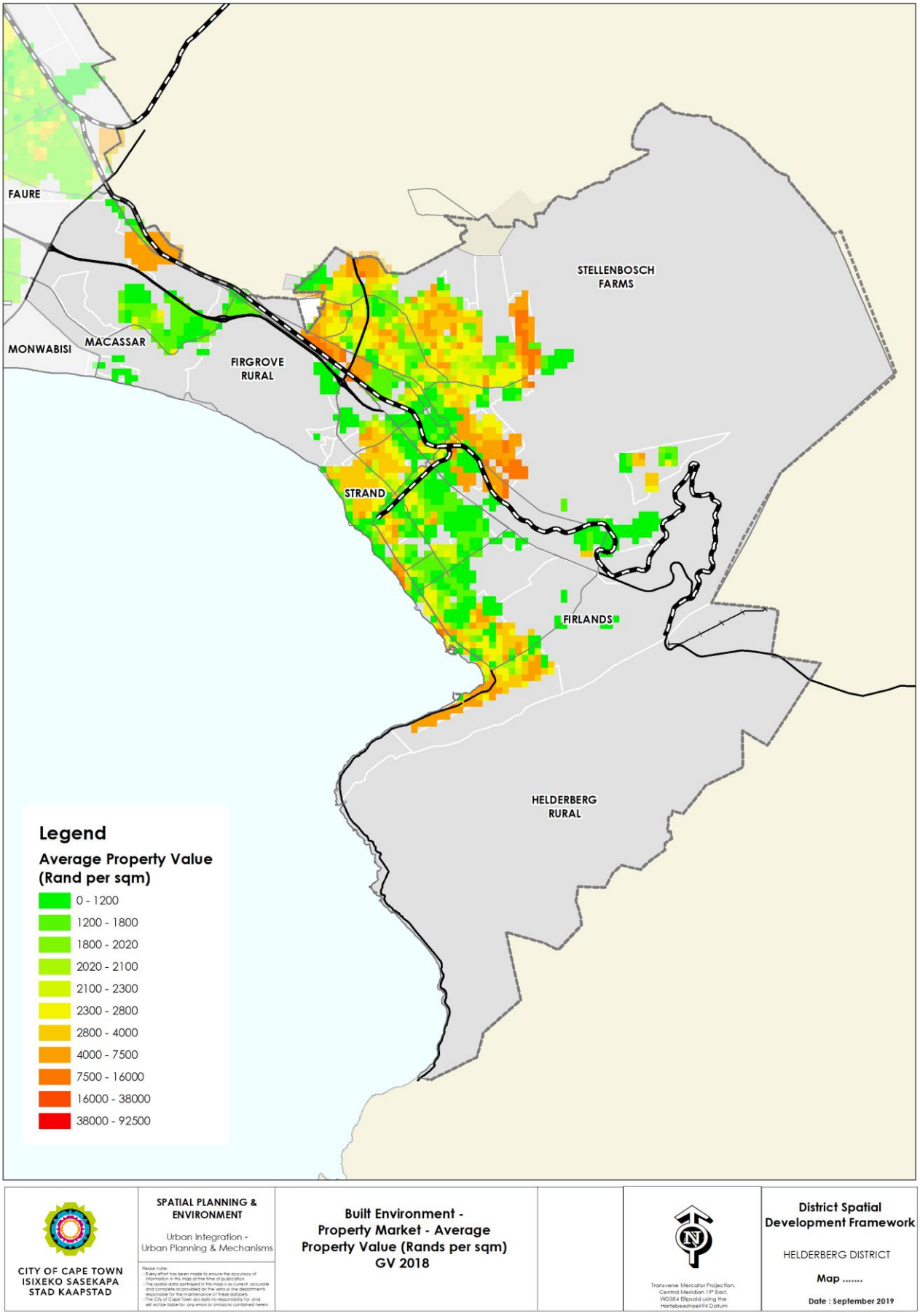


Figure 80: Helderberg District average residential property value (R/m²) by sub-place area, 2018

10.2.2.2 Change in Value

Between 2012 and 2018, the following areas saw exceptionally high growth (>100%) in residential property values:

- New suburban development north of Macassar;
- Somerset Mall and the suburb immediately north of the N2;
- South-eastern Somerset West (particularly new suburban development north of the N2)
- South-eastern Strand (including Weltevreden and Rusthof);
- Sir Lowry's Pass Village; and
- Northern Gordon's Bay (bordering Firlands).

More moderate and inconsistent growth in residential property values were observed in the following areas:

- Firgrove (80 – >100%);
- Central Macassar (60 – >100%);
- The remainder of Somerset West (30–80%);
- The remainder of Strand (60–100%);
- Nomzamo (60–100%);
- Lwandle (60 – >100%); and
- The remainder of Gordon's Bay (20–70%).

Lastly, the lowest growth in residential property values was recorded on the western and eastern edges of Macassar, primarily in the range of 15–40%.

Of these areas, only the growth observed in Strand and Gordon's Bay generally coincided with high numbers of residential sales. This, in combination with their moderate residential property prices, positions these two areas as those with the overall healthiest residential property market performance.

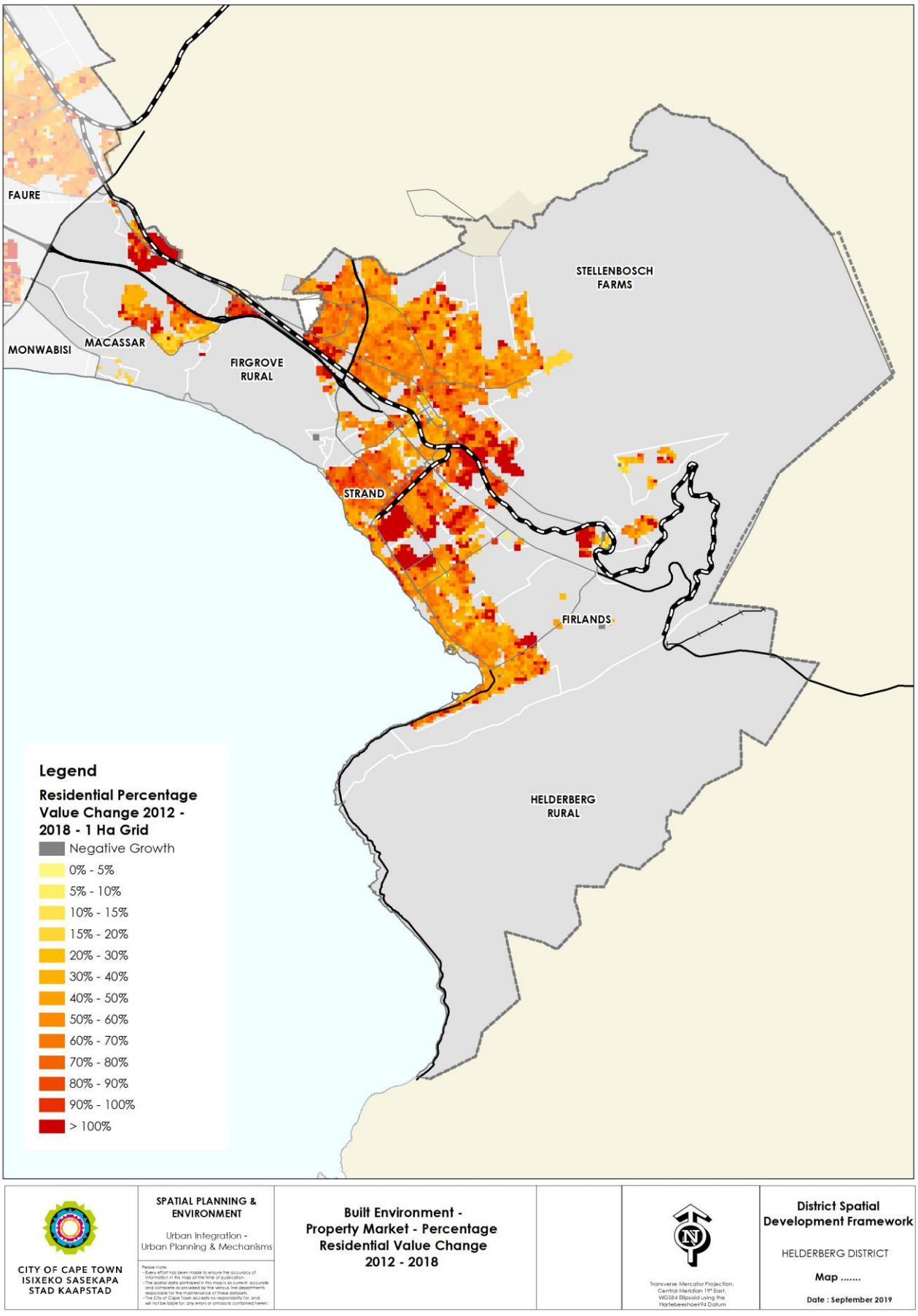


Figure 81: Helderberg District change in average residential property value per 1 ha grid, 2012–2018

10.3 KEY OPPORTUNITIES AND CONSTRAINTS

10.3.1 Opportunities

- The area around Somerset Mall is performing well in all three main non-residential property market segments (industrial, street-front retail and office) and provides a wide variety of economic opportunities.
- There is potential for economic growth in south-eastern Strand, supporting industrial, street-front retail and office sectors.
- The industrial property market is performing relatively well across the District.
- The Strand and Gordon's Bay areas (particularly the former) are performing well in terms of residential property, with high numbers of sales coupled with medium-level property prices and moderate to high growth in property value.
- There is a confluence of growing non-residential property values (linked to industrial, street-front retail as well as office space) and a well-performing residential property market in south-eastern Strand, creating a basis for potential higher-density, mixed use development.

10.3.2 Constraints

- Strand (most notably along Main Road and the Strand CBD) is performing relatively poorly in terms of street-front retail and office sectors and is seeing relatively low growth in property values.
- The above holds true for Somerset West and Gordon's Bay.
- The best performing economic node in the District (Somerset Mall) is disconnected from the surrounding areas, public institutions and public transport infrastructure, while theoretically well-located areas such as Strand CBD, Somerset West CBD and Gordon's Bay are underperforming in terms of cap rates and growth in property value.
- Higher-end residential property values, combined with moderate to high growth in value and minimal sales positions the majority of the Somerset West area as home to an exclusive residential property market. Development here is primarily of a low-density, suburban nature and limits opportunities for spatial integration and environmental conservation in the District.

E: RISKS

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[17] is lessened.

This chapter outlines the current and future risks to the Helderberg District that have 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 "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 Cape Town's resilience to risks (i.e. the ability to recover from disastrous events). This is reflected in the policy statements of the MSDF (**Table 31**). 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 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

[17] 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)

vulnerable areas and informal settlements is a priority across the Cape Town for building resilience.

Table 31: Policy statements pertaining to risk (CTMSDF, 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, 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.
Policy 17 Avoid inappropriate urban growth and development in risks areas.	Areas vulnerable to climate change and natural hazards and risks have broadly defined through specialist studies or will be determined by future specialist studies.

Table 32: Cape Town Disaster Risk Management Plan evaluation of hazards[18]

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		

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

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.

11.2 Risks in the Helderberg District

Taking the aforementioned guiding policy into the account, the following section identifies the types of risk 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.** 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.

11.2.1 Natural Risks

11.2.1.1 Mass Movement

The steeper and unstable slopes in the Helderberg District pose a risk from falling rocks and unstable terrain. These mass movement events include rockfalls, erosion and landslides. Rockfalls affect Clarence Drive in particular and cause access risks to the Gordon's Bay.

Table 33: Overview and implications of risk in the Helderberg District – mass movement

Rating of Probability	Rating of Maximum Impact	Vulnerability Rating	Coping Capacity	DRM Priority Rating	Development Principles and Exceptions
Likely	Moderate	Vulnerable	Adequate	high	Development should consider engineering solutions for slope stability and protection of buildings and infrastructure where possible. New development areas should avoid this risk.

11.2.1.2 Windblown Sand and Sand Dune Migration

The Helderberg District is situated along an exposed coastal area with dynamic dune systems. Sand dune migration poses a risk to urban development, impacting the use and maintenance of coastal infrastructure and properties. This is anticipated to become more severe over time due to increases in wind-speed caused by climate change. Furthermore, windblown sand affects the viability of stormwater infrastructure, blocking outlets along the coastline

Macassar, including Macassar beach, is adversely affected by wind-blown sand. Managed retreat has become a consideration, as the beach resort infrastructure, erected in the context of Apartheid spatial planning, with less consideration for preservation of natural systems, has become derelict and unusable as a result of the windblown sand. In the Strand beachfront area, facilities and infrastructure are also located within dynamic dunes systems, with similar risks.

Table 34: Overview and implications of risk in the Helderberg District – windblown sand and dune migration

Rating of Probability	Rating of Maximum Impact	Vulnerability Rating	Coping Capacity	DRM Priority Rating	Development Principles and Exceptions
Likely	Insignificant	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. Hard infrastructure in dynamic dune systems may need to be limited. Be risk averse when considering new infrastructure or infrastructure upgrades in coastal areas.

11.2.1.3 Coastal Erosion

The disruption of natural sand movements caused by historic development has led to exposure to risk from coastal erosion processes (**Table 35**). This is anticipated to become more severe over time due to changes in coastal dynamics and sea level rise caused by climate change.

In Helderberg, the beach alongside Strand is particularly vulnerable to erosion. Consequently, Beach Road is at risk of collapse. Similarly, the Bikini Beach stone sea wall has been undermined and is collapsing. Beach Road is at risk of collapse.

Table 35: Overview and implications of risk in the Helderberg District – coastal erosion

Rating of Probability	Rating of Maximum Impact	Vulnerability Rating	Coping Capacity	DRM Priority Rating	Development Principles and Exceptions
Likely	Insignificant - Atlantic seaboard	Vulnerable	Adequate	Lower	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.

11.2.1.4 Wildfire

Fire lines indicate the interface between natural vegetation and urban areas, with high risk areas home to larger volumes of combustible vegetation. The areas alongside the mountain slopes will periodically be at risk due to the natural Fynbos fire germinating ecosystem. Despite this natural presence of fire in Fynbos ecosystems, fire risk is anticipated to increase over time due to increased temperatures, increased drying, and higher wind speeds linked to global climate change (**Table 36**).

Table 36: Overview and implications of risk in the Helderberg District: fire

Rating of Probability	Rating of Maximum Impact	Vulnerability Rating	Coping Capacity	DRM Priority Rating	Development Principles and Exceptions
Very Likely	Moderate	Vulnerable	Adequate	High	Consideration should be given to reducing the risk and to the operational needs of the City's fire services. In cases where development is permitted, conditions should ensure access for fire fighting vehicles and that building materials and landscaping do not exacerbate risk.

11.2.1.5 Flooding

The presence of waterbodies and 1:100-year flood lines, coupled with indicative sea level rise modelling, reveal the areas with higher exposure to the risk of flooding and coastal inundation (**Table 37**). Relative elevation reveals areas where water will flow faster with potential to inundate and create risk either annually or perenially.

Areas directly next to the coast and flatter areas of the coastline are vulnerable to flooding and coastal inundation, particularly during spring tide and during storm surges. Areas along river corridors are also vulnerable to flooding, particularly during heavy rainfall events and storm surges. Managed retreat is already underway along the Lourens River, where the hospital was destroyed by flooding in 2014.

Infrastructure in Strand and Gordon's Bay is located in vulnerable areas and is damaged by storm surges. Beach road is affected during spring tide by coastal inundation. Overtopping of the sea wall by wave action remains a problem where the sea wall hasn't been extended. Investments in coastal defences are aimed at ameliorating this threat.

Table 37: Overview and implications of risk in the Helderberg District – flooding

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.

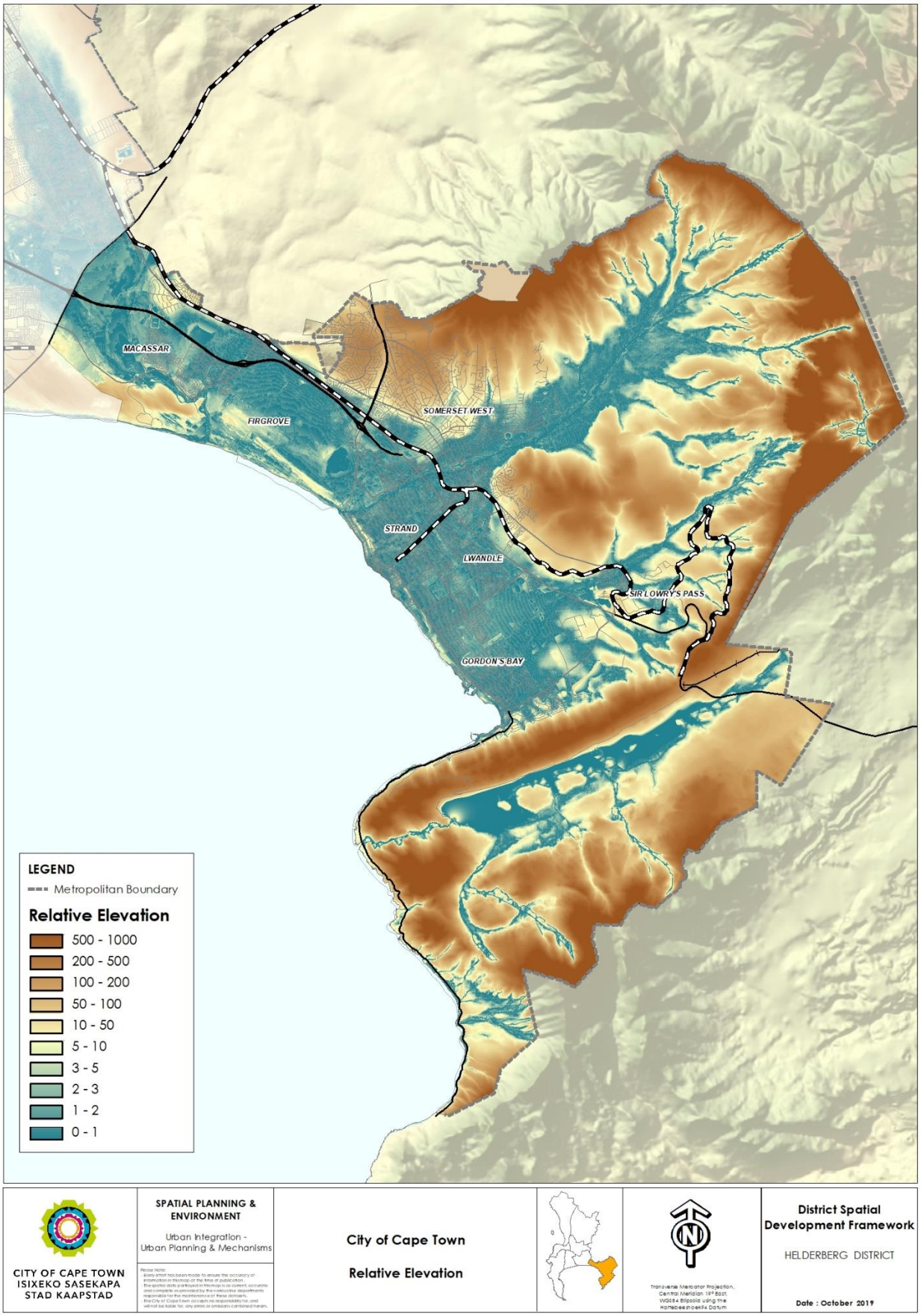


Figure 82: Relative elevation above sea level (m) of the Helderberg District

11.2.2 Built Environment Risks

11.2.2.1 Cemeteries, Solid Waste Disposal Sites and Wastewater Treatment Works

Exclusion buffers exist around waste disposal sites and refuse transfer stations 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. 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 and their integration into neighbourhoods needs to be considered.

Historic landfills can pose challenges along the coast. In Harmany Park, the old landfill edge needs management intervention to stop and prevent rubble and other matter from spilling on to the coastline.

Table 38: Overview and implications of risk in the Helderberg District – cemeteries, solid waste disposal sites and wastewater treatment works

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. Manage erosion of historic landfill sites.

11.2.2.2 Industry

Sand mining in Macassar will need to be rehabilitated, which may affect future use. However, other industries in the district are not a risk in terms of hazardous material release and don't require a substantial buffer.

11.2.2.3 Infrastructure Availability

The availability and condition of infrastructure influences the type of development that can occur in a given area; greater infrastructure capacity can accommodate 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 is a risk throughout the district, limting its ability to respond and adapt to a range of other risks, as discussed in this chapter.

Table 39: Overview and implications of risk in the Helderberg District – infrastructure 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.

11.2.2.4 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. 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 re-blocking and maintenance access routes for emergency services are interventions that may reduce risk.

Table 40: Overview and implications of risk in the Helderberg District – structural fire (informal settlements)

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.

11.2.2.5 Structural Fire Formal Settlements:

Fire in formal settlements is also a risk across the district, particularly when exposed to high temperatures and high winds (**Table 41**). 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 vehicles mean that there is less vulnerability than informal settlements experience.

Table 41: Overview and implications of risk in the Helderberg District – structural fire (formal settlements)

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.

11.2.2.6 Heat Island Effect

All areas of the city are at risk from increased heat due to climate change, including increased heat waves (defined as three 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.

Table 42: Overview and implications of risk in the Helderberg District – heat island effects

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.

11.2.2.7 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. Such pieces of land are also often located in areas unsuitable for habitation. As such, occupation of seemingly vacant, unused land may place households at risk of flood, fire or other hazards 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.

Table 43: Overview and implications of risk in the Helderberg District – unmanaged land occupation/unregulated development

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.

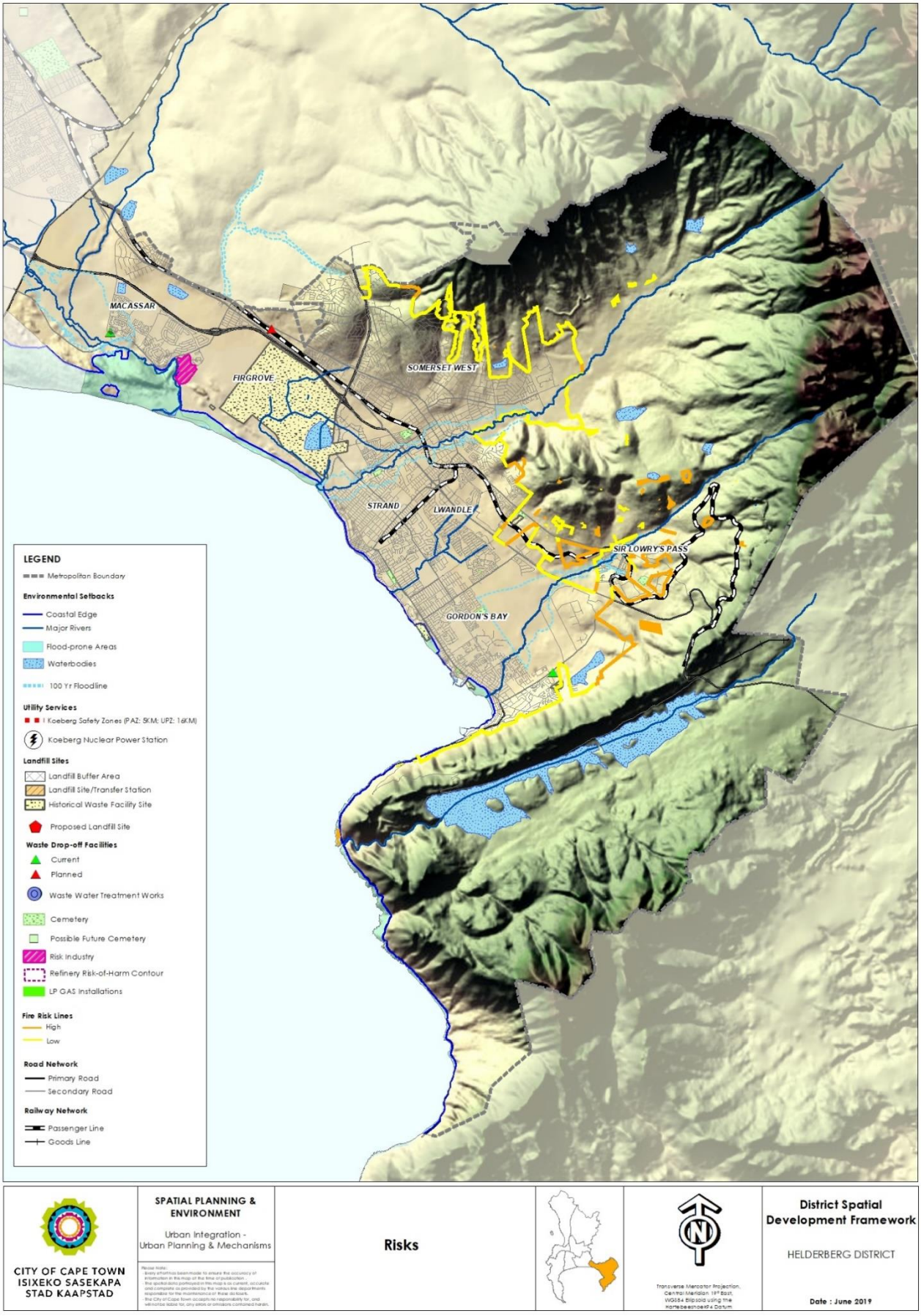


Figure 83: Helderberg District integrated bio-physical and built environment risks (TO BE UPDATED WITH FIRE RISK LINES)

11.3 Climate Change Hazard, Vulnerability and Risk Assessment Study

11.3.1 Overview

A climate hazard, vulnerability and risk study has been conducted for Cape Town, breaking down the risk posed by a given hazard as a component of an area's exposure to the hazard and its level of vulnerability/resilience (risk = exposure + vulnerability). It has identified the following six key climate change hazards to which the city must adapt:

- 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

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

11.3.2 Vulnerability and Impact

Vulnerability is a function of several factors, including physical and geographical vulnerability (i.e. proximity to high risk areas such as the coast or wetland 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).

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

- 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

The climate hazard, vulnerability, and risk study done for Cape Town involved the mapping of these key issues for the baseline period (1960–1991), the mid-future (2021–2050) and the far future (2070–2099). These models are based on a low climate mitigation scenario and are in line with the current global trends. For the purposes of the district planning process, the mid-future assessment is presented below.

Figure 84 comprises of a consolidated map of the Helderberg District's exposure to the range of climate hazards outlined above for the mid-future period, including rainfall changes, temperature changes, heat islands, fire risk, flood risk, sea level rise inundation risk, and wind speed change. A higher score (darker orange) indicates a greater exposure to climate hazards, while lower score (darker blue) indicates less exposure to harms.

Figure 85 maps a composite score for present-day resilience to climate hazards. It should be noted that resilience can be seen as the corollary to vulnerability. Therefore, areas of high resilience will have relatively low vulnerability, and vice versa. These scores are based on a weighted analysis of the social, economic, and environmental factors listed and ranked in the **Table 44** below:

Table 44: Weighting of climate change hazard vulnerability factors

Indicator	Description	Weighting
Crime Rate	Total number of crimes by police precinct area	5
Electricity for Lighting	Percentage of households with access 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 opportunities , ranked zoning areas by potential formal employment areas assessed in a 1km radius	5
Employment variety within 1 km	Measure of job diversity opportunities: 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

Figure 84, Figure 85 and **Figure 86** below map the level of risk to climate hazards across the Helderberg District relative to exposure and resilience/vulnerability. Areas with high exposure to climate hazards and low resilience will have the highest risk rating, while those with low exposure and high resilience will have the lowest risk rating.

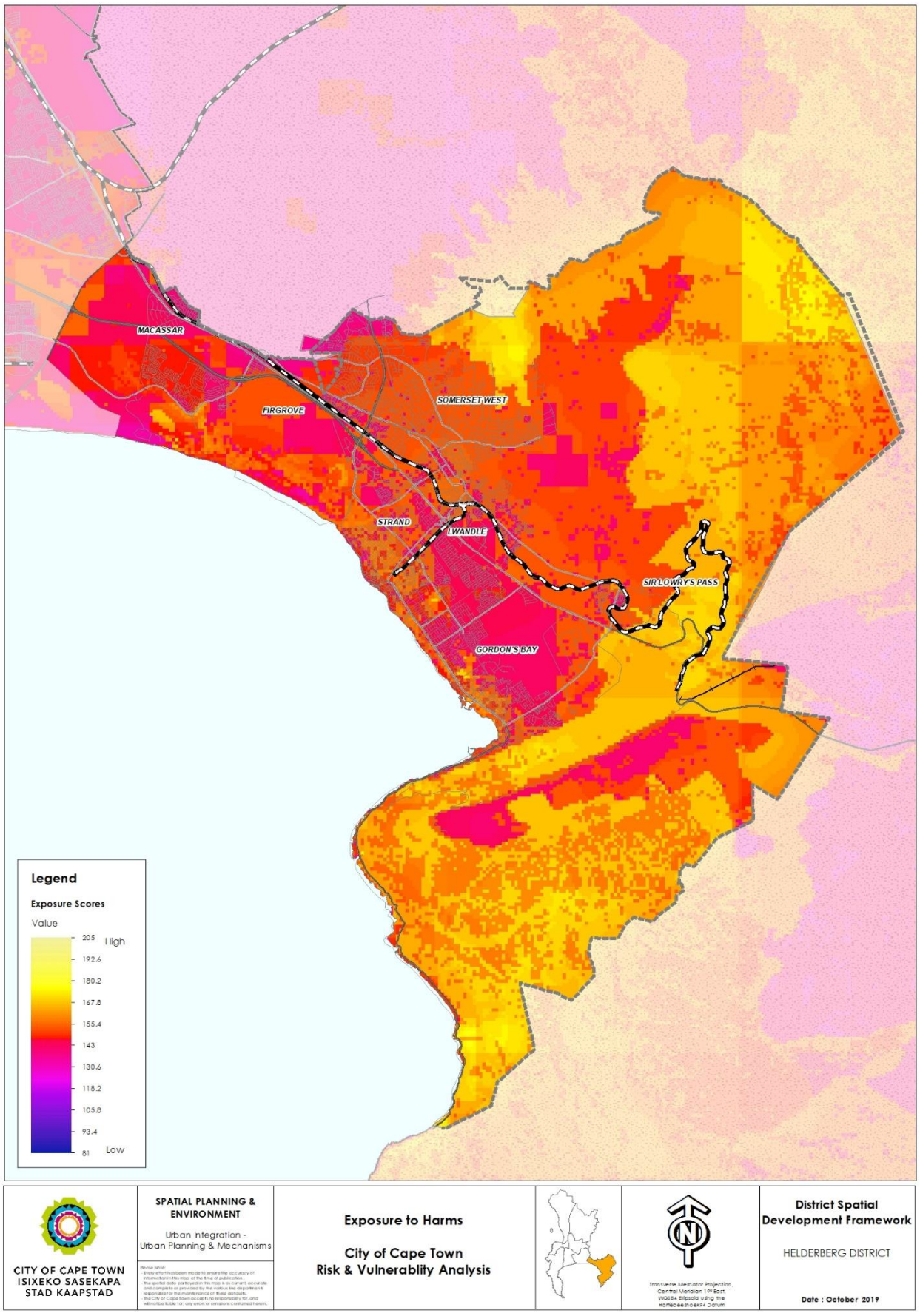


Figure 84: Consolidated map of exposure to all climate hazards for the mid-future period (2021–2050) across the Helderberg District

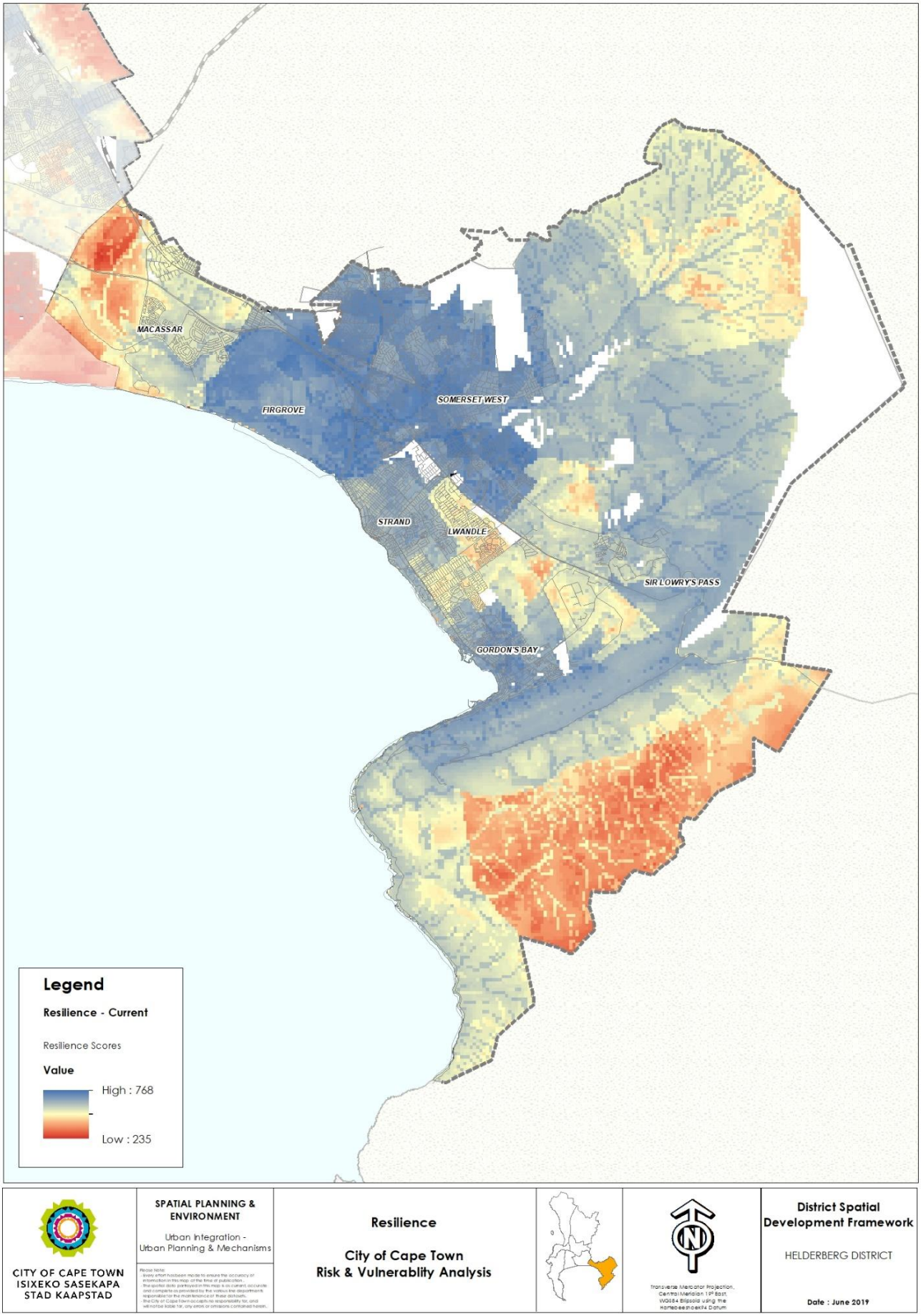


Figure 85: Present-day resilience to climate hazards across the Helderberg District

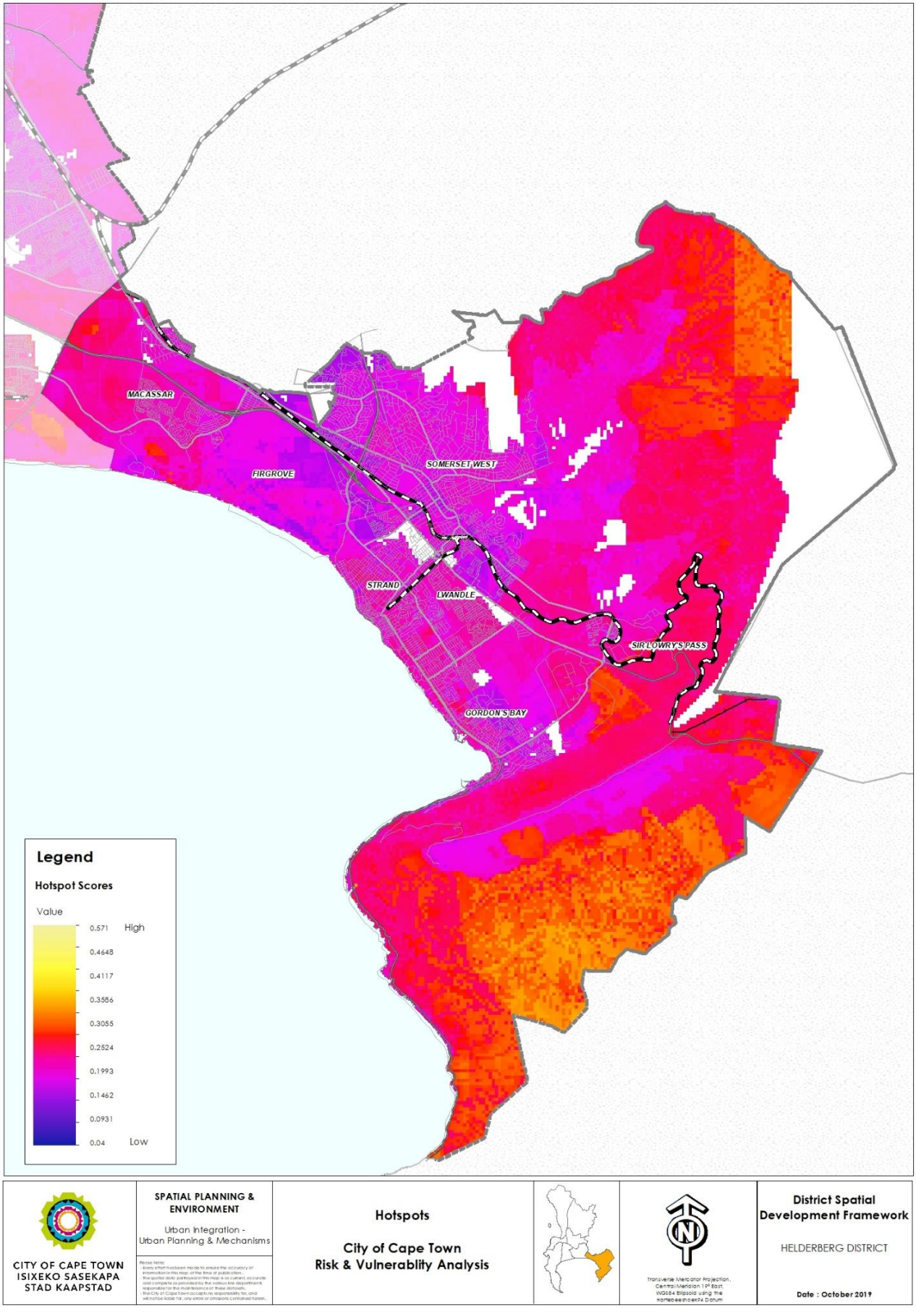


Figure 86: Risk of climate hazards relative to resilience across the Helderberg District

11.3.3 Spatial Implications:

Vulnerable areas and risk hotspots indicate areas that will need to be prioritised for resilience building, public sector interventions and support. Based on the figures above, highlighting where settlements and infrastructure show a high degree of vulnerability, the settlements of Macassar and Lwandle show the greater degrees of vulnerability. Consequently, these urban areas, as well as the district's coastline and vegetated mountainous areas are major risk hot spots.

11.4 Key Opportunities and Constraints

Table 45 below, identifies opportune **(encouraged)** and constrained **(discouraged)** areas for development in the Helderberg District, informed by the aforementioned risk assessment.

Table 45: Implications of climate hazards and risk for development

Risk	DRM Priority Rating	Impact Radius	Discouraged Types of Development	Encouraged Types of Development
Landfill and waste disposal sites and refuse transfer stations	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	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.

	enforce ment			
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.
Rock fall, landslide	n/a	Informed by steep slopes	Development in rock fall paths or without adequate protection measures	• Investments in slope stabilization and management of rock fall.
Flood Risk, Storm Surge exposure and Coastal Inundation Zones	High	Informed by 1:100 year flood lines coastal urban edge line[19] All exposed and flatter coastal areas	Intensification of urban development	• Green infrastructure programmes to defend nearby infrastructure, non- motorised transport • Water Sensitive Urban Design. • Open space recreation • Feasible development to support identified public recreational nodes and the sustainable use of harbours.
Wild Fire	High	Fire lines	Development outside the range of existing service response times.	• Fire Breaks • Development that incorporates fire protection measures. • Erosion prevention in aftermath of fires.

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

Windblown sand	Lower	Dynamic dune systems	All infrastructure and any intensification of urban development.	• Rehabilitation of degraded dune systems. • Managed retreat • Green Infrastructure • Defences of crucial infrastructure
Coastal Erosion Zones		Along entire coast	All intensification of urban development	• Green infrastructure • Feasible development to support identified recreational nodes and the sustainability of harbours.