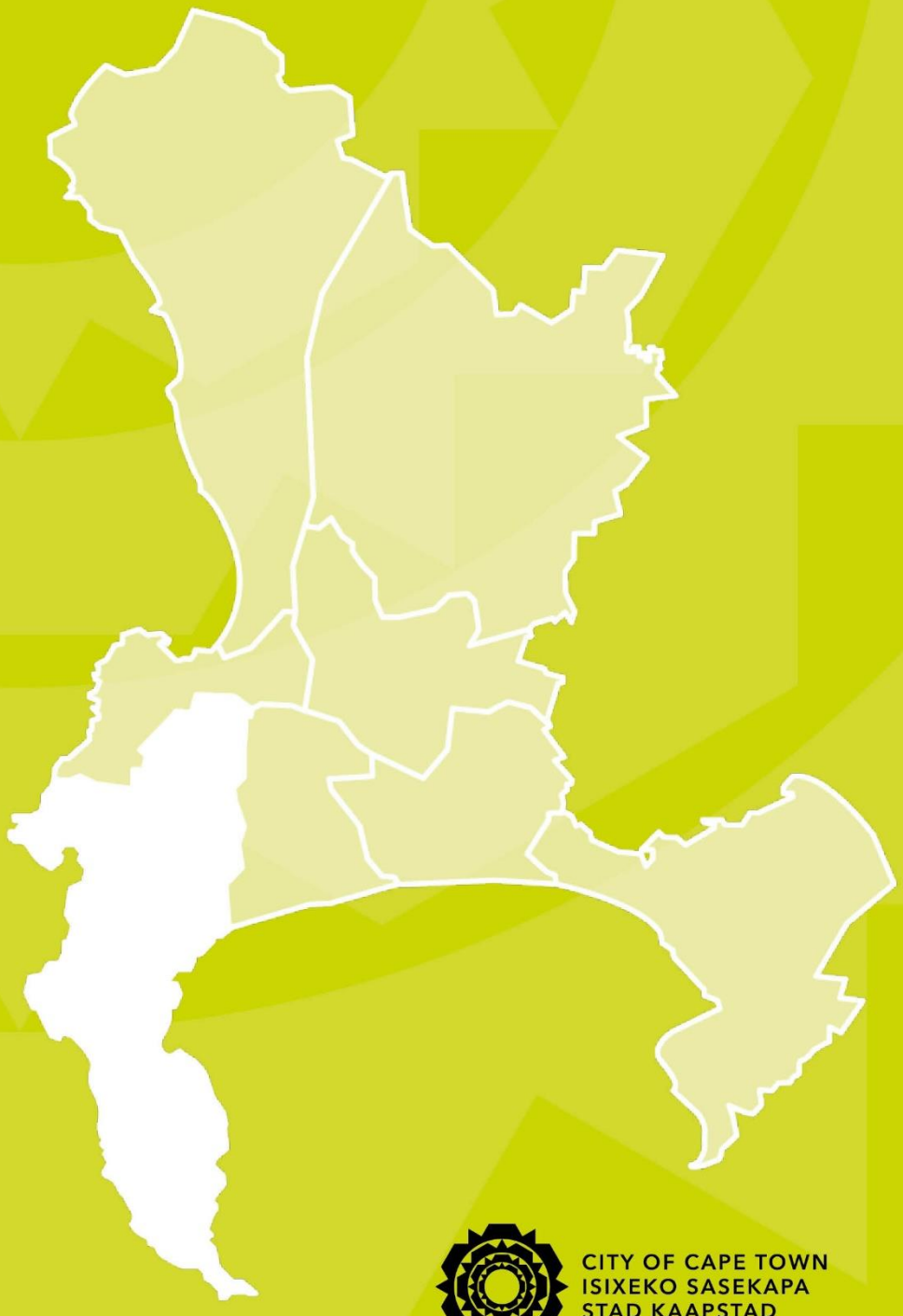
Southern

Integrated district spatial development framework and environmental management framework

Vol. 1: Baseline and Analysis Report



MAY
2022

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

CONTENTS

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1. INTRODUCTION **9**

1.1 Structure of the District SDF Suite of Documents 9

1.2 Baseline and Analysis Report (current report for your comment) 9

1.2.1 Purpose of the Baseline and Analysis Report 9

1.3 The Structure of the Baseline and Analysis Report 11

1.3.1 State of the Population: 11

1.3.2 State of the Environment: 11

1.3.3 State of the Built Environment: 11

1.3.4 State of the Economy: 11

1.3.5 Risk and Resilience: 12

1.3.6 Policy and Legislative Analysis – (incomplete) to follow 12

1.4 Key informants and limitations of the Baseline and Analysis Report 12

2. Demographics **13**

2.1 Overview 13

2.1.1 Key Statistics 13

2.2 Population 14

2.2.1 Growth 14

2.2.2 Spatial Distribution 15

2.2.3 Population Structure 20

2.3 Households 22

2.3.1 District Trends 22

2.3.2 Spatial Distribution 23

2.4 Employment 25

2.4.1 Employment and Unemployment 26

2.4.2 Trends 26

2.4.3 Spatial Distribution of Employment 26

2.5 Income (Households) 0

2.5.1 Trends 0

2.5.2 Spatial Distribution of household incomes 0

2.5.3 Income Inequality 2

2.5.4 Socio-Economic Indicators 2

2.5.5 Synthesis 3

3 NATURAL AND HERITAGE ENVIRONMENT **5**

3.1 Status Quo, Trends and Patterns 5

3.1.1 Topography 5
3.1.2 Biodiversity 8
3.1.3 Fauna 11
3.1.4 Hydrology 14
3.1.5 Coastal Areas and Dunes 21
3.2 Agriculture and Mineral Resources 25
3.3 Heritage and cultural resources 25
3.4 Key Development Pressure and Opportunities 33
3.4.1 Development Pressures and Constraints 33
3.4.2 Integrated Opportunities 34
3.5 Environmental Priorities and their Spatial Implications for District Plan 36
4 LAND USE AND DEVELOPMENT TRENDS 38
4.1 Residential 38
4.1.1 Key dynamics and trends 38
4.1.2 Second dwellings 39
4.2 Industrial 39
4.3 Retail and Office 40
4.4 Mixed Use 40
4.5 Tourism 41
4.6 Agricultural land 41
4.7 Supportive land uses 42
4.8 Development Pressures 42
4.9 Vacant Land 42
4.10 Key Challenges and Opportunities 45
4.10.1 Opportunities and Management Priorities 45
4.10.2 Challenges 45
4.10.3 Management Priorities 45
5 TRANSPORT AND ACCESSIBILTY 47
5.1 Introduction 47
5.2 Strategic Parameters & Informants 48
5.2.1 District Specific Transport Strategies 48
5.3 State of Public Transport 49
5.3.1 Existing Infrastructure and Services 49
5.3.2 Planned Transport Infrastructure and Services 52
5.3.3 Level of Public Transport Accessibility 54
5.4 State of Road Infrastructure 57

5.4.1 Overview of the district road network 57
5.4.2 Congestion Management 58
5.4.3 Parking 59
5.4.4 Planned Road Infrastructure 60
5.5 The State of Freight 62
5.6 Travel Patterns 64
5.6.1 Current (EMME Demand – Base year 2015) 64
5.6.2 2013 Origin Destination Movements for the District 65
5.6.3 Cost of Travel 68
5.7 Key Transport Challenges and Opportunities 71
5.7.1 Constraints 71
5.7.2 Opportunities 72
5.7.3 Spatial Implications 73
6 INFRASTRUCTURE 74
6.1 Electricity 74
6.2 Water 75
6.3 Sanitation (Waste Water and Solid Waste) 76
6.3.1 Waste Water 76
6.3.2 Bulk solid waste 77
6.4 Stormwater 80
6.5 Key Opportunities and Constraints 80
7 HUMAN SETTLEMENTS 83
7.1 Housing Overview 83
7.1.1 Housing typology 83
7.1.2 Tenure Status 87
7.2 Housing Demand 89
7.3 Housing Supply 90
7.3.1 Constructed/Delivered 90
7.3.2 Pipelined, Planned and in Construction 91
7.4 Key Opportunities and Constraints 93
7.4.1 Generic constraints: 93
7.4.2 Local constraints and opportunities: 93
8 PUBLIC FACILITIES 95
8.1 State of Supply and Demand 95
8.1.1 Analysis 95
8.1.2 Education 100

8.1.3 Medical 102
8.1.4 Community/Social Facilities 105
8.1.5 Parks and Recreational Facilities 108
8.2 Required Facilities 113
8.3 Key Observations 114
8.4 synthesis 115
8.4.1 Summary of issues and trends 115
8.4.2 Pressures and Constraints 115
8.4.3 Opportunities 115
8.4.4 Implications for the spatial plan 116
9 THE ECONOMY 121
9.1 Macro-Economic Factors 121
9.2 Property Market 123
9.3 District Analysis 126
9.3.1 Economic Characteristics 126
9.3.2 Development Indicators 133
9.4 The Informal Economy 135
9.4.1 Size of Informal Economy 135
9.4.2 Employment Distribution 135
9.4.3 Opportunities and Constraints 136
10 PROPERTY MARKET 137
10.1 Market Performance 137
10.1.1 Key Observations and Trends 139
a. Industrial 139
b. Street Front Retail 139
c. Office 140
10.2 KEY OPPORTUNITIES AND CONSTRAINTS 149
10.2.1 Summary of issues and trends 149
10.2.2 Pressures and Constraints 149
10.2.3 Opportunities 150
10.2.4 Implications for the spatial plan 150
11 RISKS 151
11.1 GUIDING POLICY ON RISK AND RISK MANAGEMENT: 151
11.2 RISKS IN THE SOUTHERN DISTRICT 152
11.2.1 Natural Risks 154
11.2.2 Built Environment Risks 160

11.2.3 Climate Change Hazard, Vulnerabilities, and Risks - Overview 162
11.3 KEY OPPORTUNITIES AND CONSTRAINTS 168
12.1 SUMMARY OF KEY ISSUES AND PRIORITIES 170
12.1.1 Summary of Opportunities 170
12.1.2 Summary of Challenges 171

TABLES

Table 1: Average annual Population change- District vs Metro 14
Table 2: Change in Population structure between 2001 and 2011 20
Table 3: (CoCT and Census 2011) 22
Table 4: Comparison of households and household sizes between the district and the metropolitan average 23
Table 5: District vs metro employment trends 25
Table 6: Labour force indicators 25
Table 7: Human Development Index- District vs metro 2
Table 8: Conservation status of national vegetation types occurring in the Southern District ... 9
Table 9: Health status of rivers in northern parts of the Southern District 14
Table 10: 1. Health status of the Hout Bay River system 15
Table 11: Health status of rivers in the west of the Southern District 16
Table 12: : Health status of rivers flowing into Zandvlei 16
Table 13: Health status of Silvermine and Else rivers 17
Table 14: Status of estuaries in the Southern District. 24
Table 15: Heritage resources in the Southern District 27
Table 16: Scenic routes in the Southern district 30
Table 17: Implications for the Southern district 36
Table 18: Vacant land categories 42
Table 19: Public transport facilities in the district 51
Table 20: Trip generation 67
Table 21: Definition of electrical system capacity (MTIIF, 2017 Draft, pg 68 74
Table 22: definition of water system capacity 76
Table 23: Waste water capacity definitions 76
Table 24: Existing bulk solid waste management infrastructure capacity status 77
Table 25: Southern District tenure status 87
Table 26: Top Areas of need in the Southern District for 2020 and 2040 97
Table 27: PHC served and unserved regions 102
Table 28: Service Stats 2011: Distance and capacity constraints: within 5km & current supply 105
Table 29: 2011 area and population served per fire station 105
Table 30: Fire stations: Service statistics 2011 105
Table 31: Community vs Regional libraries service coverage statistics 106
Table 32: Sports Grounds 108
Table 33: Supply of total sports Facilities 109
Table 34: Travel distance based on capacity and distance constraints 109
Table 35: Southern Service Coverage statistics- community parks (2011) 111
Table 36: Human Development Index (HDI) - 2009, 2014 and 2018 133
Table 37: Gini coefficient - 2009, 2014 and 2018 133
Table 38: District Property Market (Mean) Indicators (City of Cape Town Non-Res Market Research: 2018) 138

Table 39: Monthly income bands and the corresponding bond amount 144
Table 40: MSDF risk related policy statements 151
Table 41: Summary of key challenges and strategic priorities 171

FIGURES

Figure 1: District Spatial Planning Review Process Summary 9
Figure 2: Building Integrated Communities 10
Figure 3: Key Statistics 13
Figure 4: Graph showing change in Population Growth Rates 15
Figure 5: Map showing Population distribution across the district by sub-place (2011 Census 16
Figure 6: Population Growth between 2011-2017 per 'sub-place' 17
Figure 7: Gross Population Density by Sub-Place 19
Figure 8: Population Pyramid 21
Figure 9: Change in Age Distribution between 2001 and 2011 21
Figure 10: Household Growth (2011-2017) 24
Figure 11: Unemployment rate (census 2011) 27
Figure 12: 2001 vs 2011 household income 0
Figure 13: Household income 1
Figure 14: Gini Coefficient 2
Figure 15: Trophic tendency in Cape Town - Rivers 17
Figure 16: Trophic tendency in Cape Town - Wetlands 18
Figure 17: Hydrology 20
Figure 18: Green infrastructure and biodiversity conservation 31
Figure 19: Agricultural Potential and Cultural Resources 32
Figure 20: Building Plan Approvals 2012-2018 44
Figure 21: Transit Oriented Development Concept at Various Scales (Source: TOD SF, 2016: 24) 47
Figure 22: High Order Public Trasnport Services showing Current MyCiTi Service to Hout Bay . 50
Figure 23: Existing and Planned Cycle Routes 52
Figure 24: Planned Phase 2A MyCiTi Trunk Routes 53
Figure 25: TAPs Accessibility Scoring 55
Figure 26: Current Public Transport and Related Infrastructure 56
Figure 27: Congestion Strategy Road Prioritisation 58
Figure 28: Possible Road Improvements 61
Figure 29: Commercial Vehicle Movement 63
Figure 30: Current Distribution of Trip Generators and Attractors 64
Figure 31: Origin- Destination of All Commuter Trips (2013) 65
Figure 32: Origin-Destination of Private and Public Transport Trips (2013) 66
Figure 33: Origin-Destination of commuter Trips (2013) 66
Figure 34: Congestion Hotspots in the Metropolitan Area 68
Figure 35: Future Trip Generators and Attractors (2032) 70
Figure 36: Substation Loading 2018 75
Figure 37: Infrastructure - Areas with adequate or spare capacity 81
Figure 38: Infrastructure - Areas with slight & severe lack of capacity 82
Figure 39: Building Integrated Communities 83
Figure 40: Dwelling Typologies pie chart 84
Figure 41: Dwelling typologies in the Southern 84
Figure 42: Spatial distribution of dwelling typologies, Southern District 85
Figure 43: Distribution of housing typologies in the Southern District 86

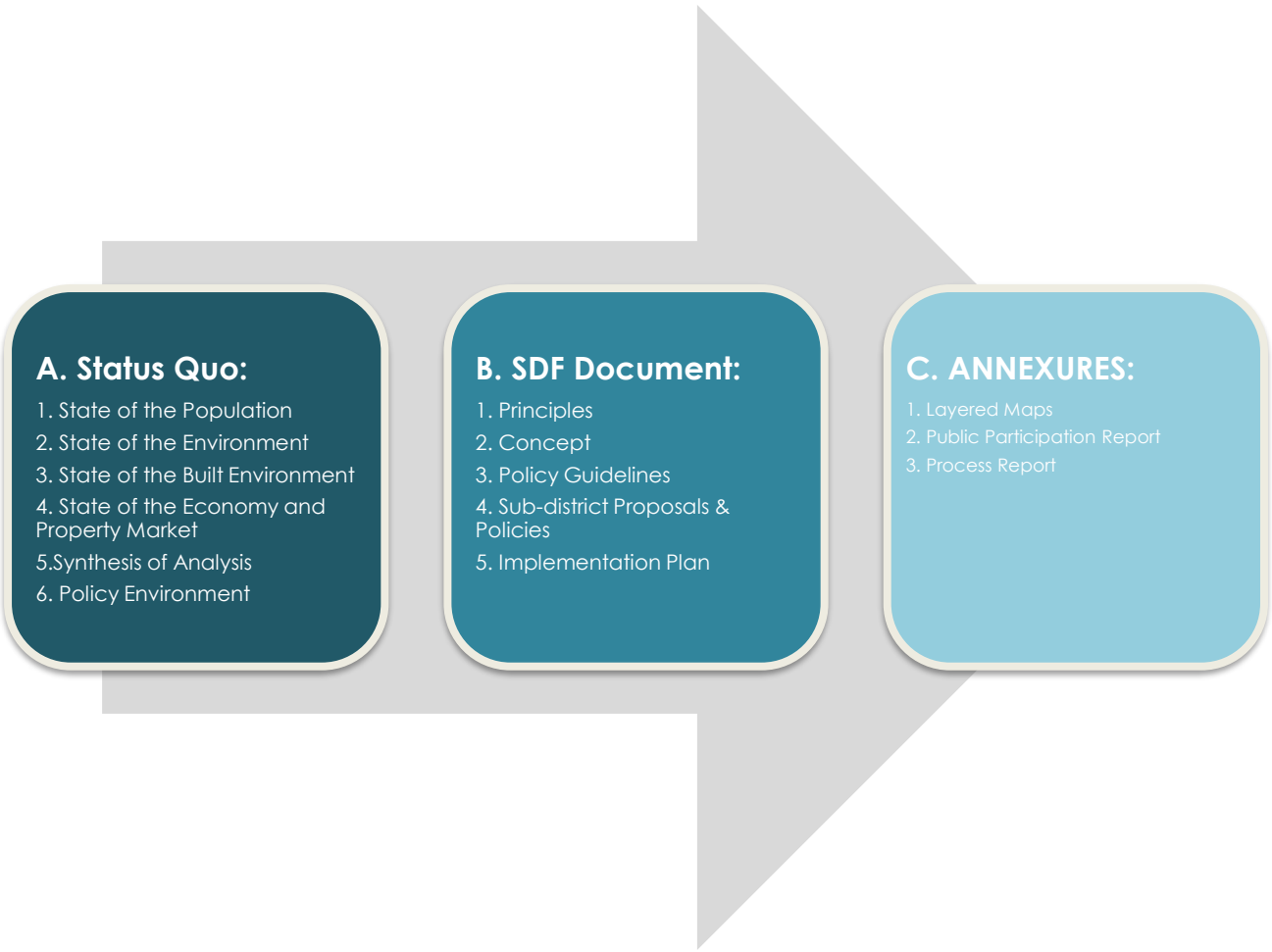
Figure 44: Tenure status- Southern District 88
Figure 45: Housing database 89
Figure 46: City's Human Settlements delivery data, 2013/2014 - 2017/2018 90
Figure 47: Status of Human Settlement projects 92
Figure 48: Conceptual Hierarchy of Community Facility Nodes/Civic Clusters 95
Figure 49: Distribution of existing facilities within Southern District 96
Figure 50: Facility need Southern District 99
Figure 51:Title??? 101
Figure 52: 13% unserved within 4km 103
Figure 53: Health care facilities 104
Figure 54: Community facilities 107
Figure 55: District Park travel Distance 110
Figure 56: 2011 travel distance to Community Park 110
Figure 57; Parks and Recreation 112
Figure 58: Average annual Gross Domestic Product (GDP) growth, South Africa vs. Cape Town for 2009 to 2018 (Source: IHS Markit, 2019). 121
Figure 59: CPI and PPI trends in South Africa, 2009 to 2018 (Source: CPI and PPI extracted from Statistics South Africa, 2018-2019, and repurchase rate extracted from SARB, 2018-2019). ... 122
Figure 60: Building Confidence Index (BCI), 2009 to 2018 123
Figure 61: Cape Town's new building completions and vacancy rates for Office and Industrial space, 2009 to 2018 124
Figure 62: Cape Town's Gross Value Added (GVA) and Capitalisation rate , 2011 to 2018 .. 125
Figure 63: Employment contributions, 2018 (IHS Markit, 2019). 126
Figure 64: Gross geographic product (GGP) contributions at current prices, 2018 (IHS Markit, 2019). 126
Figure 65: Average annual economic growth rates, 2009 to 2018 (source: IHS Markit, 2019). 127
Figure 66: Performance comparison, 2018 (source: IHS Markit, 2019). 127
Figure 67: Gross Value Added (GVA) contribution by sector, 2018 (IHS Markit, 2019). 128
Figure 68: Employment contribution to Cape Town, 2018 (IHS Markit, 2019). 128
Figure 69: Total employment by sector, 2018 129
Figure 70: Gross Value Added (GVA) size by sector, 2018 129
Figure 71: Gross Value Added (GVA) and Employment contributions, 2018 130
Figure 72: Number of households by (annual) income category, 2018 (Source: IHS Markit, 2019.) 134
Figure 73: Formal and informal employment sectors 135
Figure 74: Industry distribution of informal sector employees in Cape Town (Source: Stats SA, QLFS Q2, 2019) 136
Figure 75: Average capitalisation rates per non-residential market segment (City of Cape Town Non-Res Market Research : 2018) 138
Figure 76: Average vacancy rates per non-residential market segment (City of Cape Town Non-Res Market Research : 2018) 139
Figure 77: Average Cap Rates Per 4ha: Industrial Property Market 141
Figure 78: Average Cap Rates Per 4ha: Street Front Retail Property Market 142
Figure 79: Average Cap Rates Per 4ha: Office Property Market 143
Figure 80: Number of Residential Sales 2009-2018 145
Figure 81: Value (R) per m² 146
Figure 82: % Changes in Value 2012-2018 for Residential Properties 147
Figure 83: : % Changes in Value 2012-2018 for Non-Residential Properties 148
Figure 84: Integrated Bio-physical and Built Environment Risk Map 153
Figure 85: Exposure to harms 165
Figure 86: Resilience 166
Figure 87: Hotspots 167

1 INTRODUCTION

1.1 Structure of the District SDF Suite of Documents

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

Figure 1: District Spatial Planning Review Process Summary



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

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

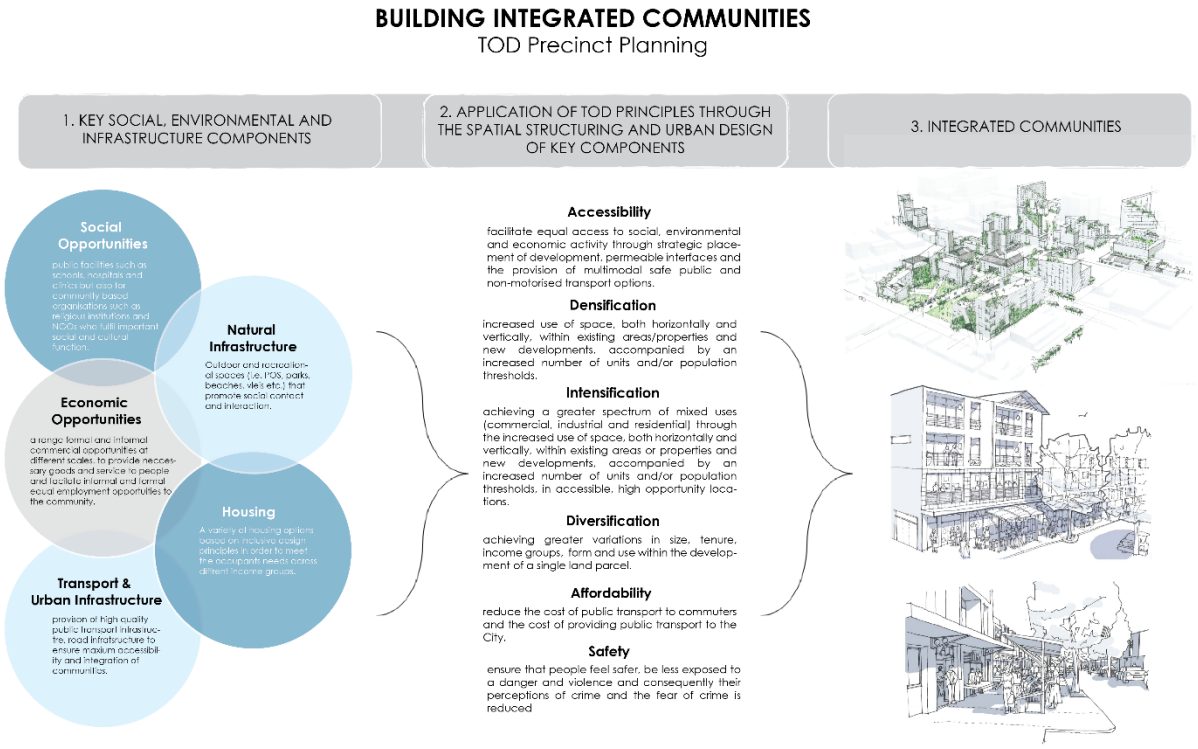
1.2.1 Purpose of the Baseline and Analysis Report

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

The formulation of the baseline and analysis report uses a spatial layering approach to extract the **constraints** and **opportunities** for the respective structuring elements under investigation in each district. This is required to identify appropriate spatial interventions to **mitigate** against

constraints and **enhance** opportunities in order to build integrated and resilient communities. The intent is to enable environments that support the natural, social, physical, and economic integration of people into the existing urban fabric and establish quality living environments for all – refer to **Error! Reference source not found.** below.

Figure 2: Building Integrated Communities



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

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

2. **SWhat does this mean and what are the implications?** This entails an indication of the implications of the above constraints or opportunities for spatial planning (District SDF), i.e. where are is available, physical space and where is more needed. Where are land use guidelines or policies, or interventions, e.g. physical projects, needed.;

1.

How is this linked to other elements/layers? This is the synthesis, that has not been completed, but explores the interrelationship between the constraints and the opportunities as they relate to the various layers analysed as they all work together to form the basis for plan making, using an analysis informs plan making approach.

1.3 The Structure of the Baseline and Analysis Report

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

1.3.1 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:

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

1.3.3 State of the Built Environment:

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

1.3.4 State of the Economy:

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

1.3.5 Risk and Resilience:

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

1.3.6 Policy and Legislative Analysis – (incomplete) to follow

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

Cape Town Municipal Spatial Development Framework 2018;
Integrated Development Plan 2017-2022 (IDP);
City Development Strategy (CDS);
Transit-Oriented Development Strategic Framework (TODSF);
Integrated Public Transport Network (IPTN);
Bioregional Plan;
Environmental Strategy;
Economic Growth Strategy (EGS);
Social Development Strategy (SDS);
Integrated Human Settlements Framework (IHSF);
Cape Town Densification Policy;
Energy2040;
Climate Change Policy; and
Resilience Strategy.

1.4 Key informants and limitations of the Baseline and Analysis Report

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

1. DEMOGRAPHICS

2.1 Overview

The Southern District is the fourth largest district of the eight districts that together make up the City of Cape Town municipal area. It covers an extent of 400km² and comprises most of the Cape Peninsula and borders the Atlantic Ocean to the west by and False Bay to the east. It is also bordered by the Cape Flats District to the east and the Table Bay district to the north. A vast amount of the district is made up of natural areas, the Table Mountain National Park being one of its biggest natural assets.

Due to its scenic beauty the District has a particularly high proportion of affluent areas, with a low proportion of informal dwellings, however, this number has been increasing over the past few years due to the lack of available developable land for housing. The main commercial hubs are Claremont, Wynberg and the Retreat. There are a few small industrial areas in the district located mainly in the north-eastern part of Retreat and Elfindale.

2.1.1 Key Statistics

POPULATION

2001: 263 744

2011:319 040

AVERAGE HOUSEHOLD SIZE

2011: 3.05

2016: 2.91

AGE

0 - 14	15 - 64	65+
19%	71%	10%

ANNUAL HOUSEHOLD INCOME

	2001	2011
NO INCOME	7.3	12
R 1 – R 1 600	15.6	8.9
R 1 601 - R 3 200	12.7	9.4
R 3 201 - R 6 400	18.9	10.9
R 6 401 - R 12 800	19.8	14.1
R 12 801 - R 25 600	15.7	16.8
R 25 601 - R 51 200	6.8	15.5
R 51 201 - R 102 400	1.9	8.8
R 102 401 or more	1.3	3.7

Figure 3: Key Statistics

UNEMPLOYMENT RATE

2011: 12.47%

2011 COCT Avg: 29.19%

GINI COEFFICIENT

2009: 0.56

2014: 0.56

2018: 0.56

2018 COCT Avg: 0.62

2.2 Population

2.2.1 Growth

By 2016, based on past growth trends, the population of the Southern District was estimated at 378 261. In effect, it now comprises 9.06% of the city's population of 4 174 510 making it the fourth largest district in the metropole (Table 1.1.2a). The first, second and third most populated districts are the Khayelitsha, Mitchells Plain & Greater Blue Downs, Tygerberg and the Cape Flats, respectively comprising 29.19% (1 218 681), 18.36% (766 320) and 15.47% (654 926) of the city's population.

The Southern District saw an average annual population growth rate of 2.10% between 2001 and 2011, which was lower than the metropolitan average of 2.95% (Table 1.1.2a). However, the annual average population growth rate between 2011 to 2016 has substantially increased to 3.71%. As a result, the district's share of the metropolitan population has steadily increased from 8.53% in 2011 to 9.06% in 2016. The population has increased by 114 517 people over the 15-year period, which is a 30% increase since 2001.

Table 1: Average annual Population change- District vs Metro

	2001	Average Annual Change 2001-2011	2011	Average Annual Change 2011-2016	2016
Southern District	263744	2.10%	319040	3.71%	378261
Cape Town Total	2893399	2.93%	3740023	2.32%	4174510

Based on the City's 2018 population estimates per sub-place, it can be deduced that the top 3 most populated sub-districts are the Main Road Corridor (±188 816), the Far South (±75 153) and Bishopscourt-Constantia-Tokai (±52 001). Hout Bay (±38 649) and the Table Mountain National Park and environs (±7 423) are the least populated sub-districts.

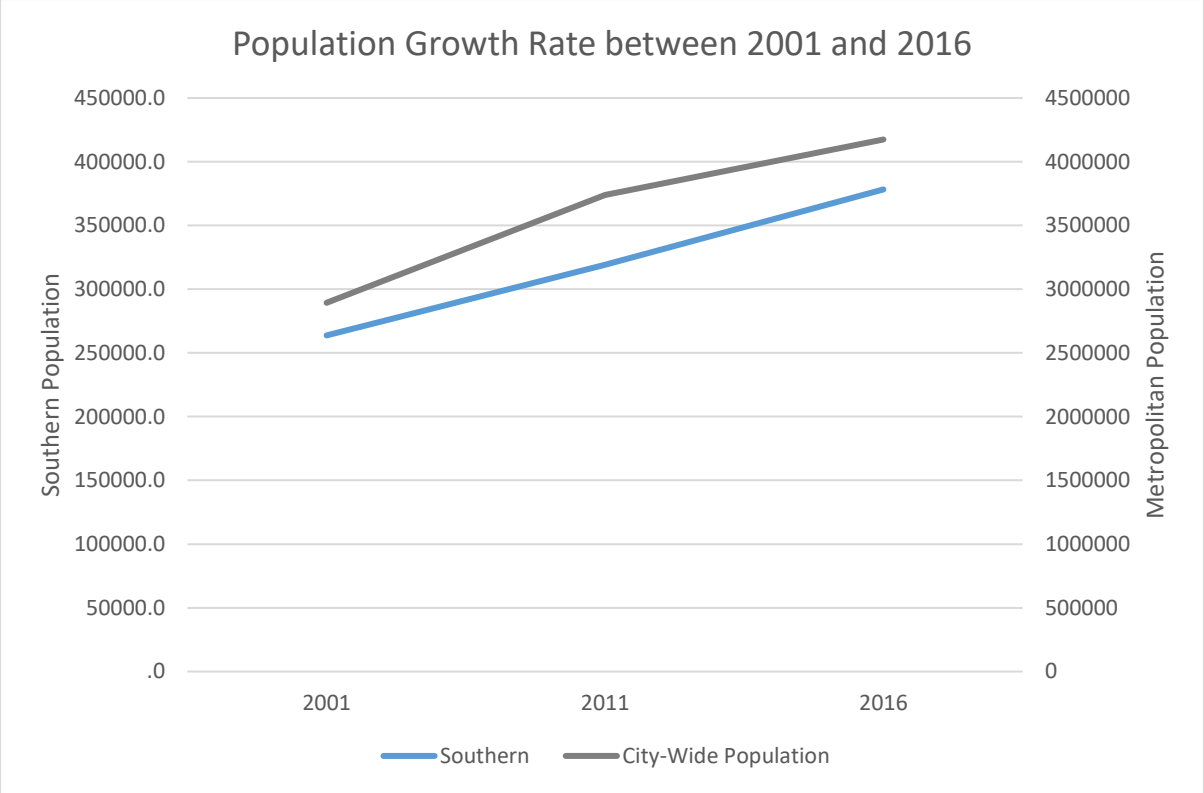


Figure 4: Graph showing change in Population Growth Rates

2.2.2 Spatial Distribution

According to 2011 census data, the Mowbray to Muizenberg sub-district at that time was the most populated sub-district with a population of 183545, followed by the "Far South" (72460), Bishopscourt-Constantia-Tokai (24770) and lastly the Hout Bay and Llandudno sub-district (17900).

The top three most populated sub-places within the district were Retreat (25745), Plumstead (20178) and Claremont (17198). These were then followed by the two informal settlements of Masiphumelele and Imizamo Yethu with populations of 15969 and 15538 respectively.

Although majority of the most populated sub-places are located within the Mowbray to Muizenberg sub-district, there exist strong contrasts within certain sub-districts. Imizamo Yethu for example is an informal settlement found in the Hout Bay and Llandudno sub-district that is one of the densest sub-places surrounded by sub-places that are far less dense. Another example is Masiphumelele informal settlement located in the 'Far South' sub-district, which is another highly dense area surrounded by affluent, less dense sub-places.

Figure 5: Map showing Population distribution across the district by sub-place (2011 Census

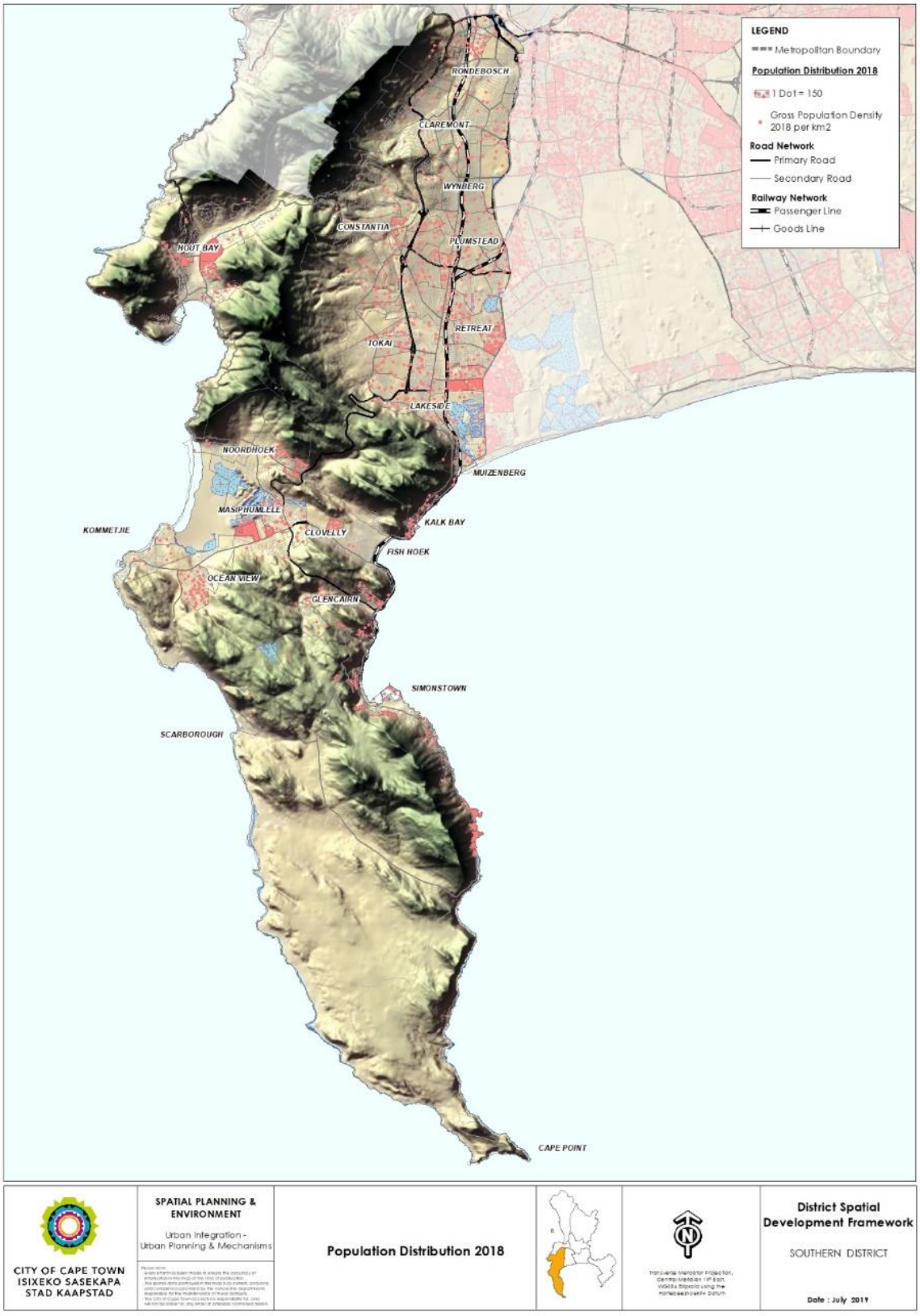


Figure 6: Population Growth between 2011-2017 per 'sub-place'

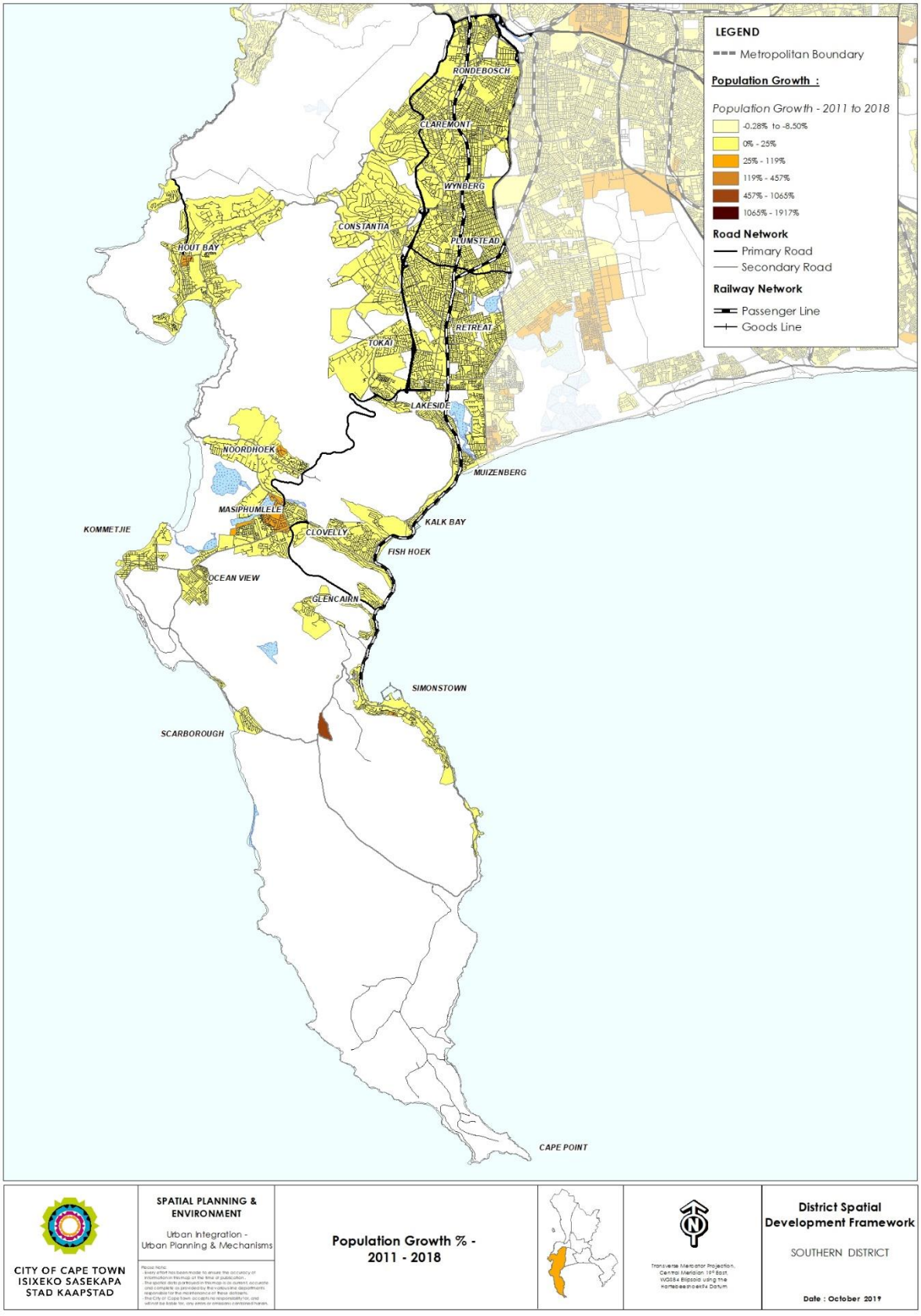


Figure 3 above indicates where (by percentage growth) the population growth of the sub-districts between 2011 and 2018 has been greatest. It is noted* that the map depicts the sub-

place with by far the highest population change over this period as being the Table Mountain National Park (TMNP) area (at 5.36%). However, this is misleading as it is due to informal settlement growth within the Red Hill (Simons Town area) and 'Rasta' (Ocean View area) informal settlements, which are within the TMNP sub-place area(s), and which are then reflected across the entire sub-place.

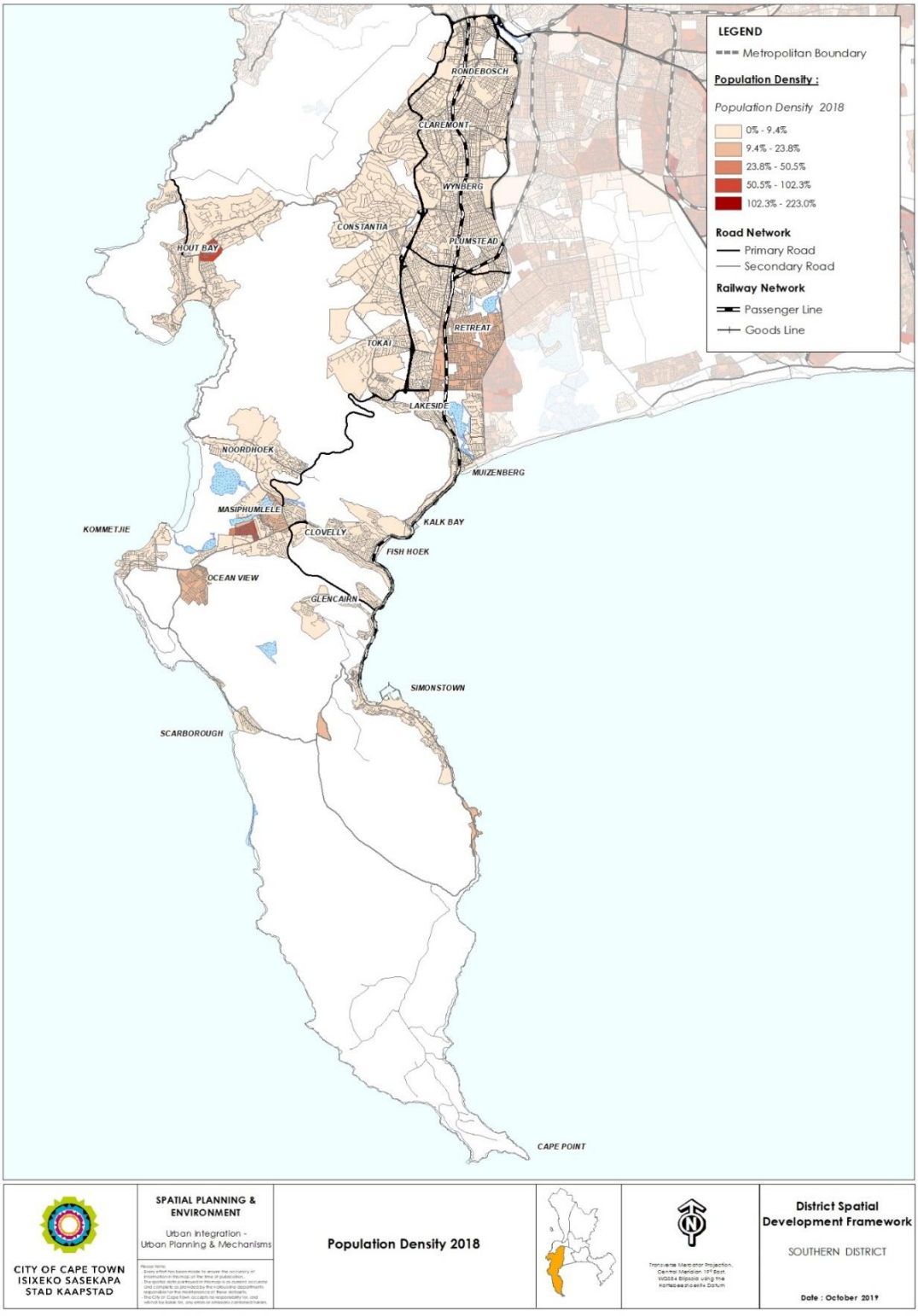
Notwithstanding the above, the urban areas reflecting highest population growth are confined to low income areas with significant informality (backyard shacks and informal settlement area) which has expanded, including Imizamo Yethu and Masiphumelele, and large new urban infill areas including at Noordhoek, Sunnydale, and near Simon's Town.

The sub-places that follow in terms of the highest population growth within this period are Beach Estate (0.66%), Harbour heights (0.60%) and Kommetjie Estate (0.57%). This calculation is expressed in a percentage and is not in terms of absolute number of individuals.

Thus, the areas ideally located within close proximity to public transportation services are indicated to have experienced a relatively low population growth over this period, which would not be aligned with TOD principles that the City has been trying to implement. In terms

of the measurement indicators (% growth ranges) utilised city-wide these areas are not registered as high growth areas despite having grown in pop to some degree.

Figure 7: Gross Population Density by Sub-Place



The top 3 densest sub-places are the informal settlements of Masiphumelele School Site, Masiphumelele and Imizamo Yethu SP which have a gross population density of 53899.07 du/km², 42948.96du/km² and 32909.90 du/km² respectively. These numbers are extremely high in relation to the rest of the sub-places and the metro average. For example, Castle Rock and Cafda Village have a gross population density of 12500.56 du/km² and 11202.71 du/km² respectively. The informal settlements are growing faster than the formal sub-places.

Note on Population and Household Estimates:

Population and Household data is from multiple sources including Census 2011; Aerial Photography Counts 2011; Estimated Growth in Formal Dwelling Units and Population from October 2011 to end December 2017; the Solid Waste 2017 Count and CGIS 2018 roof count. These assumptions made for each of these estimates could impact these figures. While ever effort has been made to ensure duplications don't occur, these sources have different categories and use different methods to obtain these counts. These figures are illustrative of broad trends only. 2nd and 3rd Dwellings (Formal) are included in the formal estimates. Informal Backyard dwelling growth is not accounted for at a Subplace Level.

To avoid distortion of density-related data, subplaces with fewer than 20 households in the 2011 Census data are excluded.

2.2.3 Population Structure

An overview of the population structure by age group in the Southern District is in the table below. In the absence of more recent comparable date this section uses the 2011 Census data and is therefore rather outdated. Nevertheless, these figures are likely to be broadly indicative of the current situation.

Based on the data contained in Table XX below, the population structure for the district has seen very little variations in the various age categories. The biggest change was in the 0-14 age category which decreased by 1.8% from 20.2% to 19%. Majority of the population falls within the potential labour force category (15-65) which slightly increased by 1.2% from 69.8% to 71% and the 65+ age category has increased by 0.1%.

The dependency ratio (measure of the number of people in the potential labour force in relation to those in the "dependent groups", the youth and aged expressed per 100) has decreased since 2001 from 43.24% to 41.72%. This gives a rough estimate of the level of dependency in a society. The Index of aging (number of aged relative to the number of youth expressed per 100) has increased from 49.21% in 2001 to 55.24% in 2011. This means that there are more people over the age of 65 in relation to those below 15 years.

Table 2: Change in Population structure between 2001 and 2011

	0 - 14		**15 - 64**		**65 +**		Dependency Ratio	Index of Ageing
	Number	%	Number	%	Number	%		
2001	53 360	20.2	184 122	69.8	26 257	9.9	43.24	49.21
2011	60 495	19	225 105	71	33 423	10	41.72	55.24

2.2.3.1 Age Distribution

The population pyramid for district is shown in Figure 5. The highest percentage of the population in the Southern District falls within the age category of between 20-24 years, followed by 30-34 years. The

Between 2001 and 2011 the Southern District saw an increase in the percentage of the population in the labour force age category (15 – 64) from 69.8% to 71% as well as the 65+ category from 9.9% to 10%, while the percentage of youth in the district decreased slightly from 20.2% to 19%. The high percentage of children aged 0-4 years reflects a high birth rate in the Southern District.

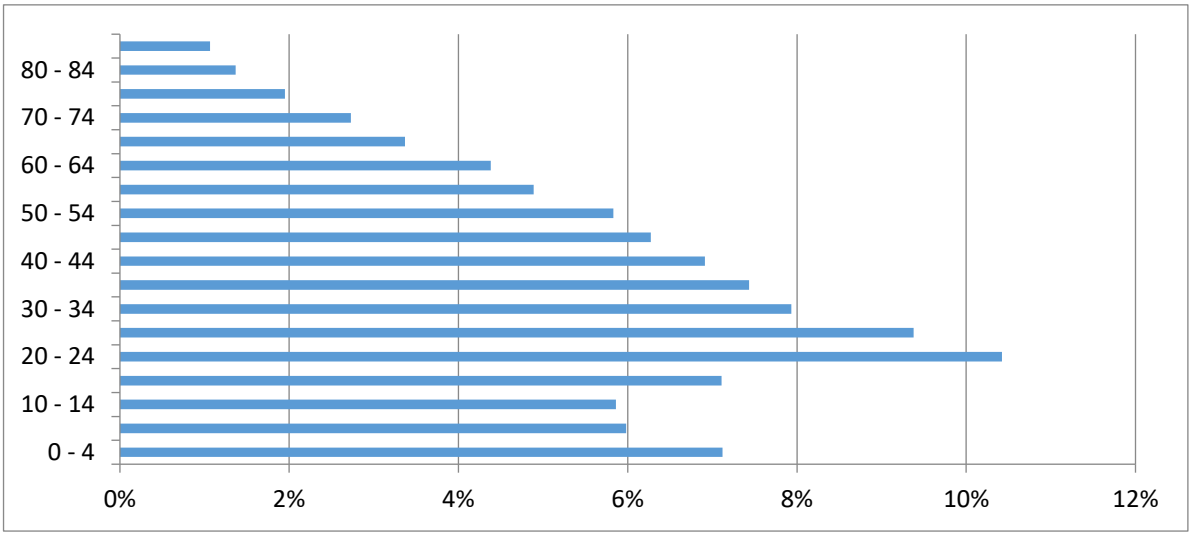


Figure 8: Population Pyramid

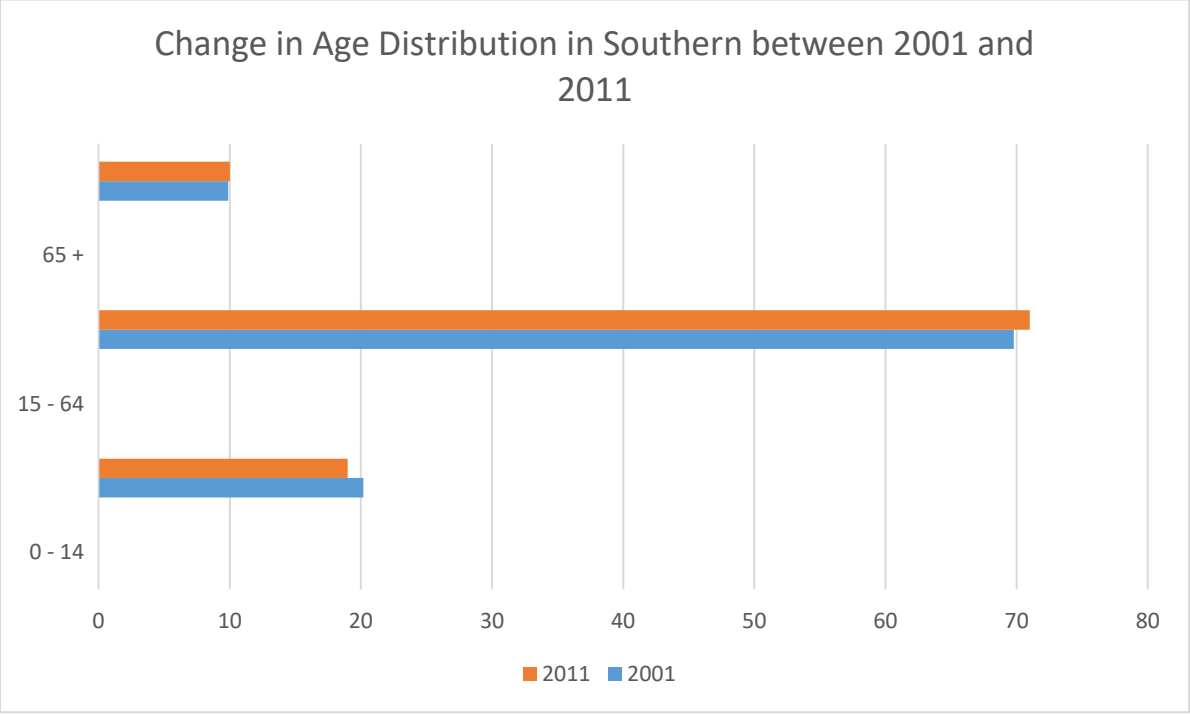


Figure 9: Change in Age Distribution between 2001 and 2011

2.2.3.2 *Education (aged 20+)*

The Southern District has generally higher levels of education compared to city averages. In particular, the level of higher education in the district is notable. Approximately 35.7% of adults in the district have completed some form of higher education compared to just over 16% of adults in the City of Cape Town. In terms of education levels Southern District is in an above average position when compared to the rest of the districts.

Table 3: (CoCT and Census 2011)

	No Schooling		Matric		Higher Education	
	2001	2011	2001	2011	2001	2011
Southern	-	1.2%	-	30.6%	-	35.7%
City of Cape Town Average	4.2 %	1.8 %	25.4 %	30.2 %	12.6 %	16.2 %

2.3 Households

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

The number of Households in the Southern District was estimated to be 129 919 at the end of 2016. The district contains the fourth highest number of households in the city. The average household size for the district was 2.91 in 2016. This is slightly less than the average household size experienced in 2011and 2001 which stood at 2.99 and 3.05 respectfully.

2.3.1 District Trends

The number of households within the district has increased by 23.22% between 2001 and 2011 and a further 21.79% between 2011 and 2016. During both periods the ave. household size has been increasing faster than the population.
Concurrently, the average household size decreased in both periods. The rate of decrease in household size remained relatively similar between 2011 and 2016 in the District.

Matching the city-wide trends, the effects of the increases in population in the Southern District are further intensified by the increase in the number of households and decrease in the average household size.

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

		2001	Average annual growth rate 2001-2011	2011	Average annual growth rate 2011-2016	2016
Households	Southern	86 567	2.32%	106671	4%	129 919
	Cape Town Total	776 781	3.76%	1 068 573	3.03%	1 23 590
Average Household Size	Southern	3.05	- 0.06%	2.99	- 0.08%	2.91
	Cape Town Average	3.72	- 0.60%	3.50	-0.62%	3.39

2.3.2 Spatial Distribution

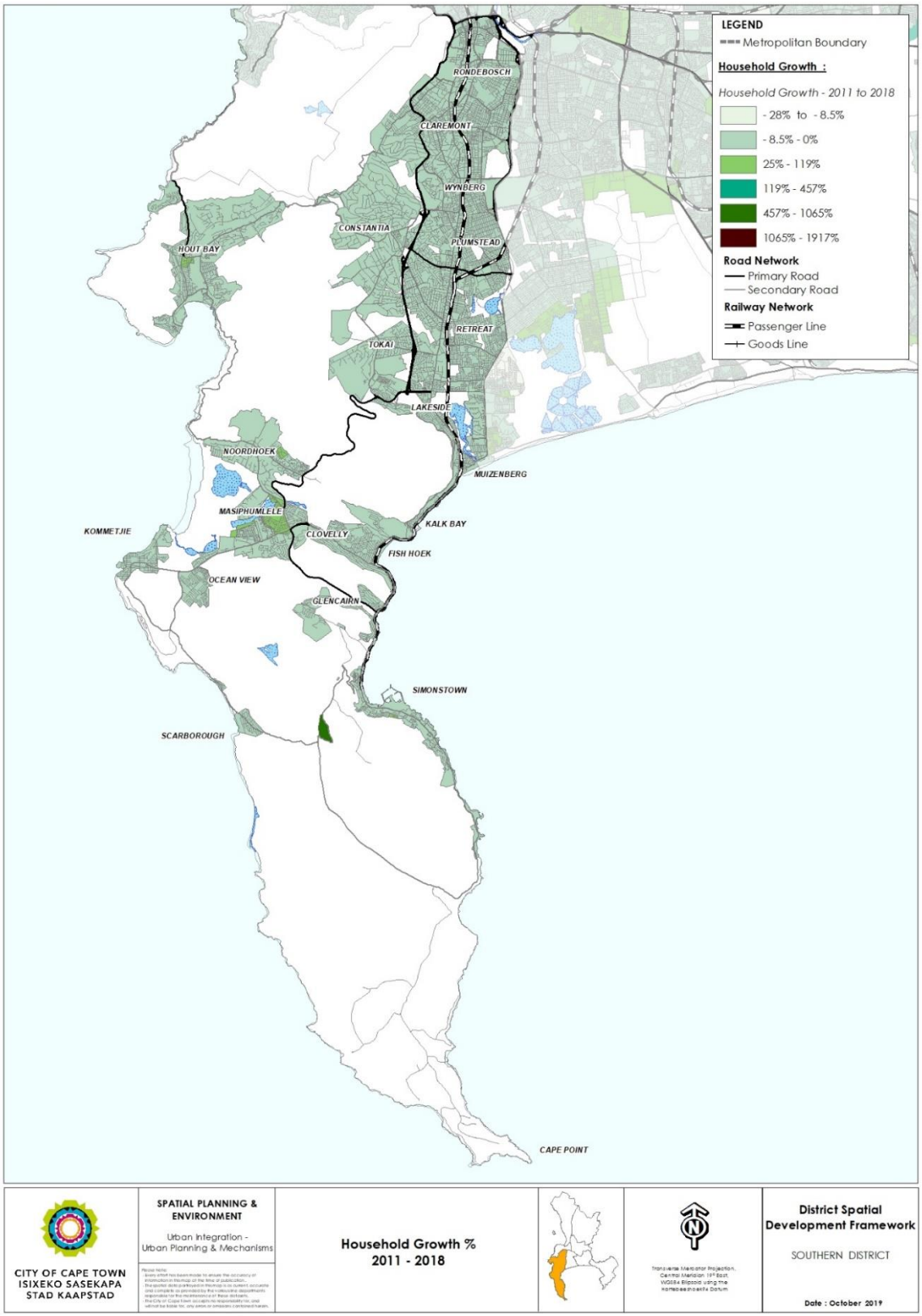
The spatial distribution of households in the Southern District closely resembles the distribution of population by means of sub-places. The areas with the highest populations are generally the ones with the most households. Household sizes however range across the district with smaller household sizes found in the more affluent areas such as Rondebosch and Claremont while the opposite exists in the poorer areas such as Steenberg, Ocean View and Cafda.

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

- Imizamu Yethu SP- 1300 households
- Sunnydale - 991 households
- Table Mountain National Park- 588 households

  The household growth rate for the district is depicted in the following map taking into account the percentage change of households between 2011 and comparing that against the 2018 projections. This map is very similar to the population growth map which highlight the Cape Peninsula National Park (CPNP) as the area with the highest percentage of household growth. This is largely due to the informal settlements that are growing within the CPNP in areas such as Ocean View and Red Hill.

Figure 10: Household Growth (2011-2017)



2.4 Employment

In 2011, 70% or 225 105 people of the Southern District's population were of working age (15 to 64 years). The labour force stood at 150090 with 131370 (71%) being employed and 18720 (8.3%) unemployed. The not economically active population, which includes discouraged work-seekers and others not economically active, stood at 75015.

The unemployment rate for the district stood at 12.47%, the labour absorption rate at 58.36% and the Labour Force participation rate stood at 66.68%.

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

Unemployment rate has decreased by approximately 1% from 13.41% in 2001 to 12.47% in 2011. The number of discouraged work seekers have also decreased while the labour force participation rate increased.

Table 5: District vs metro employment trends

		2001	%	2011	%
Unemployment	Southern	16213	13.4	18,720	8.3%
	Cape Town Total	387315	29.2	405,999	15.6%
Employment	Southern	104680	86.6	131,370	71%
	Cape Town Average	939207	70.8	1,294,239	49.7%

The table below summarises the labour force indicators for the Southern district between the period of 2001 and 2011.

Table 6: Labour force indicators

Southern District Planning District Labour Force Indicators	**2001**	**2011**
Population aged 15 to 64 years	**184 122**	**225 105**
Labour Force	**120 893**	**150 090**
Employed	104 680	131 370
Unemployed	16 213	18 720
Not Economically Active	**87829**	**75 015**
Discouraged Work-seekers	4408	3 015
Other not economically active	83421	72 000
Rates %		

Unemployment rate	13.41%	12.47%
Labour absorption rate	56.85%	58.36%
Labour Force participation rate	65.65%	66.68%

2.4.1 Employment and Unemployment

The majority of the labour force, approximately 131 370 people, were employed. Unemployed people comprised the remaining 18 720 people. The district has an unemployment rate of 12.47%, which is low in comparison to the metro and average.

The large proportion of 'Not Economically Active' people results in a relatively low labour force participation rate, of 66.68%, despite the vast majority of the labour force being employed.

2.4.1.1.1 Labour Absorption Rate

The labour absorption rate of 58.93% indicates that just over half of the Southern District's working age population was employed. Given the relatively high employment rate for the District, the labour absorption rate is lower than may have been expected. Again, this is due to a large proportion of "Other Not Economically Active" people.

2.4.2 Trends

Despite a rapid increase in population, the unemployment rate decreased from 13.41% in 2001 to 14.47% in 2011. This indicates that there was a shortage of labour in the District, as there was an increase in population. The number of discouraged work seekers decreased quite largely over the same period.

2.4.3 Spatial Distribution of Employment

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

The Muizenberg to Mowbray, Hout Bay to Llandudno and the 'Far South' sub-districts generally have sub-places with higher unemployment figures compared to the others. The areas with the highest number of unemployed individuals are Imizamo Yethu (3048), Masiphumelele (2679) and Retreat (1980).

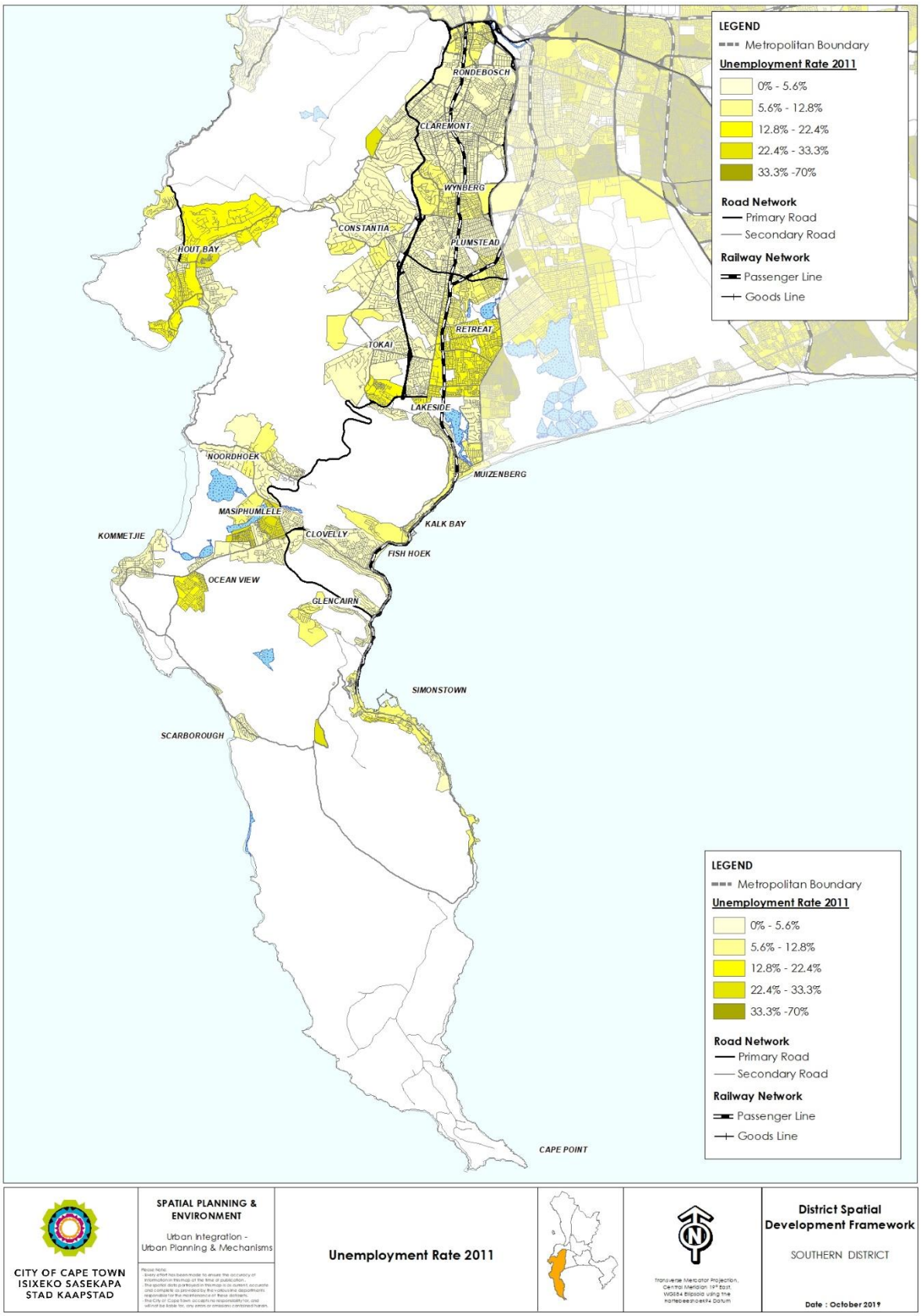


Figure 11: Unemployment rate (census 2011)

2.5 Income (Households)

The household income for the sub-places have been categorised into 4 categories to represent the change in household income between 2001 and 2011. The mean household income has been used to represent the distribution of household income for the sub-districts. Table 11 and figure 13 below gives a more detailed representation of the household incomes by sub-place.

2.5.1 Trends

The graph below indicates the trends in household income between 2001 and 2011.

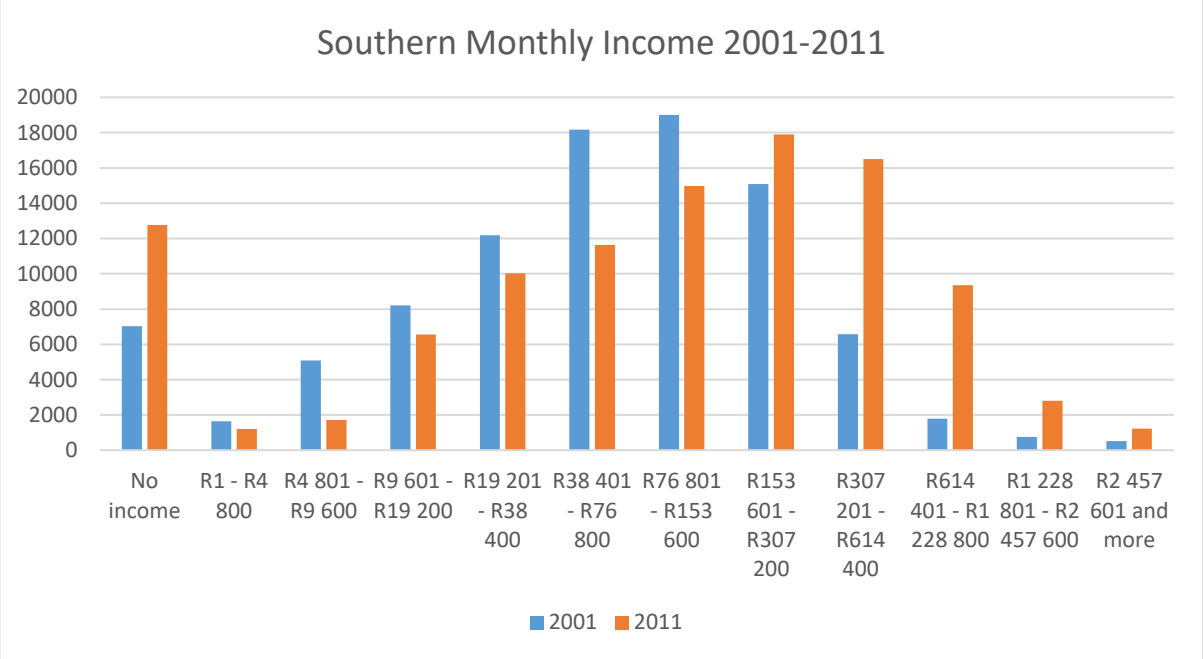


Figure 12: 2001 vs 2011 household income

2.5.2 Spatial Distribution of household incomes

According to the 2011 Census, approximately 14.7% of all households in the district earn R800 and less per month, 26.5% earn between R801-R1640, the bulk of the population (46.3%) earn between R6401and R51200 per month while 12.5% households have a monthly income of +R51201. There is almost as many people earning +R51201 as there are those earning R800 and less. This highlights the unequal distribution of wealth within the Southern district.

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

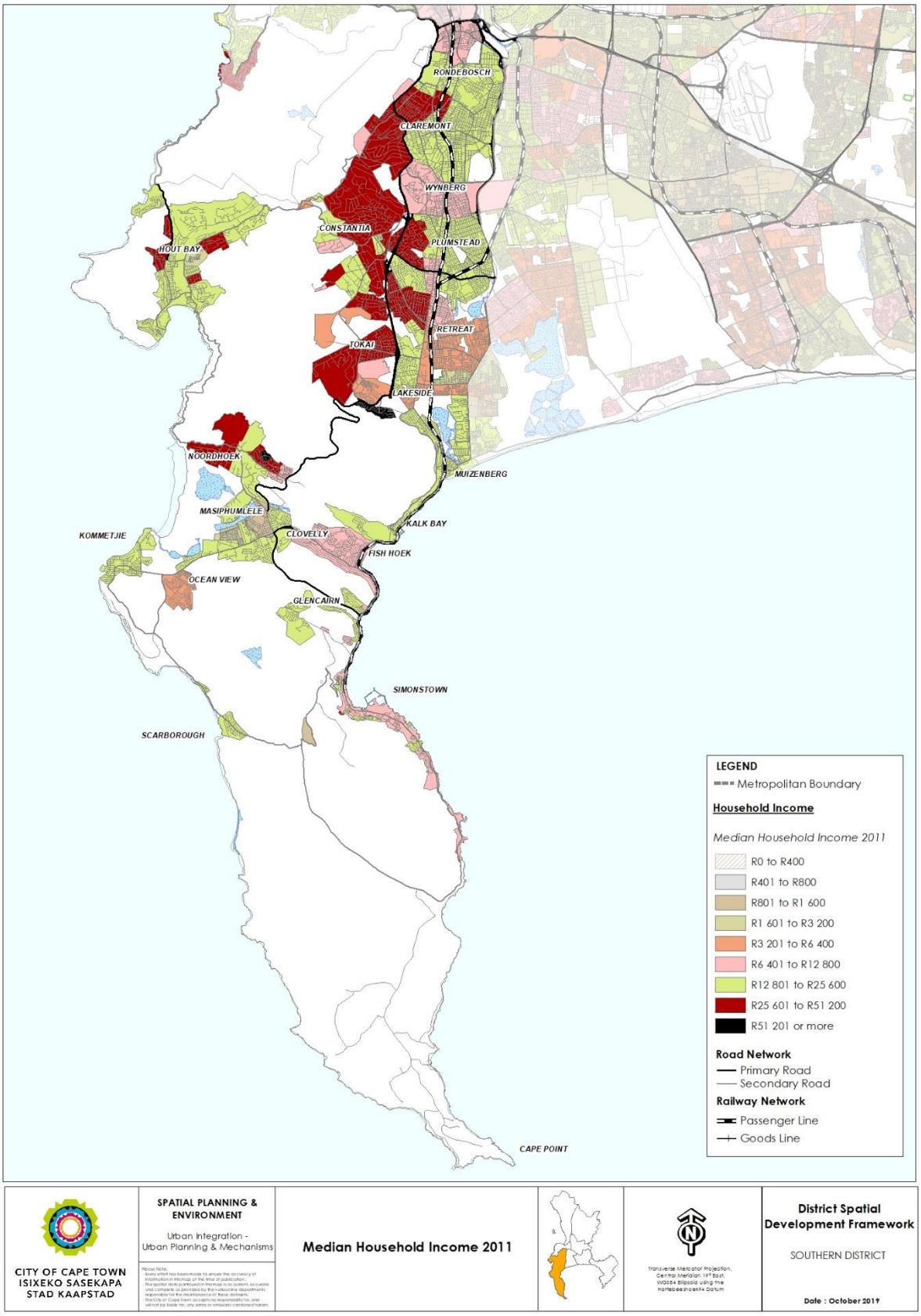


Figure 13: Household income

2.5.3 Income Inequality

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

Although Southern Districts Gini coefficient is lower than the Cape Town average, it is the one of the most unequal district out of the eight in Cape Town. Interestingly, the Gini Coefficient for the district has remained constant between 2009 and 2018.

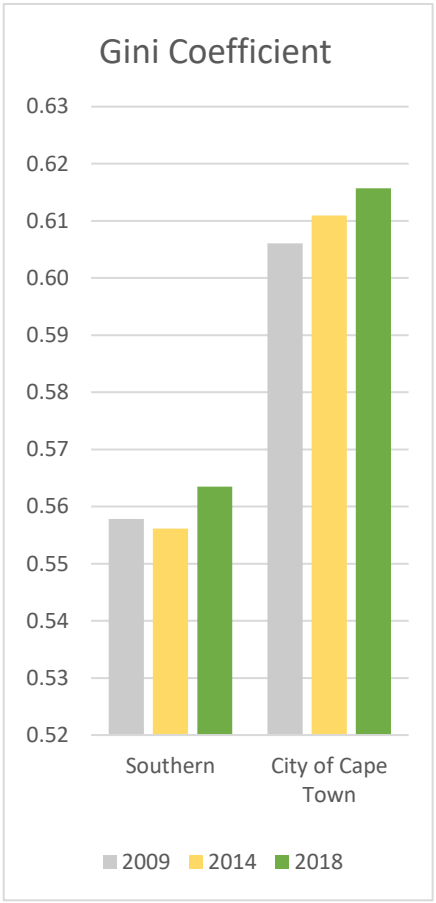
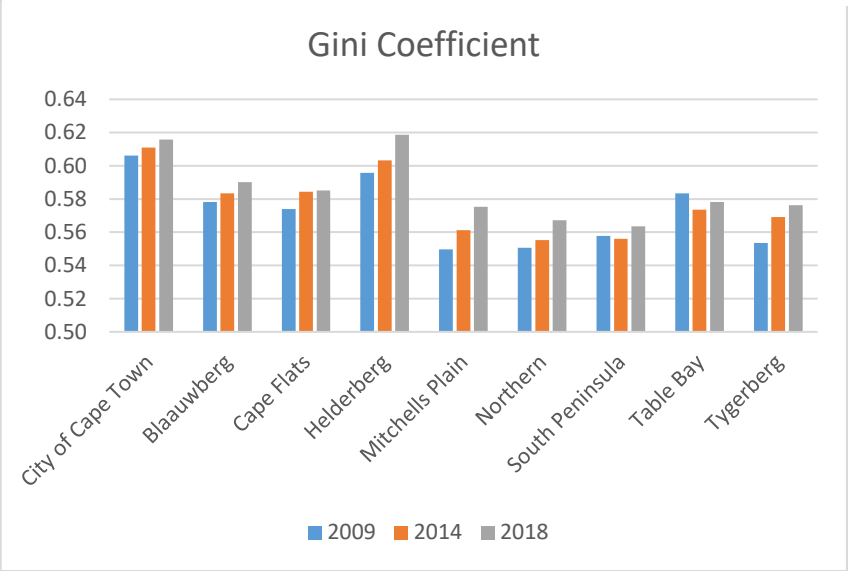


Figure 14: Gini Coefficient

Figure 15: District vs Metro comparison



2.5.4 Socio-Economic Indicators

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

Table 7: Human Development Index- District vs metro

District	Human Development Index (HDI)		
	2009	2014	2018
Southern	0.78	0.80	0.81
City of Cape Town	0.70	0.73	0.74

The Southern District has one of the highest HDI's out of the eight districts, well above the lowest in 2018, which was Mitchell's Plain/Khayelitsha with 0.66. The Southern Districts HDI has been steadily

increasing from 2009 to 2018, at a faster pace than the City average. This is a positive indication for the District.

2.5.5 Synthesis

Summary of issues and trends

- The index of ageing (number of aged relative to the number of youth expressed per 100) increased from 49.21 in 2001 to 55.24 in 2011. This indicates a relative increase in
- The no. of households in the district has increased rapidly between 2001 and 2016 (from 86 567 to 129 919). This is an ave annual growth rate of 4%, which is significantly higher than the city's ave annual growth rate of 3.03% over this period.
- Ave household size (2.91) is lower in this district than in the city generally (3.39), and steadily decreasing (down from 3.05 in 2001).
- Due to decreasing household sizes the increase in households is outpacing the increase in population. Highest household sizes still correspond with lowest income households and the areas they live in.
- Nearly 60% (58.5%) of dwellings in the district are residential houses; Flats comprise 16.88%; Semi-detached houses 4.79%; backyard shacks 5%; and informal dwellings/shacks 6.56%. Thus informal dwellings comprise 11.56%.
- Areas of informality are concentrated in Masi, IY, Hangberg and Red Hill, with only a few other small areas including Rasta Camp (edge of Ocean View) Boys Town (edge of Wynberg).
- The majority of households in the district are in properties they own (55%) with 36% of households renting.
- Almost 60% of households in the district earn >R6500/m.
- Highest income areas, predominantly within the highest income categories in the city, are concentrated close to the mountain chain (& coast). The lower income areas in the district are in the south-eastern part of the Main Road corridor sub-district area, and the lowest are in the Imizamo Yethu and Masiphumelele areas. Unemployment rates are comparatively low (at 12%, and down from over 14% in 2011) and as expected correspond closely with the income area distribution.
- Although the Main Road corridor is a targeted city growth area this has not resulted in very high rates of growth.
- An HDI higher, & growing at a faster pace, than other districts in the city, and a Gini coefficient lower than other districts in the city.
- Masiphumelele and Imizamo Yethu are significant outlier areas in the district. Hangberg and Ocean View are also but less so.

Pressures & Constraints (Challenges)

- An area of relative attraction in the city, but paucity of undeveloped (vacant) land (identified for urban infill).
- Access into living opportunities in the district for low income households is particularly constrained. Land invasion thus far has been minimal, and restricted almost exclusively to existing low income areas where urban management is particularly

Integrated opportunities

- An HDI higher, & growing at a faster pace, than other districts in the city suggests this being an area of more opportunity (& therefore attraction) than other districts. This is likely to include in respect of education (primary, secondary & tertiary), job opportunities, and retail and leisure opportunities (e.g. shopping, restaurants, parks).
- Opportunity for further densification in Main Road corridor, and those IRT 'trunk' routes coming in from the east – Klipfontein, Imam Haron, and South Rd, and also activity and development routes (IRT 'feeder' routes) including Retreat Road, and Kommetjie Road.
- Utilisation of remaining identified urban infill areas

Implications for the spatial plan

- Ensure sufficient infrastructural capacity in focus areas – esp the Main Road corridor
- Support minimum development densities within Main Road corridor
- Ensure inclusionary housing is included as a significant element in the development particularly of identified urban infill areas which are state-owned.

3 NATURAL AND HERITAGE ENVIRONMENT

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

3.1 Status Quo, Trends and Patterns

3.1.1 Topography

The Southern District encompasses most of the Cape Peninsula, a narrow, rocky peninsula that juts out approximately 75 km into the Atlantic Ocean at the south-western extremity of the African continent. The Cape Peninsula has a varied and dramatic terrain, dominated by the spectacular Cape Peninsula mountain chain, a 56 km long spine of mountains that extends from Table Mountain in the north (in the Table Bay District) and terminates spectacularly at the famous Cape Point in the south[1].

The Peninsula was once an island, but about sixty million years ago it was joined to the mainland by the emergence from the sea of the sandy area now known as the Cape Flats. The landscape of the Peninsula has been shaped by prolonged erosion that has removed large parts of the once continuous Table Mountain Group sandstones, leaving high residual mountain ridges. Where faults occur in the rock, natural erosion has cut across and displaced the upper rock layers, resulting in the formation of deep ravines and gorges carved out down the flanks of the remaining mountains.

Numerous small rivers and streams drain the mountains, both to the east and west of the Peninsula. Some of the larger rivers include the Disa River, which drains into Hout Bay, Schusters River, which drains into Schusters Bay at Scarborough, Else River that drains into Else Bay at Glencairn and Silvermine River that drains into Fish Hoek Bay near Clovelly. Some of these rivers form extensive wetlands and some vleis in low-lying areas, especially around Noordhoek and in southern Peninsula. As a result of the mountainous character of the Peninsula, only a few roads link the eastern and western seaboards: Constantia nek links the Southern Suburbs with Hout Bay through a small break in the mountains and then down the Disa River gorge; further south, Ou Kaapse Weg traverses the Silvermine Mountains to connect Tokai with Sun Valley/Noordhoek. The southern section of the Peninsula becomes somewhat flatter and more roads crisscross the Peninsula towards Cape Point.

The Cape Peninsula Mountains drop very dramatically into the sea along the western coastline of the Peninsula. Most of the western coastline is dominated by steep cliffs, well-illustrated on the famous Chapman's Peak drive that links Noordhoek and Hout Bay. The cliffs are interspersed with dramatic promontories, such as the Karbonkelberg that overlooks Hout Bay and the famous Cape of Good Hope[2], situated just north-west of Cape Point. Small white sandy beaches have formed in a few protected bays, such as Dias Beach below the Cape of Good Hope and the famous Llandudno beach, but in addition to this, long expanses of white sandy beaches are also present at Noordhoek and near Scarborough. An extensive wave-cut platform is present on the promontory south of Kommetjie, marked by the Slangkop lighthouse.

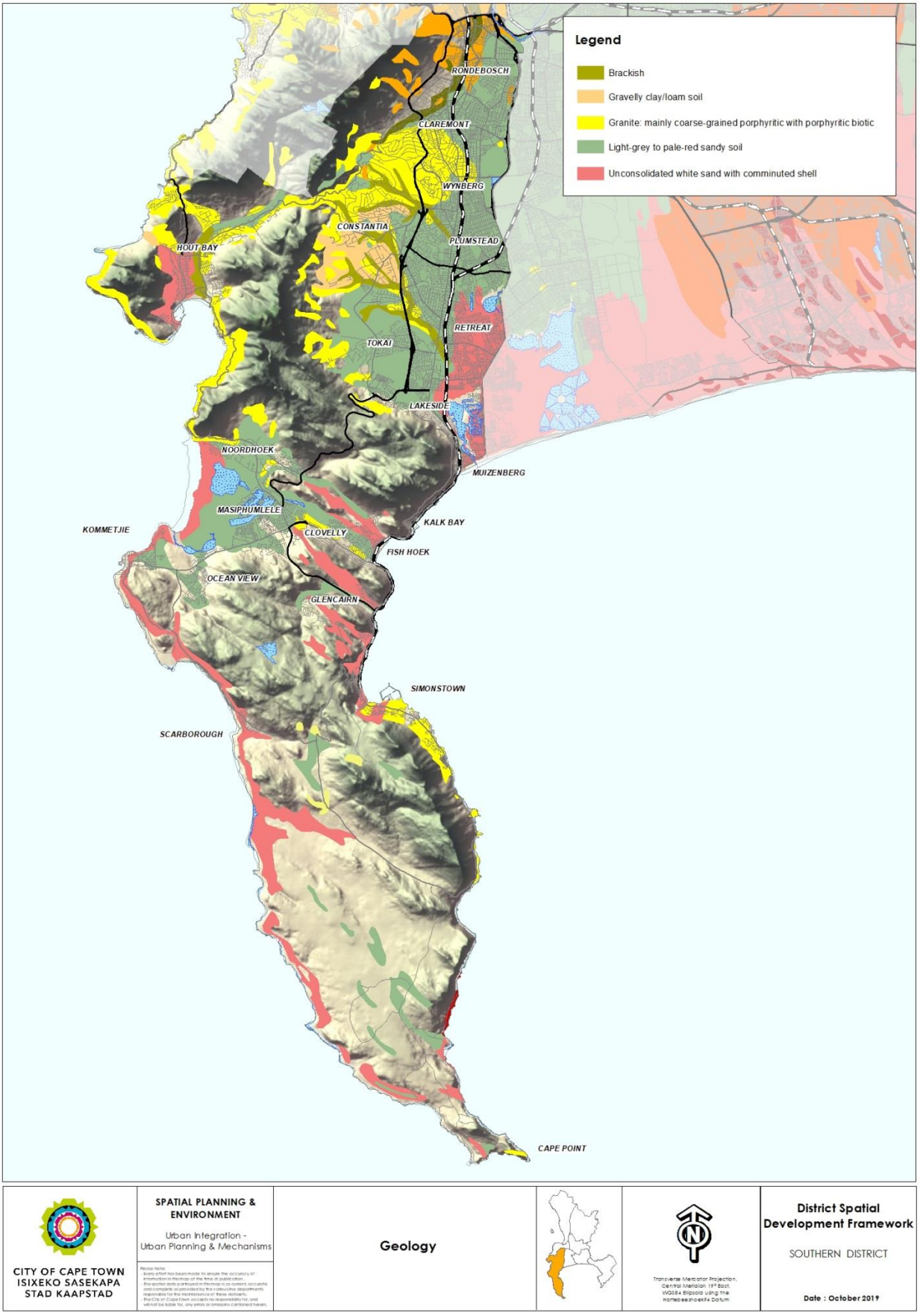
The eastern coastline is somewhat less dramatic, with a more gradual descent down to the warmer waters of False Bay. The shoreline is very rocky, with mainly small secluded beaches that are often pebbly or quite shelly, although Fish Hoek beach and Long Beach at Simonstown are more extensive sandy beaches. The large spheroidal granite boulders that characterise the Cape

[1] Contrary to popular belief, Cape Point is not the southernmost point of the African continent; this is in fact located at Cape Agulhas, some 250km southeast of Cape Town.

[2] The first explorer to round this Cape was Bartolomeu Dias in 1488, and he named it 'Cabo Tormentoso' or the 'Cape of Storms'. Early seafarers believed that once they had passed this point, the worst of their journey was over, and the Cape was later renamed the 'Cape of Good Hope' as a result.

Peninsula are present along some of the coastline here, especially around Boulders Beach and Simon's Town.

Figure16: Geology map



3.1.2 Biodiversity

The CoCT falls within a unique and globally significant biodiversity hotspot. The City's biodiversity is a valuable part of its heritage and is an important driver of tourism, economic growth, building ecological resilience and social upliftment in the City and for the country as a whole.

The City of Cape Town falls within the extreme south-west of the Cape Floral Region (CFR), the smallest but richest for its size of the six plant kingdoms in the world. The biodiversity of the CFR is of international significance. The fynbos biome comprises some of the remaining tracts of some of South Africa's rarest vegetation types, namely Sand Fybos and Renosterveld. Approximately 70% of the plant species found in the CFR are found nowhere else on earth.

Eighteen different terrestrial national vegetation types[3] and three azonal vegetation types[4] occur within the City of Cape Town. Twelve of these are considered Critically Endangered, two are Endangered, three are Vulnerable and the remaining four are Least Threatened (DEAT 2009).

[3] As defined by the South African National Biodiversity Institute (SANBI).

[4] Wetland vegetation types, including along rivers, in pans and in salt marshes, and seashore vegetation.

The conservation status of each of the vegetation types discussed above is shown in Table below. Four of the vegetation types that occur in the Southern District occur only within the City of Cape Town and are considered Endangered or Critically Endangered. Cape Lowland Freshwater Wetlands are also Critically Endangered.

Table 8: Conservation status of national vegetation types occurring in the Southern District

Vegetation types	Historic area within CoCT (km²)	% within CoCT	Current area within CoCT (km²)	Conserved within CoCT (km²)	National* Conservation target (%)	National Ecosystem Status
Cape Winelands Shale Fynbos**	39	37.5	24	9	30	Vulnerable
Southern Afrotemperate Forest	3	0.4	3	3	34	Least Threatened
Peninsula Sandstone Fynbos	219	100	213	173	30	Endangered
Peninsula Granite Fynbos	91	100	39	28	30	Critically Endangered
Cape Flats Sand Fynbos	544	100	85	5	30	Critically Endangered
Hangklip Sand Fynbos	33	41.8	19	14	30	Endangered
Cape Flats Dune Strandveld	400	100	191	28	24	Endangered
Cape Lowland Freshwater Wetland	?15	15	11	8	24	Critically Endangered

*As set by the National Spatial Biodiversity Assessment (as % of historical extent).
**Incorporating Peninsula Shale Fynbos
Source: Adapted from LAB, 2008 and CoCT 2009 Biodiversity Network report.

The national vegetation types that occur within the Southern District in the City of Cape Town are:
1. Cape Winelands Shale Fynbos (incorporates Peninsula Shale Fynbos);
2. Southern Afrotemperate Forest;
3. Peninsula Sandstone Fynbos;
4. Peninsula Granite Fynbos (North and South subtypes);
5. Cape Flats Sand Fynbos;
6. Hangklip Sand Fynbos;
7. Cape Flats Dune Strandveld (incorporates Cape Seashore Vegetation); and
8. Cape Lowland Freshwater Wetland.

A brief description of each of these vegetation types is provided below:

Cape Winelands Shale Fynbos (incorporating **Peninsula Shale Fynbos**) occurs in the Southern District on recent, non-aeolian colluvium (derived from Malmesbury Shales) on the steep north-eastern slopes of Table Mountain (Devil's Peak), above the M3. This vegetation type consists of dense, moderately tall shrubland with proteoid fynbos dominating (Rebelo et al. 2006). The vegetation is relatively well-conserved but considered Vulnerable.

Southern Afrotemperate Forest occurs in small patches in the Table Mountain National Park and the Kirstenbosch National Botanical Garden. Only about 0.4% of this vegetation type occurs within the boundaries of the City of Cape Town with most occurring in the southern Cape. This vegetation consists of tall, multilayered afrotemperate forests dominated by yellowwoods, stinkwood, etc. with a well-developed shrub understorey and herb layers. Virtually all of this vegetation type occurring in Cape Town is conserved and nationally it is Least Threatened.

Peninsula Sandstone Fynbos is endemic to the CoCT and found on gentle to steep slopes across the entire Cape Peninsula on sandstone or mudstone of the Table Mountain Group. The vegetation is a moderately dense, tall proteoid shrubland over a dense, moderately tall ericoid shrubland, consisting of mostly proteoid, ericaceous and restioid fynbos with some asteraceous fynbos. The

vegetation type is extremely rich in species that are endemic (146 known species) and/or Red Listed (65 known species). About 82% of this vegetation is conserved in the TMNP, although it is considered one of the top three vegetation types vulnerable to the impacts of urban expansion as a result of an increase in population density (Rouget *et al*., 2004). The vegetation is considered Endangered owing to the high density of Red List threatened plant species.

Peninsula Granite Fynbos is endemic to the CoCT. The vegetation type occurs on deep, loamy, sandy soils derived from the Cape Granite Suite on the steep to gentle, lower slopes (below the sandstone slopes) of the Table Mountain range on the Cape Peninsula (at altitudes of 0-450m). The vegetation is diverse, with the North subtype recognized as distinct from the wetter South subtype, and consists of moderately dense to open trees in tall, dense, proteoid shrubland, dominated by asteraceous and proteoid fynbos. Patches of restios and ericaceous fynbos occur in wetter areas. This vegetation type is threatened by plantations, vineyards and fire exclusion and is considered Critically Endangered. The vegetation type is conserved in the TMNP and the Kirstenbosch National Botanical Garden, but much of the conserved fynbos has transformed to Afrotemperate Forest due to fire exclusion policies.

Cape Flats Sand Fynbos is endemic to the City and occurs mainly on deep, leached, acid sands (Mucina *et al*., 2006) at altitudes of 20–200m. It is characterised by typical Fynbos families such as protea, erica, restio (Cape reeds), buchu and geophytes (bulbs). The vegetation comprises dense, moderately tall shrubland, interspersed with restios. Cape Flats Sand Fynbos is exceptionally high in species diversity and has a high number of Vulnerable, Endangered and Critically Endangered species (some 94 Red List Threatened species occur on the remnants within Cape Town). Five of its plant species have become extinct. Although historically the most extensive vegetation type in the City, Cape Flats Sand Fynbos is listed as Critically Endangered and more than 85% of this vegetation type has been transformed. Many of the remaining patches are small pockets surrounded by urban areas. In the Southern District, small patches of Cape Flats Sand Fynbos occur on Rondebosch Common, at the Kenilworth Racecourse, on Meadowridge Common and the flats at the Tokai Park section of the TMNP.

Hangklip Sand Fynbos occurs on old sand dunes and sandy bottomlands supporting moderately tall, dense ericoid shrubland (Rebelo et al. 2006); about 42% of its distribution is within the CoCT. The vegetation is dominated by proteoid, ericaceous and restioid fynbos with some asteraceous fynbos. A number of endemic species of shrubs and herbs occur in this vegetation type. Hangklip Sand Fynbos is considered Vulnerable and about 20% of it is conserved within the TMNP, the Kogelberg Biosphere Reserve and the Kleinmond Nature Reserve, with another 3% in private conservation areas. About 31% has been transformed by coastal residential development, cultivation and roads. Alien species occur in localised patches. Within The Southern District, Hangklip Sand Fynbos occurs on the old dune fields at Hout Bay, in the area between Fish Hoek and Noordhoek and on Smith's Farm near Cape Point.

Cape Flats Dunes Strandveld is endemic to the CoCT and occurs on flat to slightly undulating dunes consisting of alkaline sand of marine origin. The vegetation is dominated by broad-leaved shrubs and small trees such as taaibos (*Rhus spp.*) and ghwarrie (*Euclea spp.*). Grasses, annual herbs and succulents are abundant. 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. Threatened species within this vegetation type include *Euphorbia marlothiana, Jordaaniella anemoniflora* (*Cephalophyllum anemoniflorum*) as well as the milkwood (*Sideroxylon inerme*) which is a protected species. Relatively few endemic species are found in this vegetation type. Strandveld plays an important role in terms of corridors for animals, ensuring connectivity between the coast and inland. It is listed as Endangered. About 56% of this vegetation has been transformed. In the Southern District this vegetation occurs in coastal dune areas near Muizenberg and in a narrow band along the coastline of the Peninsula.

Cape Lowland Freshwater Wetland is an azonal vegetation type that occurs on the Cape Flats in flats and depressions and may be seasonally or permanently inundated. Almost 15% of this vegetation type occurs within the CoCT, where transformation rates are high (55%). This vegetation is characterised by tall *Phragmites australis* and *Typha capensis* reeds, seasonally or permanently

flooded restios, sedges and rushbeds. Several endemic species of low shrubs and aquatic herbs occur in this vegetation type. In The Southern District, Cape Lowland Freshwater Wetland occurs at Zandvlei near Muizenberg. This vegetation is considered Critically Endangered.

Conservation Areas

Conservation Areas in The Southern District include the following:
The largest part of the **Table Mountain National Park** (TMNP) falls within the Southern District and stretches from Signal Hill in the City Bowl in the north to Cape Point in the south. The TMNP is managed by South African National Parks (SANParks) and is considered to be one of the centres of endemism within the Cape Floral Region. One of the highest concentrations of plant biodiversity within the Cape Floral Kingdom is found in the TMNP.

Rondebosch Common is a public open space area located between the suburbs of Rondebosch, Rosebank and Mowbray. The 40 ha National Monument is a remnant of the Critically Endangered Cape Flats Sand Fynbos and has small remnant patches of Renosterveld and a seasonal wetland area.

The 52 ha **Kenilworth Racecourse Conservation Area** comprises another remnant of Cape Flats Sand Fynbos and is considered one of the best-protected examples as it has not been disturbed for over 100 years. The conservation area in the centre of the Kenilworth Racecourse is home to a high number of plants species, including 20 endangered and two endemic species, as well as a healthy fauna population and (permanent and seasonal) wetland areas. Alien infestation has recently become a problem but an active volunteer group assists staff to keep this under control.

The **Zandvlei Estuary Nature Reserve** at Lakeside near Muizenberg is one of the most accessible reserves and is popular with picnickers and windsurfers. The 208 ha Local Authority Nature Reserve comprises the only functioning estuary on the False Bay coast and is an important fish nursery area supporting a variety of indigenous fish species. The estuary mouth is opened artificially at high spring tides. The estuary is popular among sport anglers, but strict recreational fishing regulations apply and many anglers prefer to 'catch, tag and release' indigenous species. The Reserve's wetlands are important bird habitats and support numerous migrating birds. Numerous reptiles, amphibians and small mammals also occur in the reserve.

3.1.3 Fauna

Very little is known about the fine scale distribution of fauna within the CoCT, and species lists are generally available only for isolated sites such as proclaimed nature reserves. There is thus little quantitative data available for each district.

3.1.3.1 Fish

Five indigenous freshwater fish species are currently recognized as occurring within the boundaries of the CoCT. However, the one species, Cape Galaxias (*Galaxias zebratus*), has been shown to comprise of at least 13 species across the Western Cape. Preliminary results have placed the Galaxias in the Cape Flats portion of the Southern District is being in the "zebra" lineage. However it appears that the "mollus" lineage also occurs on the Peninsula. Both these taxa have not been formally described as yet and the conservation status has yet to be assessed. Galaxias are found in flowing or standing water across the City and can be expected to occur in any suitable habitat in The Southern District.

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 5 taxa. The distribution and conservation status of each of these species needs to be confirmed and presently it is unclear which taxa would fall within The Southern District. Within the CoCT, most remaining populations are in the upper

reaches of streams and in dams in the mountain catchment areas. Within The Southern District, Cape Kurper are known to occur in the Disa River (Hout Bay) above Disa River road bridge of the Table Mountain National Park and are likely to occur in many of the upper reaches and dams on the mountain chain.

3.1.3.2 Mammals

Of the 83 species of indigenous mammals found or presumed to occur within the CoCT, 18 species (excluding marine mammals) have IUCN status. There are six species of bat which could possibly occur within the District and which are considered Near Threatened. Very little is known about the exact distribution of bats within the CoCT. Any bat roosting sites identified within or near any proposed development would require a specialist report which would assess the significance of any potential impacts.

With regard to the larger terrestrial mammals that still occur within the district, all were assigned the conservation 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 depends on the availability of larger natural open space to ensure that viable populations exist and persist. The ecological corridors linking important natural areas are essential for the continued survival of many mammal species. An important ecological corridor within The Southern District encompasses the Kommetjie / Noordhoek wetlands, which link the northern and southern part of the Peninsula Mountain chain.

3.1.3.3 Avifauna

Of the 404 bird species recorded within the CoCT, 28 species are listed as being threatened. Numerous threatened species found in the coastal 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 Cape Cormorants *(P. capensis)* breeds on the Cape Point cliffs. The Near Threatened Crowned Cormorants *(P. coronatus)* roost or feed along the coastline of the Southern District but they do not breed in the district. The Endangered Bank Cormorant (*Phalacrocorax neglectus)* is regularly seen around the Cape Peninsula and they breed on the isolated granite boulders in False Bay south of Simon's Town.

Important Bird Areas:
oulders near Simon's Town is well-known for its African Penguin (*Spheniscus demersus*) breeding colony. This constitutes one of only three mainland breeding colonies in the world. The African Penguin is classified as Endangered, and the population are decreasing at about 14% per generation. The more than 700 active nests are of immense conservation significance and the site is of enormous educational and tourism importance. In the 1998 assessment of the most important bird areas in South Africa, Boulders was identified as an Important Bird Area (IBA): Boulders Bay (Site Number: SA117).

Important roost and breeding sites:
There is an important tern and cormorant roost at Die Kom in Kommetjie. All four species of marine cormorant are regularly present and the mixed species tern roost can number in the thousands. This site is also known as "The Island".

3.1.3.4 Amphibian Fauna

Of the 27 species of amphibians which occur within the CoCT, ten are allocated threatened status.

Within the Southern District, five threatened amphibian species are known to occur. These include the Critically Endangered Table Mountain Ghost Frog (*Heleophryne rosei*) and the Near Threatened Cape Peninsula Moss Frog (*Arthroleptella lightfooti*). Both of these are endemic to the Cape

Peninsula and constitute the only endemic vertebrates to the CoCT. The Table Mountain Ghost Frog is almost totally restricted to the Southern District although they do occur in the Table Bay District to the north. The species is dependent on perennial streams in moist forested ravines. While its entire distribution range falls within the Table Mountain National Park and the upper reaches of the Kirstenbosch Botanical Gardens, the species is considered as Critically Endangered due to its miniscule global range. The Cape Peninsula Moss Frog is found throughout the Cape Peninsula Mountain chain in seepage areas in Peninsula Sandstone Fynbos and Southern Afrotemperate Forest.

In the CoCT, the Critically Endangered Micro Frog (*Microbatrachella capensis*) only occurs within in the Conservation Area within the Kenilworth Race Course which is also located in the Southern District. This population is highly significant as it is the last remaining population on the Cape Flats and the populations to the east at Gansbaai, Betty's Bay and Kleinmond are all threatened by habitat destruction. The filling in, drainage or pollution of vleis, and alien vegetation encroachment, are major threats facing this frog species.

The Endangered Western Leopard Toad (*Amietophrynus pantherinus*) is known to occur in suitable habitat throughout The Southern District. The Constantia, Clovelly, Diep River, Glencairn, Heathfield, Kommetjie, Meadowridge, Princessvlei POS, Retreat, Scarborough, Lakeside, Kirstenhof, Tokai, Bergvliet, Hout Bay, Noordhoek and Fish Hoek areas are particularly important for Western Leopard Toads although they are known to occur in almost all the suburbs in the Southern District. If the presence of this species is suspected on a site then a comprehensive assessment would need to be conducted.

The Near Threatened Cape Rain Frog (*Breviceps gibbosus*) occurs in this area and is frequent in the suburban gardens. This species is not associated with wetlands and could be found in areas with natural vegetation remnants and gardens.

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

3.1.3.5 Reptile Fauna

Eight of the 61 species of reptiles found or suspected to occur within the CoCT are considered to have Red Data status. The conservation assessment of South African reptiles is currently underway so the status of some of the species found in the CoCT may change. However, the Vulnerable Cape Sand Snake (*Psammophis leightoni)* could potentially occur in the Southern District in Strandveld and Sand Fynbos vegetation.

3.1.3.6 Invertebrates

Little is known about invertebrates in the Southern District. Three threatened butterfly species occur or historically occurred within the district. Two of these, the False Bay Unique Ranger and the Barber's Cape Flats Ranger, are dependent on dune slack wetlands where there is an abundance of Cottonwool Grass (*Imperata cylindrical)*. Any such habitat on the Cape Flats portion of the Southern District should be assessed for the presences of either of these species, as they could potentially occur. A brief summary of each of these butterfly species is included below.

The False Bay Unique Ranger *(Kedestes lenis lenis)* is Critically Endangered. It is only known from seeps on the Cape Flats in Cape Flats Dune Strandveld. Its numbers have been declining alarmingly over the last 20 years due to urbanization, habitat fragmentation and destruction, invasive alien vegetation and increased fire frequency. This butterfly has occurred together with Barber's Cape Flats Ranger in the past. The False Bay Unique Ranger flies in November and December and is

known to occur in the open field south of Flora Road in Steenberg (information provided by Jonathan Ball).

The Barber's Cape Flats Ranger *(Kedestes barbeae bunta)* is classified as Critically Endangered. It is considered to be extinct from its former range of Steenberg and Retreat. It is presently known only from a minute range (area of occupancy is less than 0.001 km^2) in the Strandfontein area in the neighbouring Cape Flats District. The habitat is dune slack wetlands containing Cottonwool Grass (*Imperata cylindrica*) in Cape Flats Dune Strandveld. Most of the habitat has been destroyed by urbanization coupled with habitat fragmentation, invasive alien trees and increasing fire frequency. The flight period of the butterfly is from early September to mid-October (information provided by Jonathan Ball).

3.1.4 Hydrology

The Southern District lies within the winter rainfall region of the Western Cape. The district records some 700 mm of mean annual precipitation and 1 400 mm of mean annual evaporation (River Health Programme, 2005). The district contains an abundance of rivers and surface water bodies (see Figure XX).

3.1.4.1 Rivers and Estuaries

The Southern District contains a large number of small rivers. Those located in the northern part drain into Table Bay and include the Liesbeek and Black Rivers. Rivers located in the western part of the district drain into the Atlantic Ocean and include the Hout Bay, Bokramspruit, Schusters and Krom rivers, of which the last two fall within the Cape of Good Hope Nature Reserve. The rivers located in the eastern part of the district drain into False Bay and include the Sand, Diep, Keyser, Westlake, Silvermine and Else rivers. The de Goede Hoop River drains into the Noordhoek Wetlands.

Of the northern rivers, the *Liesbeek River* drains the east-facing slopes of Table Mountain above Kirstenbosch Botanical Garden, while the *Black River* drains the north-western portion of the Cape Flats. Both rivers flow through largely urbanised areas throughout much of their course and enter Table Bay to the north in the Table Bay District. Significant portions of both the Liesbeek (40%) and Black (55%) rivers are canalised.

Both rivers are increasingly impacted in their downstream areas, resulting from canalisation (which leads to habitat loss and severely reduces the river's ecosystem functioning), release of treated wastewater, littering and invasion of alien weeds particularly in the Black River (River Health Programme, 2005).

As a result, the lower stretches of the rivers in the northern part of the Southern District are amongst the worst polluted rivers in the district. While the upper reaches of the Liesbeek River, located within the Table Mountain National Park, are still in a natural condition, its middle reaches have deteriorated to fair condition, with only the fish assemblage showing a good status. The lower reaches of the river, where it enters the Table Bay District, are of fair to poor quality, with particular concerns on riparian vegetation and aquatic invertebrates. The Black River is of poor to unacceptably low quality, with particular concern on water quality and aquatic invertebrates (River Health Programme, 2005) (see **Error! Reference source not found.**).

1.

Table 9: Health status of rivers in northern parts of the Southern District

River	River health[5]*	Most notable problems
Liesbeeck River – upper reaches	Natural	

[5] The National River Health Programme assesses the health of rivers by measuring selected ecological indicator groups that represent the condition of the larger ecosystem: habitat integrity, riparian vegetation, fish assemblage, aquatic invertebrates and water quality. A healthy river has the ability to provide ecosystem goods and services such water supply, breakdown of pollutants, conservation, flood attenuation, natural products, recreation and spiritual rituals which contribute to human welfare and economic growth (River Health Programme, 2005).

River	River health[5]*	Most notable problems
Liesbeeck River – middle reaches	Good to fair	Release of treated effluent from urban areas and run-off Infestation with alien vegetation Infestation with alien fish in lower reaches Canalisation
Liesbeek River – lower reaches	Fair to poor	
Black River – lower reaches	Poor to unacceptable	

Source: River Health Programme (2005)
*Note: The order of rankings is Natural, Good, Fair, Poor, Unacceptable (River Health Programme, 2005)

Of the rivers in the west of the Southern District, the *Hout Bay River* is the historically most important one. It is formed by the confluence of the Disa and Original Disa Rivers, which originate on Table Mountain, is approximately 12 km long, and drains into the Atlantic Ocean at Hout Bay. It is typical of many of the rivers in the Fynbos biome in that it is short, steep and fast flowing, with naturally acidic, tea-coloured waters (River Health Programme, 2003).

The land use along the river varies from conservation on the upper reaches to farmlands on the middle stretch and peri-urban and urban areas on its lower reaches. The compounding impacts on the river along its course are clearly visible by the deteriorating health of the river ecosystem as the Hout Bay River flows towards the sea. The impacts are greatest on habitat integrity, riparian vegetation and water quality (River Health Programme, 2003) (see **Error! Reference source not found.**).

Table 10: 1. Health status of the Hout Bay River system

River	**River health***	**Most notable problems**
Disa river – upper reaches above dam (located in the Table Bay District)	Natural	
Disa River – upper reaches at Orange Kloof (located in the Table Bay District)	Natural to good	In-stream dams, reducing the natural flow of the river Canalisation of a limited stretch, restricting natural river function
Hout Bay River – middle reaches at Disa Road	Good to fair	In-stream dams, reducing the natural flow of the river Invasion of alien vegetation, destabilising river banks and clogging channel Water abstraction for livestock watering and garden irrigation Canalisation downstream of Victoria Road, restricting natural river function Runoff from urban areas and seepage from septic tanks Frequent sewage overflows
Hout Bay River – lower reaches at Victoria Road	Poor	

Source: River Health Programme (2003)
*Note: The order of rankings is Natural, Good, Fair, Poor, Unacceptable (River Health Programme, 2005)

The other rivers in the western part of the district, the *Bokramspruit, Schusters* and *Krom* rivers, have a generally good ecosystem health status as they are largely located within the Table Mountain National Park and therefore experience less human pressure.

Nevertheless, these rivers have been impacted on by water supply dams, often established in their upper reaches and altering the natural flow volumes in the river, urban development along the lower reaches, which ads to littering and nutrient loads in the water, and alien invasive plants that impact on the river habitats (see **Error! Reference source not found.**).

Table 11: Health status of rivers in the west of the Southern District

River	River health*	Most notable problems
Bokramspruit – upper reaches	Natural to good	Water supply dams reducing flow in the river
Bokramspruit – lower reaches	Fair to poor	Invasive alien vegetation (river gum, wattle) destabilising banks Runoff and nutrient load from urban development Frequent sewage overflows
Schusters River	Good	Invasive alien vegetation (poplars and kikuyu) destabilising banks Runoff and nutrient load from urban development Water supply dams reducing flow in the river
Krom River	Natural to good	

Source: River Health Programme (2005)
*Note: The order of rankings is Natural, Good, Fair, Poor, Unacceptable (River Health Programme, 2005)
In the eastern part of the Southern District, the *Sand, Diep, Keysers* (with its tributaries *Spaanschemat* and *Grootboschkloof*) and *Westlake* rivers, located close to the eastern border of the district, all flow into Zandvlei, which is situated on the False Bay coast at Muizenberg.

These rivers, particularly the Sand, Diep and Keysers rivers, flow through relatively densely urbanised areas, while the tributaries of the Keysers River flow through the Constantia vineyards, which abstract water and generate runoff that flows back into the rivers. Infestation with alien plants and aquatic species is also wide-spread in these rivers. The Diep/Sand River system has also been extensively canalised (75% of the river length). As a result, the ecosystems of most of these rivers are in a fair to poor state.

Table 12: : Health status of rivers flowing into Zandvlei

River	River health*	Most notable problems
Diep River	Good to fair	Runoff, nutrient load and litter from urban development Invasive alien vegetation threatening habitat diversity, river banks Invasive alien fish (banded tilapia) threatening indigenous fish
Spaanschemat River	Good to fair, poor water quality	Runoff, nutrient load and water abstraction from agriculture (vineyards) in Constantia Invasive alien vegetation threatening habitat diversity, river banks
Grootboschkloof River	Fair to poor	Runoff, nutrient load and water abstraction from agriculture (vineyards) in Constantia Invasive alien vegetation threatening habitat diversity, river banks
Keysers River	Good to fair	Invasive alien vegetation threatening habitat diversity, river banks Invasive alien fish (banded tilapia) threatening indigenous fish
Westlake River	Fair to poor	Invasive alien vegetation threatening habitat diversity, river banks Invasive alien fish (banded tilapia) threatening indigenous fish Alteration of natural flow due to Pollsmoor Dam Frequent sewage overflows

Source: River Health Programme (2005)
*Note: The order of rankings is Natural, Good, Fair, Poor, Unacceptable (River Health Programme, 2005)

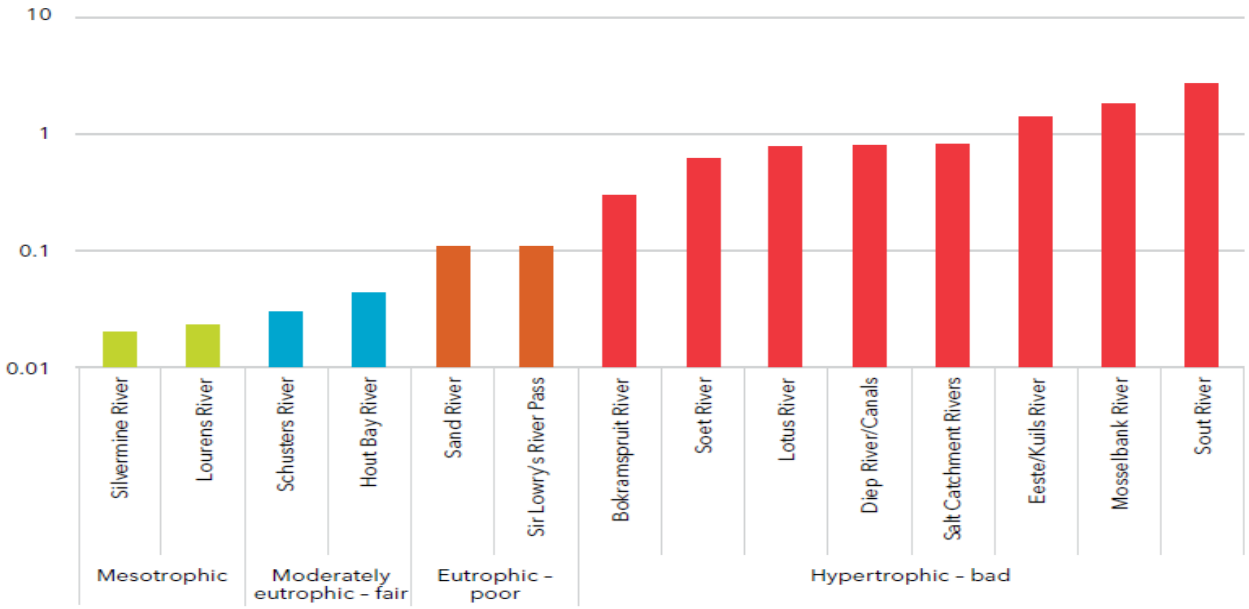
The remaining rivers in the eastern portion of the Southern District, most notably the *Silvermine* and *Else* rivers, flow directly into False Bay. Both of these rivers originate in the Table Mountain National Park but experience problems with invasive alien vegetation and fish and with the effects of urban development along their lower reaches, such as nutrient-rich effluent and runoff that reaches the rivers. Water supply dams (such as Lewis Gay Dam and Kleinplaas Dam) in the Else River's catchment are impacting on the natural flow of the river. The lower reaches of these rivers are therefore somewhat degraded and show good to fair ecosystem health, with most problems related to riparian vegetation. Further information on river pollution is provided in Section 2.1.6.

Table 13: Health status of Silvermine and Else rivers

River	River health*	Most notable problems
Silvermine River – upper reaches	Natural to good	Invasive alien vegetation threatening habitat diversity, river banks
Silvermine River – lower reaches	Good to fair	Invasive alien vegetation threatening habitat diversity Invasive alien fish (banded tilapia) threatening indigenous fish Runoff, nutrient load and litter from urban development
Else River	Good to fair	Water supply dams reducing flow in the river Invasive alien vegetation (poplars and kikuyu) destabilising banks Runoff, nutrient load and litter from urban development Release of water treatment residue from Brooklands Water Treatment Plant

Source: River Health Programme (2005)
*Note: The order of rankings is Natural, Good, Fair, Poor, Unacceptable (River Health Programme, 2005)

Figure 15: Trophic tendency in Cape Town - Rivers



3.1.4.2 Wetlands

The Southern District contains a large number of lakes, wetlands and small dams. The largest lake in the district is *Zandvlei*, located at Muizenberg on the shores of False Bay. Zandvlei is the estuary formed by the Sand, Diep, Keysers and Westlake rivers. It is connected to False Bay by an estuarine mouth that is artificially opened periodically, particularly in winter, to allow saline water to flow into the estuary and to keep the estuarine system functioning. Zandvlei forms part of the Greater Zandvlei Estuary Nature Reserve, a local nature reserve covering 96 ha.

The rivers flowing into Zandvlei feed a number of other, smaller, lakes further to the north, most notably *Princessvlei* on the Sand River, *Little Princessvlei* on the Diep River, *Langvlei* and *Westlake Wetland* on the Westlake River. *Wildevoëlvlei* is located in the western part of the district near Kommetjie. It accommodates a variety of palearctic and non-migratory waders and wetland-dwelling birds during winter (River Health Programme, 2005). *Glencairnvlei* is located approximately opposite of Wildevoëlvlei on the False Bay coast on the other side of the peninsula, at the mouth of the Else River.

The Cape of Good Hope Nature Reserve, which forms part of the Table Mountain National Park, has a large number of wetland areas distributed throughout the park. Table Mountain accommodates a number of smaller dams, many of which were established around the time the peninsula was settled. While some of these are still in use and supply water for domestic or agricultural purposes (such as Kleinplaas and Lewis Gay dams, which supply water to Simon's Town), others are not (such as the Silvermine Dam) (River Health Programme, 2005).

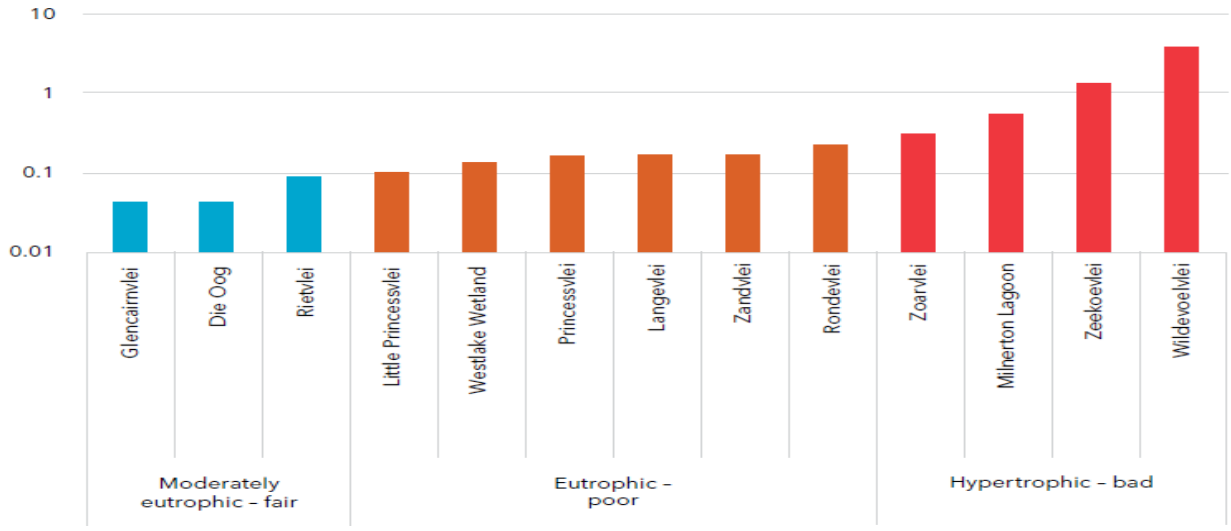


Figure 16: Trophic tendency in Cape Town - Wetlands

3.1.4.3 Groundwater

The Southern District has a diverse hydrogeological environment and has various aquifers storing groundwater. Aquifers are typically classified into three types, all of which occur in The Southern District. These are fractured aquifers, intergranular aquifers and fractured and intergranular aquifers[6] (DWAF, 2000).

The entire peninsula south of Noordhoek and some of the central and western parts of the district, those lying on Table Mountain Group formations, are located on a *fractured aquifer* (see **Error! Reference source not found.**). In most areas of the Southern District this aquifer type has a moderate median yield of 0.5-2.0 litres per second (ℓ/s), except west of Hout Bay where the aquifer has a very low yield of only up to 0.1 ℓ/s (DWAF, 2000).

[6] *Intergranular aquifers* are typically found in unconsolidated but occasionally semi-consolidated Tertiary-Quaternary coastal deposits and alluvial deposits along river terraces. *Fractured aquifers* are present in fractured and fissured bedrock resulting from decompression and/or tectonic action, with groundwater predominantly located within fractures and fissures in sedimentary and metamorphic rocks. *Fractured and intergranular* aquifers occur in largely medium to coarse grained granite, weathered to varying thicknesses and in jointed and occasionally fractured bedrock (DWAF, 2001).

Intergranular aquifers are only found in small portions of the district, at Noordhoek Beach and along the eastern border of the district in areas that are lying on Witsand and Springfontyn formations of the Sandveld Group (see **Error! Reference source not found.**). The Sandveld aquifer is essentially a c oastal aquifer that extends along the West Coast from False Bay to Saldanha. The aquifer is most productive in the south at False Bay in the Cape Flats District and Khayelitsha Mitchells Plain District and becomes gradually less productive as it extends north into the Table Bay District and Tygerberg District. The south-eastern border of the Southern District with the Cape Flats District falls within the moderate yield range of 0.5-2.0 ℓ/s, while yields are low at 0.1-0.5 ℓ/s along the north-eastern border with the Cape Flats District. The small intergranular aquifer at Noordhoek also has moderate yields of 0.5-2.0 ℓ/s (DWAF, 2000).

Fractured and intergranular aquifers are located on a strip across the peninsula between Noordhoek beach and Fish Hoek as well as in a small north-western and the most of the north-eastern part of the district in areas where Cape Granite is found (see **Error! Reference source not f ound.**). Yields within this aquifer type in the Southern District are very low, with a median yield of up to 0.1 ℓ/s (DWAF, 2000).

Groundwater quality in the district is generally very good to moderate. The electrical conductivity[7] of groundwater in the southern half of the peninsula and in a strip reaching from the north-western corner of False Bay to the border of the Southern and Table Bay Districts ranges from 0-70 milli Siemens per meter (mS/m), indicating very good quality. Groundwater in the northern half of the peninsula and along the eastern border of the Southern District has higher conductivities of 70-300 mS/m, indicating moderate quality (DWAF, 2000).

Due to the aquifers' proximity to the sea and frequent extension to below sea level, coastal aquifers are vulnerable to saline water intrusion, especially if there is excessive abstraction or mismanagement of groundwater. Careful control of abstraction rates is thus important to preserve the quality of the groundwater (DWAF, 2000).

[7] Conductivity is a measure of the ability of water to pass an electrical current. Each stream tends to have a relatively constant range of conductivity that, once established, can be used as a baseline for comparison with regular conductivity measurements. Significant changes in conductivity could be an indicator that a discharge or some other source of pollution has entered a stream.

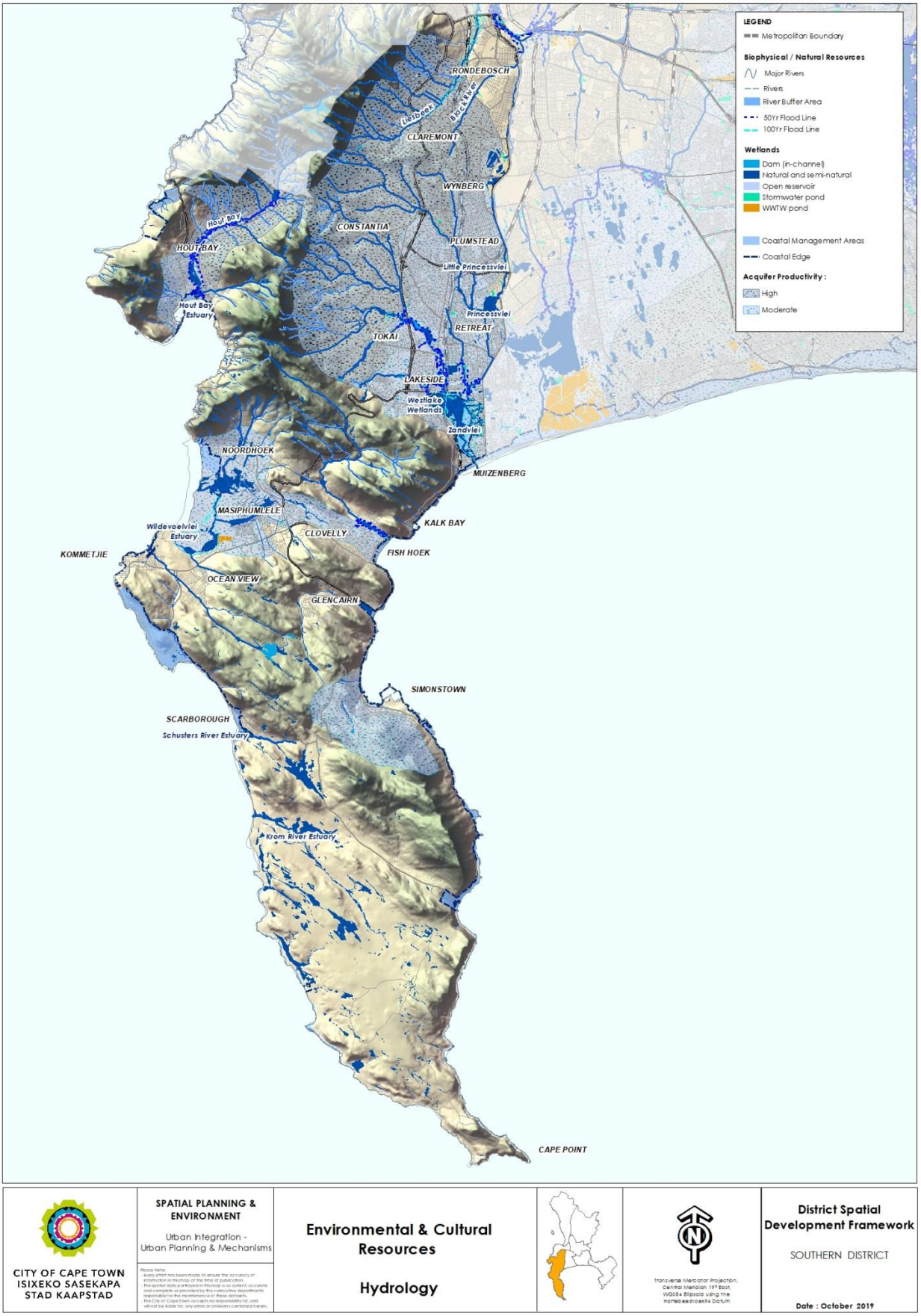


Figure 17: Hydrology

3.1.5 Coastal Areas and Dunes

3.1.5.1 Coast

The coastline of the Southern District encompasses most of the Cape Peninsula and is unique in that it borders two distinctly different seas. The western shoreline of the Cape Peninsula runs in a north to south direction along the Atlantic Ocean from Logies Bay just north of Llandudno to Cape Point in the south. The eastern coastline (False Bay) coastline runs in a south to north direction along the Indian Ocean from Cape Point to Muizenberg in the north. The Cape Peninsula coastline is predominantly rocky with sandy beaches, notably at Llandudno, Hout Bay, Noordhoek, Scarborough, Simon's Town, Glencairn and Fishhoek. The steep slopes of Table Mountain, drop down to the sea along most of the coastline.

The western shoreline of the Southern District, like the rest of the West Coast of South Africa, falls within the South-western Cape Bioregion, a marine bioregion that extends from Cape Columbine to Cape Point (DEAT, n.d.). The bioregion forms part of the Benguela Current Large Marine Ecosystem (BCLME), which extends from Angola to Cape Town (Atkinson and Clark, 2005). The western shoreline of the Southern District is located in the extreme south of the Benguela upwelling system, which stretches from Cape Point northward to Cabinda in Angola. The area has extremely high primary productivity[8] due to the upwelling of cold, nutrient-rich water in the region that feeds plankton. This supports a globally important biodiversity and high biomass of marine organisms (O'Toole *et al.*, 2001). Some South Coast species reach the northern limits of their distribution in this area, largely due to mixing of water from both the Agulhas and Benguela systems, giving it slightly higher species richness compared to further north in the bioregion (Griffiths and Robinson, 2007).

The eastern (False Bay) coastline of the Southern District falls within the overlap zone of the Agulhas Bioregion (which stretches from Cape Point to the Mbashe River in the Eastern Cape), where there is a mixing of the cold Benguela current waters of the West Coast and that of the warm Agulhas current of the south coast. Of all the marine bioregions of South Africa, the Agulhas bioregion is home to the greatest number of South African endemics and is a spawning and nursery ground for many species (Lombard *et al*., 2004).

Almost the entire coastline of the Southern District falls within the TMNP's 1 000 km^2 Marine Protected Area (MPA) around the Cape Peninsula. Fishing is allowed in most of the MPA, subject to permits, regulations and seasons as determined by DEAT Marine and Coastal Management (MCM). There are six Restricted or "no-take" Zones along the coastline of the Southern District, where fishing or other extractive activities are not allowed. These are the Karbonkelberg and Cape of Good Hope Restricted Zones on the western coastline, and the Paulsberg, Castle Rock, Boulders and Kalk Bay Restricted Zones on the False Bay side. Restricted Zones are important breeding and nursery areas for marine life and are intended to facilitate and increase in marine stock and protection of threatened species. However, poaching of marine resources in these areas is still a threat to marine biodiversity (LAB, 2008).

The diversity of habitats along the coastline of The Southern District, ranging from rocky coast and sandy beaches and dunes to rocky and sandy sub-tidal areas and the pelagic zone, supports a diversity of marine life. Species richness on the coast tends to be highest on rocky shores, which offer a high variety of habitats. Beaches support a lower number of species as they have a smaller range of habitats and are extremely dynamic due to the influence of weather and waves (CoCT, 1999). Dunes occur at the landward side of sandy beaches and form the sole habitat of several species of specially adapted plants as well as providing nesting sites for some shorebirds.

[8] Primary production is the production of organic compounds from atmospheric or aquatic carbon dioxide, principally through the process of photosynthesis. All life on earth is directly or indirectly reliant on primary production.

The water level changes by less than 2 m between high and low tide, so that tide impacts on a relatively narrow band of shoreline (CSIR, 2003).

The natural beauty of the coastal area of the South-western Cape Bioregion and, more specifically, the Cape Peninsula has enabled the development of a world-class local tourism industry. However, coastal habitats are rapidly being degraded in certain areas by pollution (mostly industrial) and inadequately managed coastal developments and activities.

The movement of sediment is an important factor in shaping the western coastline of the Southern District where there are several sandy beaches. Sediments along the coast of the Southern District originate from a number of sources. Sediment from the southern Peninsula is transported along the coast and around the rocky headland of Mouille Point to the beaches of Milnerton and further north (Reid et al., 2001). Sediment also originates from sources within the sea and, as a result, beaches along the coast of the Southern District contain a mixture of terrigenous[9] and carbonate[10], i.e. land- and sea-derived, material (Franceschini *et al*., 2003).

Strong regular swells approach the West Coast mostly from the south-west, generating a northward longshore drift most of the time. This northward longshore drift moves sediments from south to north. Dwells occasionally switch to approach the coast from north-west during weather systems. Winter storms are the main drivers for sediment turnover at the coast. They remove sand from the upper beach and foredunes during storm periods and deposit the sand offshore. During subsequent calmer periods the sediment is returned to the beach by waves. This results in seasonal movements of the shoreline.

The linear nature of western (Atlantic Ocean) coastline of the Southern District means that most of its beaches are exposed to high wave energy and range between intermediate (flatter) and reflective (steeper) beaches. However, as wave energy ranges from high to low depending on the season, the shape of beaches is being continuously changed. The eastern (False Bay) coastline of the Southern District is generally protect against wave action and, as a result, the beaches along this stretch of coastline are not very dynamic and don't experience high waves, compared to the rest of the False Bay beaches.

3.1.5.2 Dunes

Dunes are essentially terrestrial systems formed by wind-driven sand transported from, and often back to, beaches and their surf zones. The dunes on the coastline of the Southern District are a combination of active and partially stabilised and/or vegetated natural and man-made dunes, where dunes closer to the coast are more sparsely vegetated. Dunes are indicated on Figure XX.

The dune shapes found along the Southern District are typical of wave-dominated sandy and rocky shorelines and comprises embryo, linear, parabolic, transverse and sand sheet dunes (Low and Pond, 2004).

Embryo dunes are a "pioneering" dune system, usually found along the coastline and just above the high water mark. They represent the earliest stage of dune formation, occurring as small mounds to low hummocks at the coast, often supporting isolated plants (Low and Pond, 2004).

Embryo dunes are the most dynamic stage of dune formation. If they are disturbed, further dune formation may be halted, with associated impacts on related coastal processes such as beach nourishment. These dunes can therefore be considered highly sensitive (Low and Pond, 2004).

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[9] Terrigenous material is supplied to the shoreline by rivers, i.e. this material is derived from the land.

[10] Carbonate material is supplied to the beach by the shoreward transport of shells of marine organisms, i.e. this material is derived from the sea.

Embryo dunes are present in numerous places in the Southern District (Low, 2008). Along the south-western coastline of the Peninsula (south of Kommetjie and Scarborough), embryo dunes are backed by stabilised linear dunes (Low, 2008). Embryo dunes in the Hout Bay area are fragmented and impacted on to differing degrees by urbanisation, dune stabilisation, recreation and alien (acacia) infestation. The majority of embryo dunes along the south-western peninsula (south of Scarborough) are within the TMNP and therefore not impacted by human activities. On the False Bay side, from Simon's Town to Muizenberg, embryo dunes are impacted on by urbanisation, recreation and infrastructure such as roads and the railway line.

Linear dunes are single ridge dunes and stabilised linear dunes are found along much of the western coastline of the Cape Peninsula. At Noordhoek, a relatively large linear dune field consisting of bare sands and wetland depressions is moderately impacted on by encroaching urbanisation, recreation and tracks. The linear dunes in the Sweet Water area between Kommetjie and Witsand are moderately impacted on by parking, recreation and road infrastructure. South of Scarborough the linear dunes fall partly within a protected area, but experience low levels of impact from alien infestation, recreation, tracks and nearby settlement.

All of linear dunes of the Peninsula are impacted on by alien (acacia) infestation.

Parabolic dunes are tongues of advancing sand with a rounded nose that migrate with the direction of the prevailing wind. Parabolics produce two trailing edges forming a 'hairpin' shape. They are generally stabilised by vegetation on the trailing edges. Parabolic dune fields are typically more stable and less sensitive to disturbance than embryo dunes (USGS, 1997).

Stabilised, partially stabilised and/or partially vegetated parabolic dunes occur in The Southern District at Hout Bay (forming the climbing-falling dune system from Hout Bay to Sandy Bay), in the Soetwater area between Kommetjie and Witsand, on the western side of Cape Point and in the valleys north of Simon's Town up to and including Fish Hoek. Some parabolic dunes have been converted by natural wind action to complex dune types where bare transverse dunes occur, indicating a remobilization of sand as dunes have become destabilized by wind (Low, 2008).

Transverse dunes are the most common type of mobile dunes and are accumulations of sand in ridges that run at a right angle to the prevailing wind direction. The ridges are relatively straight or only slightly curved, asymmetrical and usually low, with a gentler slope on the side facing the wind and a steeper slope on the side facing away from the wind. Transverse dunes migrate laterally, with sand moving perpendicular to the crest towards the next dune ridge (Cooke *et al.*, 1993). Transverse dunes are located on the False Bay side of Cape Point.
Sand sheets are nearly flat horizontal deposits of sediment. Small areas of sand sheets are found in the Southern District at Sandy Bay, Soetwater, Cape Point and within the parabolic dune field behind Fish Hoek.

Stabilised **undulating dune flats** occur in the east of the Southern District in association with Zandvlei and Princessvlei. These undulating dune plains are fragmented and impacted on by urbanisation and alien (acacia) infestation.

Barchan dunes are arc-shaped sand ridges with two "horns" facing downwind that migrate with the wind. In the Southern District, barchans dunes occur in the dune field between Hout Bay and Sandy Bay, which has been highly impacted on by fragmentation and disconnection from its source of sand.

Other dune types in the Southern District comprises dune sand over granite forming stabilised or partially vegetated dunes, partially vegetated dune sand over limestone and stabilised or partially stabilised accumulations of dune sand over Table Mountain sandstone.

There are several dune systems in the Southern District. Four of these are climbing-falling dunes where strong sand-laden winds form climbing dunes against opposing hillslopes and finer sand is blown over the hill and drops down the other side to form falling dunes. Climbing-falling dune systems on the Atlantic side of the Peninsula include one crossing the Karbonkelberg neck from

Hout Bay to Sandy Bay and a smaller one at Sandkop near Witsand (in the Soetwater area). Two systems on the False Bay side include one at Dassenberg originating from Fish Hoek and a smaller system forming the foreshore at Elsies Bay. Most of these and several other smaller climbing-falling dune systems in The Southern District are formed by the strong south-easterly winds that characterise the Cape Peninsula. Climbing-falling dune systems rarely form migratory dune fields but transitional forms between this and migrating headland bypass dune systems do occur (Tinley, 1985).

The stabilised linear dunes south of Scarborough to Olifantsbosbaai form a coastal corridor dune system that is mostly protected in the TMNP. This system backs a series of embryo dunes along this coastline, forming an embryonic dune system. Additional embryonic dune systems occur in several other places on the Peninsula, e.g. at Maclear on the western (Atlantic) side of Cape Point.

Mobility of sand is a critical aspect of natural dune regimes, particularly between frontal dunes and the beach, as are the seasonal cycles of deposition (summer) and erosion (winter). Sand mobility helps to drive vegetation structure and successional dynamics in the dune system and also promotes diversification of terrestrial species (Low, 2006). Established ecological processes therefore rely on mobile dunes remaining mobile, without artificial barriers to the movement of sand, and on retaining the vegetation on stabilised dunes. Development can disturb dune regimes through the loss of connectivity between the coastal and inland (mobile) dune systems. Mobile primary dunes and partially stable secondary dunes can be detrimental to development and result in higher maintenance costs, as sand blows across roads and builds up against walls, roads and fences.

3.1.5.3 Estuaries

The coast of the Southern District features a number of estuaries. These include (from north to south) the Hout Bay, Goeiehoop, Wildevoël, Bokramspruit, Schuster, Krom, Olifantsbos and Booiskraal Rivers on the western (Atlantic) side of the Peninsula. The majority of these estuaries are small (less than 2ha) and normally closed. On the eastern (False Bay) side of the Peninsula, estuaries include (from south to north) the Buffels, Else and Silvermine Rivers, as well as the Sand River, which is located on the border between the Southern and Cape Flats Districts. The latter two are closed and all, except the medium-sized (2–150ha) Sand River estuary, are less than 2ha in size (Harrison *et al.*, 2000).

The estuaries on the eastern (False Bay) side generally have poor water quality[11], with better quality water in the estuaries on the Atlantic side. The small, closed Schuster River estuary has good overall water quality. The aesthetic state[12] of the majority of the estuaries on the Peninsula is good, although the Elsies and Sand River estuaries are considered to have a poor aesthetic state (Harrison *et al.*, 2000). The fish communities in most of these estuaries have not been sampled, but the Wildevoël, Schuster, Elsies and Silwermyn Rivers are known to have moderate fish species richness and community composition (Harrison *et al.*, 2000).

Table 14: Status of estuaries in the Southern District.

Estuary	Overall water quality*	Overall aesthetic state
Hout Bay River Estuary	FPoor	Moderate

[11] 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).

[12] Aesthetic appraisal is assessed based on the state of development in and around the estuary. It incorporates factors such as floodplain landuse, 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.

Goeiehoop River Estuary	Not sampled	Not sampled
Wildevoël River Estuary	Poor	Good
Bokramspruit River Estuary	Fair	Moderate
Schuster River Estuary	Good	Good
Krom River Estuary	Poor	Good
Olifantsbos River Estuary	Not sampled	Not sampled
Booiskraal River Estuary	Poor	Good
Buffels River Estuary	Poor	Good
Elsies River Estuary	Fair	Poor
Silwermyn River Estuary	Poor	Moderate
Sand River Estuary	Poor	Poor

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

3.1.5.4 Erosion

The western (Atlantic side) coastline of the Cape Peninsula is exposed to wave erosion, storms, and extreme events and inundation caused by storms and tidal action. Although it is natural for beach sand to go through cycles of accretion and loss, in recent years extreme events have occurred with increased frequency and intensity, e.g. severe storms hit the coast during the winters of 2001, 2002 and 2003 (Midgley *et al.*, 2005). Significant damage to private property and public infrastructure occurred and large areas of primary coastal dunes, that act as the natural buffer to erosion and protect the coast, were lost. Unusually high losses of beach sand were observed at beaches on the Cape Peninsula, e.g. Diaz Beach at Cape Point and Long Beach at Kommetjie (SAWS, 2007). Whereas a single major storm can cause massive sand losses, it appears that the denuding of the Peninsula's beaches has been taking place over a prolonged period (SAWS, 2007).

Climate change is predicted to result in sea level rise and higher energy storms, indicating that extreme events will further increase in frequency and intensity and affect particularly areas that are already prone to flooding (Midgley *et al.*, 2005).

3.1.5.5 Coastal Protection Zone

The CoCT has delineated a Coastal Protection Zone (CPZ), which has become a mandatory management intervention with the promulgation of the NEM: Integrated Coastal Management Act 24 of 2008. The fundamental intent of the CPZ is to mitigate the impacts of development on coastal ecosystems and to harness the potential of coastal ecosystems services towards building resilience and improving livelihoods for coastal communities. Through such an approach, and by creating an area in which coastal processes such as erosion, accretion, aeolian activity *et cetera* can take place, the CPZ effectively acts as a 'buffer' between dynamic coastal process and the built environment. This 'buffer' also serves to preserve the aesthetics and thereby the 'sense of place' associated with coastal areas within the CoCT.

3.2 Agriculture and Mineral Resources

The Southern District now includes only a relatively small remaining portion of high potential agricultural land, confined to the foothills and slopes of parts of the Peninsula Mountain Chain. This was as a result of massive urban expansion in the district, particularly from the 1950's to the 1980's. The remaining high potential agricultural land is concentrated primarily in the Constantia – Tokai valley basin. These areas have been and remain under threat from development pressure.

The district has no remaining mineral resources of any ecomonic significance.

3.3 Heritage and cultural resources

The Southern District consists of two distinct areas separated from each other by Constantiaberg and the Silvermine Plateau. To the north-east of the mountain range lie the urban areas extending from Rondebosch to Kalk Bay. The area to the south-west of and including the mountain range is characterised by the Table Mountain National Park with interspersed nodes of urban development,

of which Hout Bay and Simons Town are historical settlements, while the remainder developed as isolated settlements in the 20th century.

3.3.1.1 Archaeological heritage resources

Archaeological evidence indicates that the Cape Peninsula has a long history of human occupation spanning the Early Stone into the historic period. Late Stone Age (LSA) shell middens along the coast, especially around Kalk Bay area, were destroyed during the 17th and 18th century in lime burning activities. A few shell scatters are still visible above Harbour Road in Hout Bay. A large number of sites are situated within the Table Mountain National Park.

Cape Town originated as a refreshment station for the Dutch East India Company (*Vereenigde Oost-Indische Compagnie* – VOC) in 1652. The main purpose was to supply ships en route to the East with fresh water and food. The settlement was originally focused around the Company Gardens. Soon land was made available to freeburghers[13] for agricultural purposes along the Liesbeek River, thereby expanding the settlement into the area of the Southern District. Examples of early farms are Bosheuwel (1658), Rouwkoop (1660), Boshof (1666), Welgelegen and Zorgvliet (1676), Oude Wynberg (1683), Groot Constantia (1685) etc. (Fransen, 2004).

A number of VOC outposts were established in the Southern District. During the 17th century a redoubt was established at Coornhoop to defend the early freeburgher farms established along the Liebeeck River as well as the agricultural posts at de Rondebosje, de Schuur, Rustenburgh and Newlands managed by the VOC (Sleigh, 2004). The wild almond hedge at Kirstenbosch is the remains of a defence structure dating back to 1659, which was planted to protect the small settlement from marauding Khoekhoe.

3.3.1.2 Early farms and cultural landscapes

Towards the end of the 17th and into the 18th century, additional outposts were established at Paradise (Newlands forest), Witteboom, Kirstenbosch, Baas Hamens Craal (on route to Muizenburg) and Hout Bay. An outpost for the harvesting of thatching reed was established at Zeekoe Vallei (Sleigh, 2004)[14] and additional farms granted in the south of the peninsula as grazing lands, such as Goede Hoop/Noordhoek (1743), Imhoffs Gift (1743) and Tokai (1792) (Fransen, 2004).

Wynberg village was established at the end of the 18th century as a half way stop-over on the wagon route from Cape Town to Simons Town (Fransen, 2004). The oldest villages in the far south of the Southern District are Simons Town, which developed around the harbour/naval functions of the bay from 1743 onwards, and Hout Bay, which developed as a fishing town in the 19th century.

From c1820, particularly in the north of the Southern District, the subdivision of farms into large residential estates began. The emancipation of the slaves of the Cape lead to the establishment of high density, low income villages of which Harfield village, Protea village (demolished) and Newlands village are examples. By the mid-19th century, a number of discrete villages had formed. The development of the railway line through the peninsula to Simons Town facilitated the movement of people and contributed to the development of working class nodes associated with the commercial and industrial areas which developed along and near the railway stations, particularly at Wynberg/Retreat.
Towards the late 19th century, associated with the increase in population densities relating to the increased opportunities for immigrants in the Cape, as well as the increased wealth associated with mining (Bickford-Smith *et al*, 1999), the coastal strip from Muizenberg to Kalk Bay developed a series of seaside resort towns.

By 1902, the greater Cape Town area consisted of the following municipalities: Cape Town, Woodstock, Green and Sea Point and Maitland, all in the Table Bay District, and Mowbray,

[13] VOC employees who were released from their service contracts.
[14] A clear settlement pattern emerges: VOC outposts and early freehold farms established at/near natural resources previously used by indigenous populations; towns developing at points with ample fresh water and resources to support increased population density.

Rondebosch; Claremont; Wynberg; Kalk Bay and Simonstown in the Southern District. In 1913 the smaller municipalities were incorporated into the Greater Cape Town Municipality, which included Cape Town, Green Point, Woodstock, Maitland, Mowbray, Rondebosch and Kalk Bay. Wynberg remained a separate municipality and was only incorporated in 1927 (Bickford-Smith *et al*, 1999).

The periods surrounding the two World Wars were characterised by increased industrialisation. Housing shortages in the World War II period were chronic and, in desperation, low income households squatted on edges of the Cape Flats; an area that was virtually inaccessible before the 1850s due to moving sand cordons and bogs (Bickford-Smith *et al,* 1999).

The high demand for housing in the post war period provided the impetus for the planning of the Apartheid city, with separated residential areas for the different race groups, well before the Group Areas act was passed. New white residential areas were laid out at Bishops Court, Meadowridge and Bergvliet (Bickford-Smith *et al*, 1999). New coloured residential areas were planned on the Cape Flats (Cape Flats District).

The Group Areas were demarcated from 1957 and served to identify and remove pockets of racial integration in what were mostly seen to be white affluent neighbourhoods. All of the southern suburbs were affected. Some forced removal sites have remained as scars on the landscape. One such site in the Southern District are the stone terraces associated with the Luyolo settlement, which was built c1900 and housed Xhosa-speaking dockworkers initially employed as labour to build the East Dock, Simons Town. In 1965, between 1 600 and 1 700 residents of Luyolo were relocated to Gugulethu. By 1975, all that remained of the township were the stone terraces (Clift et al 2006).

Other sites are Protea Village opposite the entrance to Kirstenbosch Botanical Gardens and the Brooklands/Redhill village associated with the mid-19th century Wesleyan mission and later Methodist Chapel and school. Residents in the village worked at the Simons Town dock yards. They were removed to the newly created settlement of Ocean View.

A summary of the significance of heritage resources that have been identified in the Southern District is given in Table 15.

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Table 15: Heritage resources in the Southern District

Heritage Resources	Characteristics	Heritage Significance	Heritage issues, concerns and comments
Table Mountain National Park	• Fynbos biome • Historic water catchment area • Cape Point section can be considered as an archaeological reserve	• Natural environment extending along the spine of the peninsula • Archaeological and heritage sites within the boundaries of the park • Part of the Cape Floral Region UNESCO World Heritage Site	• Encroachment of development on mountain edge • Conflicts of heritage *vis a vis* nature conservation issues • More development and infrastructural needs due to higher to tourism pressure • The fragmented nature of park-owned land is a vulnerability
Fortifications/ Coastal defences	• 18th century fortification network particularly centred around the natural harbours eg. Hout Bay and Simons Town	• Linkage with the 18th century fortifications around Table Bay • Radar station network linking across the peninsula from Fort Wynyard to	• Neglect and vandalism • Fire damage

Heritage Resources	Characteristics	Heritage Significance	Heritage issues, concerns and comments
	• WWII coastal defences at Hout Bay, Llandudno, Slangkop, Simons Town etc.	Karbonkelberg, as well as further afield to Cape Hangklip	
Archaeological sites	• Many well-preserved shell midden sites within the Cape Point section of the Table Mountain National Park • A number of well-preserved shell middens at Miller's Point and Soetwater • A number of cave sites eg. Peers Cave, Bonteberg Cave, Smitswinkel Bay • Rare historic farmsteads and ruins of original farms eg. The Homestead and Silvermine	• National and international scientific value • Conservation status of archaeological sites enhanced by massive destruction of sites on the Cape Peninsula outside of the Table Mountain National Park	• Few midden sites preserved in developed areas • Development pressure in coastal node towns eg. Noordhoek and Kommetjie • Conflicts of heritage *vis a vis* nature conservation issues within the Park areas
Existing Conservation / Heritage areas	• Wynberg Village • Mowbray Station • Mowbray Rosebank • Little Mowbray • Upper Rondebosch • Belmont Road • Silwood • Lower Rouwkoop Road • St Michaels • Kelvin • Westerford • Newlands Village • Muizenberg • St James • Kalk Bay • Simonstown	• Specific to each of the individual areas and deals only with built environment and its aesthetic qualities	• Unauthorised development • Inadequate monitoring of changes to buildings • Inappropriate bulk, massing and height on the edges of conservation areas • Pressure by property owners to enlarge homes without cognisance of heritage values
Existing Proposed conservation / heritage areas	• Southern Wynberg West & East • Wynberg East • Coghill Road • Main Road Wynberg • Waterloo Green Wynberg Park • Wynberg Schools • Kenilworth • Kenilworth Road	• Specific to each of the individual areas and deals only with built environment and its aesthetic qualities	• Unauthorised development • Inadequate monitoring of changes to buildings • Inappropriate bulk, massing and height on the edges of conservation areas • Pressure by property owners to enlarge homes without cognisance of heritage values

Heritage Resources	Characteristics	Heritage Significance	Heritage issues, concerns and comments
Existing Proposed special area	• Harfield Village	• Specific to the individual area and deals only with built environment and its aesthetic qualities	• Unauthorised development • Inadequate monitoring of changes to buildings • Inappropriate bulk, massing and height on the edges of conservation areas • Pressure by property owners to enlarge homes without cognisance of heritage values
Constantia Winelands Cultural landscape Proposed heritage area	• Groot Constantia (PHS) • Alphen (PHS) • General Constantia Valley with a high concentration of conservation worthy structures and associated agricultural landscape • Estates, smallholdings / large plots • Riverine corridors • Historic tree plantings along routes	• Oldest existing farmlands relating to early settlement period of the Cape • Association with Cape Winelands Cultural Landscape Grade 1 • High archaeological potential in places • Tourism value associated with historic homesteads and wine estates	• High development pressure ito residential vs. agricultural value • Inappropriate densification • Loss of agricultural land • Loss of sense of 'countryside' • Attempt by Constantia Property Owners to have Constantia Winelands declared Grade 1 heritage site
Forced Removals sites Proposed heritage/special area	• Luyolo • Redhill/Brooklands village • Protea village	• Forced removals landscapes on par with District Six, although on smaller scale • Areas of contestation as some areas (Redhill Village) have become part of the TMNP or public open space	• Need for recognising and addressing the hurt caused by forced removals and the creation of spaces of memory
Scenic Drives	• Chapman's Peak • Coastal Road • Ou Kaapse Weg etc.	• Specific to each of the individual areas and deals only with built environment and its aesthetic qualities	• Unauthorised development & Inadequate monitoring of changes to buildings • Inappropriate bulk, massing and height in high visual impact areas • Fire hazards along routes

3.3.1.3 Scenic Routes/Drives Network

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

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

Two main categories of Scenic route were identified:

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

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

The Southern District has a number of Scenic Drives and Routes which for the most part traverse areas of high natural scenic qualitities. These scenic routes should be used to inform development proposed along its edges.

Table 16: Scenic routes in the Southern district

Category	Route	Policy/land use controls
S1	Chapman's Peak	
S1	Noordhoek Road	
S1	Ou Kaapse Weg	
S1	Boyes Drive	
S1	Steenberg Road	
S1	M3 (PK/Eastern Boulevard)	
S1	Simon van der Stel Freeway	
S1	Main Road (Kalk Bay/Fishhoek)	
S1	Glencairn Expressway	
S1	Redhill Road	
S1	Sweetwater Road	
S1	Slangkop Road	
S1	Scarborough Main Road	
S1	Main Road (to Plateau Road)	
S2	M3 Edinburgh Drive	
S2	Waterloo/Wolfe Street, Wynberg	
S2	Baden Powel Muizenberg	
S2	Constantia Main Road	
S2	Rhodes Ave	
S2	Constantia Main Road	
S2	Spaanschemat River Road	
S2	Hout Bay Road	
S2	Main Road, Simonstown	
S2	Noordhoek Road	

Figure 18: Green infrastructure and biodiversity conservation

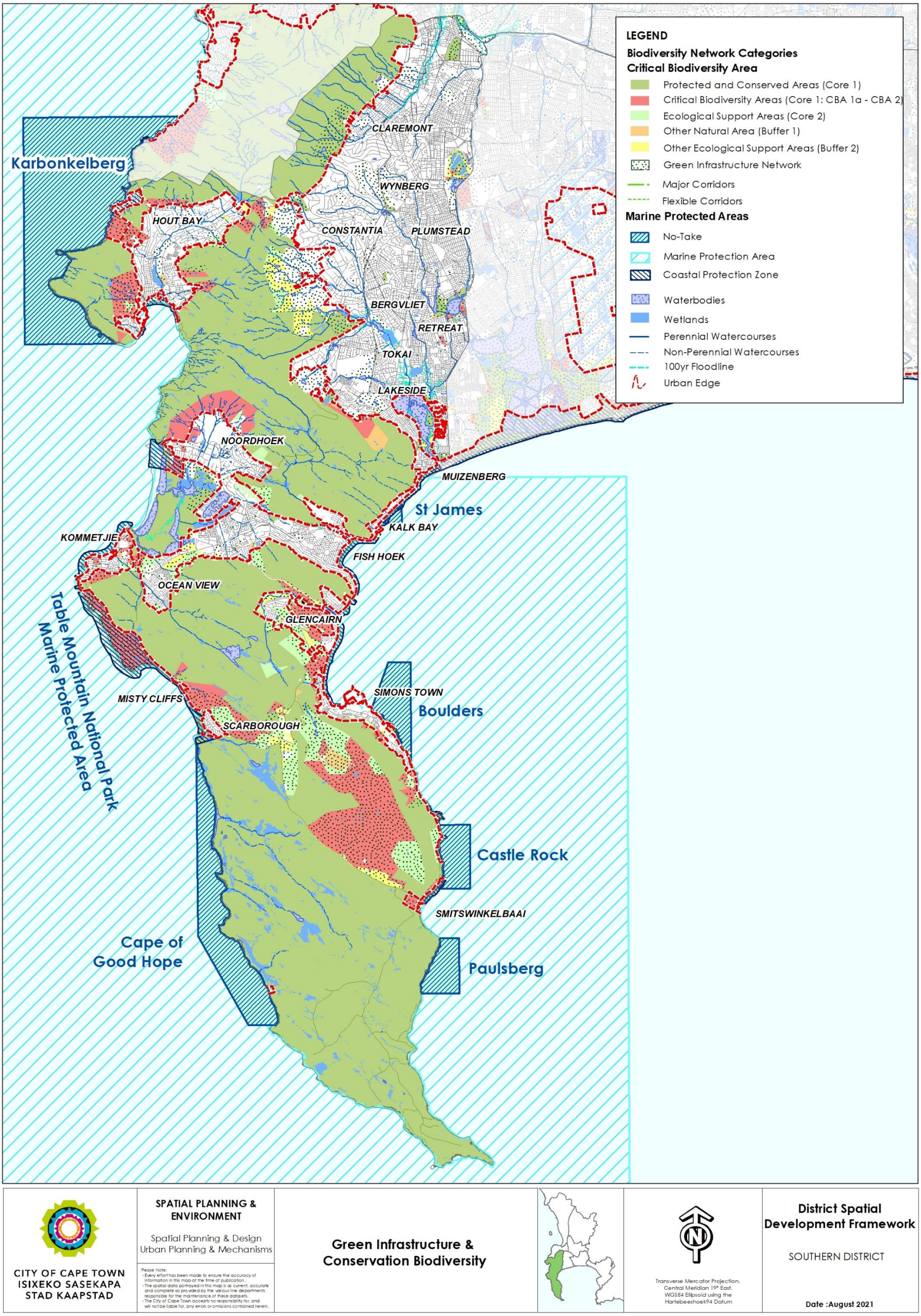
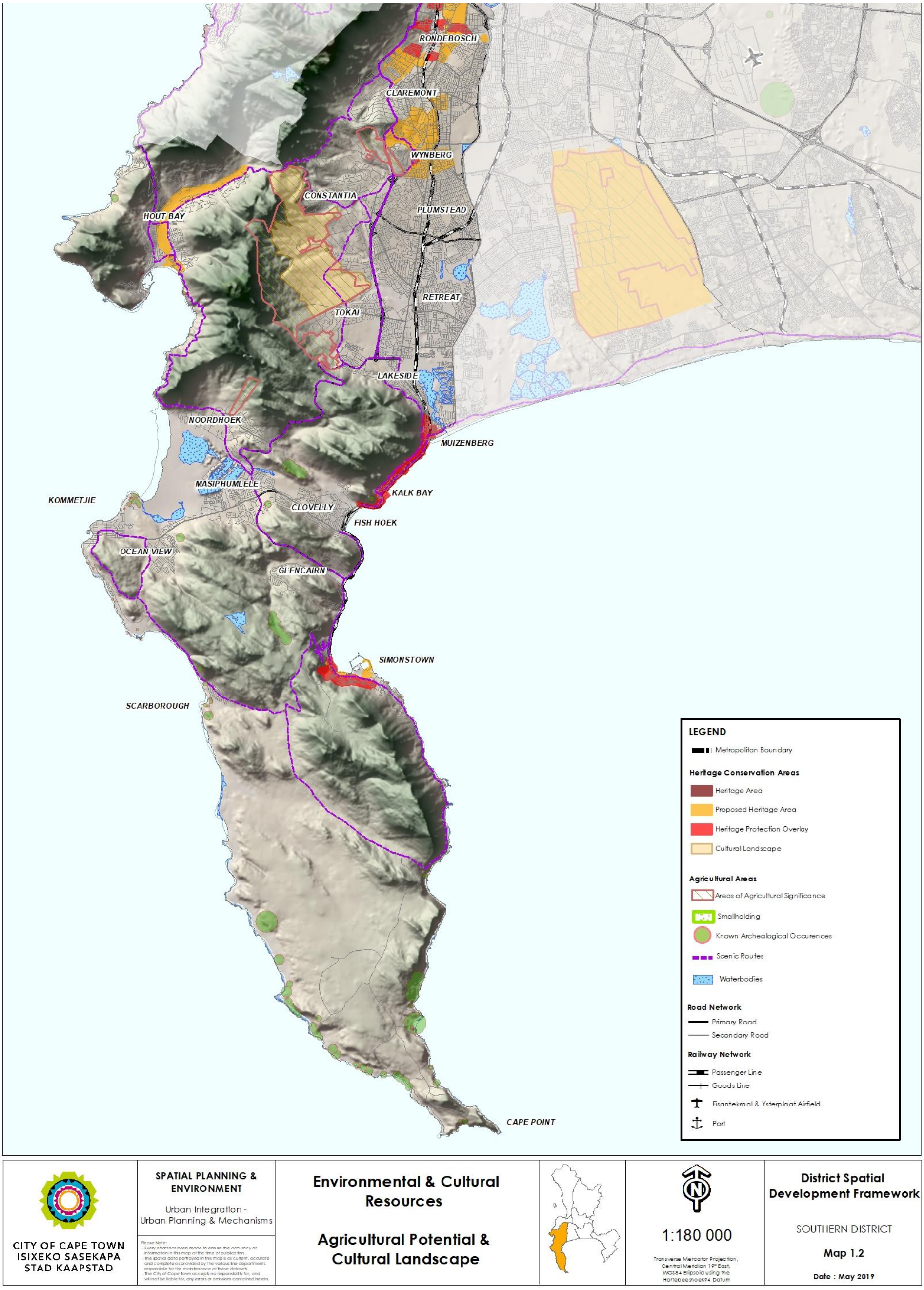


Figure 19: Agricultural Potential and Cultural Resources



3.4 Key Development Pressure and Opportunities

3.4.1 Development Pressures and Constraints

3.4.1.1 Biodiversity

i. Urban expansion resulting in urban sprawl, particularly in the valleys of the Cape Peninsula (i.e. Hout Bay and greater Far South area);
ii. Invasive alien species found in many of the open areas throughout the district maintain a seed bank of invasive plants which pose a threat to important indigenous plants;
iii. Indigenous species grown outside of their (often restricted) natural habitat, e.g. in private gardens, lead to genetic hybridisation of similar indigenous species that occur naturally in the areas nearby;
iv. Invasive alien plants (e.g. wattle, river gum) and fish (e.g. banded tilapia), particularly in the Black River, but also affecting most other rivers in the district to some degree, threaten aquatic biodiversity;
v. In the Southern District, there is insufficient burning in the appropriate summer season and difficulty in obtaining permits for burning. This hampers biodiversity management and restoration of Critically Endangered ecosystems.
vi. Overexploitation of natural resources, e.g. fire wood, around informal settlements;
vii. Encroachment of development into previously pristine and isolated areas leads to encounters and potential conflict with fauna occurring in these areas, especially baboons;
viii. Private ownership of high priority biodiversity sites makes management of these sites difficult for the City; and
ix. Illegal dumping and some land-based pollution.
x. Habitat destruction and obstructions to faunal migratory patterns resulting in breeding failure (eg. Solid walls restricting movement of the Western Leopard Frog and Cape Rain Frog).

3.4.1.2 Hydrology

i. Historic modification of rivers, with many of the rivers in the urban areas of this the District having been canalised;
ii. Encroachment of some formal and informal residential areas on river courses and wetlands, particularly the Noordhoek wetlands, Wildevoëlvlei and Hout Bay River;
iii. Encroachment of invasive alien vegetation (such as Port Jackson, Black Wattle, Water weed, and River Gum) and invasive alien fauna (such as banded tilapia) into natural river and wetland ecosystems;
iv. Alteration of river and wetland water levels, and hence habitats, through the damming of the upper reaches of river (especially the Else, Bokramspruit and Schusters Rivers) and release of treated waste water (particularly affected is Wildevoëlvlei by discharge from the Wildevoëlvlei WWTW);
v. Limited capacity of water bodies to absorb wastes from development without sustaining significant damages (e.g. degradation of water quality in the Wildevoëlvlei indicates that the receiving capacity of the vlei for effluent from the adjacent WWTW has been exceeded);
vi. Increasing pollution, waste and effluent generation; and
vii. Poor service provision in informal areas, especially those located alongside rivers and wetlands (e.g. Imizamo Yethu and Masiphumelele), leads to pollution of stormwater systems and rivers.
viii. Encroachment of development into ecological buffers necessary to protect watercourses and to build resilience to climate change.
ix. Hardening of catchments through desificantion which will impact on groundwater recharge.

3.4.1.3 Coastal Areas

i. Development along the coastline and resulting modification of the coastal environment, particularly at Hout Bay, Fish Hoek, Simon's Town and Kalk Bay; Kommetjie
ii. Destruction and fragmentation of dune systems due to urbanisation, e.g. at Hout Bay, Kommetjie, Kalk Bay, Simon's Town, Miller's Point and Boulders;
iii. Invasive alien vegetation (particularly *Acacia*) has impacted on dune systems, especially at Hout Bay, Noordhoek/, Simon's Town and the Cape Flats and at Soetwater, Scarborough, Buffelsbaai, Meadows and Glencairn;
iv. Recreational activities, such as access to beaches, parking lots etc. have impacted dunes at Hout Bay, Muizenberg, Soetwater, Schuster's Bay, Fish Hoek, Smitswinkelbaai, Miller's Point and Boulders and Kommetjie;
v. Global climate change resulting in an increasing likelihood of more frequent and more intense storm events and (in the longer term) sea level rise;
vi. Reduced sand supply to the parts of the coastal system (particularly Sandy Bay due to stabilisation of Hout Bay dunes);
vii. Excessive sand build-up in parts of the coastal system due to interruption of natural sand movements (such as in Hout Bay and Fish Hoek);
viii. Invasive alien plant and animal species threaten biodiversity in the coastal area;
ix. Poaching of marine species along the coast (especially abalone);
x. Effluent discharges (industrial and domestic) and stormwater runoff; and
xi. Demand for more recreational areas on and access to the coast.

3.4.1.4 *Cultural, Heritage, Agricultural and Mineral Resources*

i. Development pressure on the Constantia Valley winelands (e.g. Porter Estate) and former recent rural areas such as Noordhoek and Dido valley;
ii. Expansion of small settlements such as Kommetjie, Scarborough and Smitswinkel Bay bordering onto the TMNP; and
iii. Fragmented nature of the TMNP makes it more vulnerable to conversion pressures from the outside.

3.4.2 Integrated Opportunities

3.4.2.1 Biodiversity

i. Tourism, especially to TMNP, but also to Winelands areas and coastal such as Boulders and Zandvlei);
ii. Establishment of ecological corridors (particularly along the mountain chain of the South Peninsula, but also along rivers flowing from the Table Mountain chain to the sea on the eastern and western borders of the district);
iii. Integration of biodiversity with the Metropolitan Open Space System;
iv. Environmental education (especially within the TMNP and Kirstenbosch, but also at coastal / beach areas, with a focus on marine biodiversity);
v. Rehabilitation and conservation (particularly of areas encroached on or surrounded by development, such as Rondebosch Common, Zandvlei and coastal enclaves).
vi. Secure faunal corridors i.t.o. the BIONET

3.4.2.2 Hydrology

i. Wetlands and rivers provide ecosystems services such as water purification, assimilation of contaminants, conveyance of stormwater and flood attenuation;
ii. Rivers provide amenity value: Zandvlei estuary and wetland is a regionally important resource for recreation, bird watching, fishing and yachting. It is the only functioning estuary on the False Bay coast and serves as an important fish nursery for indigenous fish species;

iii. Rivers provide habitats for fauna and flora habitat and can serve as linear corridors, connecting ecosystems (such as connectivity between the Cape Peninsula mountains and the sea);
iv. Some rivers in the Southern District provide a limited volume of water which can be used for other purposes, e.g. irrigation and supplementary source of drinking water (the Else River supplies Kleinplaas and Lewis Gay dams and the Hout Bay River supplies Woodhead Reservoir and other small dams on Table Mountain).
v. Linear open space systems. This includes the many riverine systems of highly variable nature (mountain streams, valley bottom and flats meanders, vleis and estuaries), the Peninsula Mountain Chain system, and certain associated facilities, including the sports stadia and sports facilities located down the historical main road corridor;
vi. Green open spaces for groundwater recharge.

3.4.2.3 Coastal Areas

i. The coastline of the Southern District falls within the TMNP's 1 000 km^2 Marine Protected Area (MPA) around the Cape Peninsula;
ii. Functioning coastal systems decrease the need for, and costs of, coastal maintenance and facilitate recreational and tourism use;
iii. High amenity and tourism-related opportunities provided by beaches and coastline;
iv. Sports and recreation activities (surfing, wind surfing, diving, swimming etc., particularly at Muizenberg, Fish Hoek, Noordhoek, Kommetjie, Kalk Bay and Llandudno);
v. Specific sites along this coastline are popular for large competitions and events (e.g. Muizenberg. Fish Hoek etc.); and Kommetjie
vi. Views of the coastline and ocean stimulate demand for residential and commercial development.

3.4.2.4 Cultural, Heritage, Agricultural and Mineral Resources

i. The already developed, but also potential, urban character, informed in large part by the varied and changing topographical nature of the district. This includes declared urban conservation areas (Kalk Bay), those which could or should also be declared, as well as areas where great potential exists to develop urban areas of great character (eg. Sun Valley).
ii. Further development and promotion of scenic route network (e.g. Boyes Drive, Ou Kaapse Weg, Chapman's Peak Drive, railway line along the coast etc.);
iii. Retention of historic sense of place and space by designing further development with existing heritage resources in mind, e.g. suburbs along Main Road and historic defence stations along the coast;
iv. Tourism and job creation through retention and display of well-preserved cultural, historical and archaeological sites;
v. Archaeological and paleontological research.

3.4.2.5 Economic Resources

i. Unique, highly attractive and accessible biophysical environment of the Southern District, featuring amongst others the 'wilderness' areas of the TMNP, beaches, opportunities to watch whales, sharks, seals and penguins and to do water sports, provides excellent basis for tourism opportunities; and
ii. Limited economic opportunities and associated job creation in agricultural sectors (especially wine farms in the Constantia Valley).
iii. Mixed-use and higher-density developments in many parts of the district provide many opportunities for employment and businesses providing services.

3.5 Environmental Priorities and their Spatial Implications for District Plan

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

Table 17: Implications for the Southern district

NATURAL/CULTURAL RESOURCE	SPATIAL IMPLICATION
A. Biodiversity 	2. Conserve remnants of sensitive and threatened vegetation types and control development pressure in the key sensitive areas; 3. Where these remnants conflict with areas earmarked for urban development, ensure adequate botanical and faunal impacts assessments, identifying appropriate mitigation measures are undertaken, before these activities are approved; Include as appendix an appropriate modus operandi for such contested areas:
B. Rivers, Wetlands and Ground Water 	4. Improve development interfaces with natural asset areas. For example, orientate proposed new development at Princess Vlei onto the open space areas with height for improved surveillance; 5. Prevent inappropriate land uses in identified flood prone areas; and 6. Protect the re-charge and extraction areas for Aquifers and groundwater sources.
C. Coastal Areas & Dunes 	7. Prevent inappropriate development in or close to sensitive dune systems; 8. Prevent development within the coastal edge, except at identified coastal destination nodes, which have been identified for amenity opportunities; 9. Maximise amenity opportunities, with minimum disturbance to the coastal environment and processes. Identified areas include: 10. 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 	11. Protect and enhance key cultural landscapes and surrounds; 12. Conserve any coastal zone areas of high archaeological significance; and 13. Formalise Urban Conservation Areas where applicable.
E. Mining and Agriculture 	14. Preserve and utilise high potential agricultural land and areas currently being used for agricultural purposes;

4 LAND USE AND DEVELOPMENT TRENDS

Whilst the District and component areas of South Peninsula are often referred to in broad terms, the area includes a wide diversity of settlement patterns reflecting their historical establishment (a lot of the district was developed in some way over a century ago) and settlement influences during this time. These influences were originally associated with a north-south link that developed between the CBD and Muizenberg and Simons Town, then with links to agricultural / resource areas such as Constantia, Tokai, Hout Bay and Noordhoek, and finally with links to amenity areas such as Kommetjie, Llandudno, and Bishopscourt.

4.1 Residential

In terms of residential development, the area reflects, on the one hand, a range of established residential neighbourhoods to the west of the railway line. Most of these constitute large properties (low density / <15du/ha) which with expansion away from the rail line are increasingly low density and car dependent areas.

On the other hand, the areas to the east of the rail line are generally newer, of higher density, lower value, and many instances associated with the re-location of communities forcefully removed from more established areas to the west of the rail line.

4.1.1 Key dynamics and trends

The area does reflect some dynamism in terms of urban development pressure linked to residential development relating to:

- Continuing pressure for market related development into high amenity, but also environmentally sensitive, areas.
    - This includes foremostly coastal and mountain slope areas. As this has tended to occur in newer development areas at greater distance from CBD / work and other opportunity areas, allied with deteriorating public transport (primarily the rail line) these developments have remained highly dependent on private mobility, which has been reflected in increasing road congestion levels. This peripheral urban expansion has in recent years been moderated by (from 2001) a definitive urban edge and also constrained services provision (e.g. in the Far South along Kommetjie Road).
- An apparent decrease in population associated with increasing development in some areas.
    - This is attributable to a significant decrease in average household size associated with smaller planned families, increasing divorces and single parent families, older marriage ages and increasing single, which is reflected in smaller properties and building units.
- Steadily increasingly pressure for lower income development in well located areas (of employment opportunity).
    - As these are generally high amenity and high income areas (i.e. high property price areas – see s2 in Property Market chapter) access to these areas is highly constrained and increasingly only by illegal means in areas where this is practically possible. Thus rather than land invasion in new greenfields areas (which are generally quickly addressed) this is constrained to existing low income areas including Imizamo Yethu, Hangberg, Westlake, and Masiphumelele through in-migration into backyard shacks or incremental expansion of informal settlement component areas thereof. This has resulted in massive internal growth of these areas and massive associated overcrowding and service incapacity and management problems, such that these areas are the pre-eminent urban crisis areas within the district. Red Hill informal settlement is an outlier with similar issues but quite different physical and social context.
- An increasing securitisation of residential areas, through gated security villages, orientation of development away from (perceived to be dangerous) open spaces, and walling and gating of properties.
    - This has resulted in public spaces (roadways, river corridors and open spaces) becoming more impersonal, with lower 'community ownership', and ironically more dangerous (and un-kept).
- The 'gentrification' of well located areas to the east of the railway line.

    - This has resulted as property price pressure has increased to the west of the line (eg. Rondebosch, Rondebosch East,Lynfrae).
- The booming demand for student residential accommodation near to UCT.
    - This has resulted in substantial development of student orientated flats, and general increase in property values in and around the Rondebosch, Mowbray and to a lesser extent Claremont CBDs. This has led to some unhappiness by existing residents who perceive developments to be excessive in relation to associated negative impacts such as parking in streets and impact on character.
- Recent steep increase in development of flats and town-houses, now comprising approx 60% of all residential development applications.
- Small-scale subdivisions and limited cases of change in land use in high-income high-amenity areas.
    - This includes for retirement villages, small security estates, restaurants and small retail developments. This has led to some unhappiness by existing residents who perceive developments to be excessive in relation to associated negative impacts on character.

With regard to these trends, the availability of land to accommodate new settlement in the area is a severe constraint. There are limited extensive areas suitable for new greenfield development, most of which are in areas some distance from daily opportunities (work, education etc.) and public transport. This is allied with high unit development costs (vis-à-vis tenure type and compatible design interfaces) as well as substantial local community opposition to the development in such areas.

4.1.2 Second dwellings

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 particularly the older areas.

The exercising this 'as of right' (subject to building plan approval) second dwelling has been varied across the district, but generally not yet to any great degree. This is dependent on economic circumstances of landowners (linked to the broader state of the economy) as well as to individual site-specific circumstances (re- location of the primary erf on the property and available room for a second dwelling or subdivision.

Whereas opposition to second dwellings by local communities is not possible, a significant issue in some more affluent areas is community opposition, usually on the grounds of protecting urban character, to subdivision instead of a second dwelling on the basis that this opens the opportunity for the resultant two erven to each have a second dwelling as of right. However, evidence (re-land use applications) indicates landowners often prefer selling off a subdivided property (on which another landowner could build a house) rather than have a second dwelling or sectional title property. It is not clear yet how significant an issue this is or will be (i.e. how many subdivisions will result in second dwellings on either or both sub-divided properties) suffice to say that it is an issue that may need addressing in the district plan review process. This could, for example, include that within certain landscape character areas if a property is subdivided then second dwellings are not permitted as of right.

A unique area where second dwellings are popular and commonplace is in low income settlements where landowners, ironically on far smaller properties, construct one or often more second dwelling(s). This may include a formal structure or informal backyard shack and may or may not include formal application and approval. Clearly this is an area that into the future requires greater monitoring and regulation, and should be addressed in a new district SDF.

4.2 Industrial

These areas, comprising principally Retreat (Main Road), Elfindale, Access Park, Retreat Road, and Lekkerwater Road and Fish Eagle Park industrial areas, have for many years been subject to increasing pressure for wholesale retailing (factory shops). More recently

this has also begun to include pressure for community and residential uses (e.g. in Main Road Retreat/Tokai).

This is associated with a continuing general move away from traditional industrial uses to light industrial and service uses in well located and higher property value areas. This, along with better located new industrial land east of this (e.g. Lansdowne industrial area) arguably accounts for why the Retreat Road industrial area, less well located (in the Southern district context) and with lower property value, has to date remained largely vacant.

Nevertheless, there is limited industrial land in the district generally, and a need for a certain amount to remain distributed across the district into the future, particularly with continuing intensification and transformation of urban nodes and corridors and the 'forcing out' of less compatible or inappropriate uses such as car service garages and tyre replacement centres from these areas. The transformation of industrial uses to residential areas in these areas is likely to compromise this and therefore such people focused uses require careful consideration in these areas.

The low amount of industrial space in the district (comparative to other areas of the city), and the steady transformation thereof, impacts significantly on the relative lack of employment opportunities in the district, and the resultant need for ('blue collar workers') to travel to other parts of the metro. The zoned but as yet largely undeveloped industrial area on Retreat Main Road is a noticeable exception and anomaly here.

4.3 Retail and Office

In terms of formal economic activity, most investment has been in the form of retail development in proximity to key public transport interchanges associated with rail. This has been primarily concentrated in the Claremont CBD and to a lesser extent in the Retreat – Tokai urban node. A notable exception to this has been the continued lagging of the Wynberg CBD area as a significant growth area, despite its inherent potential. Investment levels in retail and office have also generally lagged in Mowbray, Rondebosch and Plumstead, and also further south in Muizenberg and Fish Hoek CBD. In recent decades commercial nodes developed away from the rail line (Constantia, Blue Route, Kenilworth centre and Access Park and Long Beach) and these have continued to be highly attractive development areas.

There has been continued pressure for expansion / relocation of small-scale businesses into residential areas. This may in part be related to the muted economic conditions of the last decade where such businesses become too big to operate out of residential homes and seek cheap property options within residential areas rather than locating in formal business areas. This is also attributable to roll-out of higher-speed internet & increasing road congestion. This development has tended to seek location on primary local area roads.

As a result of the above there has been little new retail or office development in identified key urban node areas such as Wynberg, Mowbray, Rondebosch, Retreat, and Fish Hoek.

4.4 Mixed Use

Mixed use development has been slowly increasing in CBD areas across the district, although largely confined to the Main Road corridor. This is primarily concentrated in CBD areas close to UCT where increased demand for student accommodation has driven a development response for flats in the Rondebosch, Mowbray and Claremont CBDs.

The extent of mixed use development remains subject to demand and, apart from student accommodation, is comparatively limited across the district. Significant future mixed use development opportunites are the shopping mall complexes along the main public transport routes (i.e. Main Road corridor, Klipfontein corridor, and Imam Haron corridor) where residential tower blocks could occur. This includes malls at Claremont, Kenilworth Centre, Wynberg, Plumstead, Retreat, Muizenberg etc. The only areas where this has so far occurred is in Rondebosch (in

progress) and planning for similar also in Rondebosch and in Mowbray. This opportunity is, however, constrained by low economic growth conditions and low growth property market.

Some additional mixed use development has been slowly occurring in other lower intensity urban areas to meet changing demand patterns, and to an extent greater densification. This includes the growth of more localised small convenience shops (Pick 'n Pays etc) such as in Rosmead Avenue, Kenilworth CBD, Constantia (on the old dump site), and the old Marine Oil site near Simon's Town.

There is continuing pressure in the district for small-scale business encroachment or intrusion into residential areas. Some of this includes potentially non-conforming activities (such as professional practices in flats, design and decoration practices in houses), as well as formal applications for business use premises (e.g medical practices), offices and small office parks, security and emergency services businesses, rehab centres, and restaurants and tearooms. This has been considered appropriate in some residential contexts but not in others, and dependent on type and nature of the activity in relation to this. This has resulted in one-off individual land use changes within residential areas (e.g. offices in Chapmans Peak Estate, or some combined semi-transformation of an area (e.g. Chelsea Village). This is often controversial, but not necessarily inappropriate.

In recent years this has included a more explicit focus on active ground floors (e.g. commercial), quality street interfaces and environments, and residential surveillance over the street(s). In the corridor areas between the nodes redevelopment has been limited to residential use and included low-rise flats and town-houses. Although this has in many cases involved rezoning, in many others the historical zoning has precluded this being necessary. Clearly, however, this is an area of land use activity and management which needs regular monitoring, reassessment and review.

4.5 Tourism

The tourism sector forms a considerable and continually growing part of the local economy in this district. This is based on the bio-physical attributes (mountains, sea etc.) of the district, as well as related facilties (e.g. harbours & slipways, scenic routes and walking trails). This is also based on the developed cultural heritage (eg. winelands & cultural landscapes, historical precincts such as Simons Town & Kalk Bay). More recently the formalisation of the TMNP is opening up and realising significant further opportunities. Much scope for expansion still exists in this sector. Another significant opportunity are established but under-performing destination areas (e.g. Muizenberg & Fish Hoek beachfronts

The district is arguably has a greater competitive advantage in this sector than any other district, with the exception of the Table Bay district. This needs greater consideration in how to best leverage this opportunity whilst, importantly, not compromising into the long term on the protection and enhancement of the natural and cultural environments responsible for these opportunities.

4.6 Agricultural land

Agricultural land in the district for active farming is now very limited, and includes only a few active farms. This is attributable to massive loss of agricultural areas to urban expansion over the last 30 - 100 years, as well as to the fact that much land with an agricultural zoning (primarily in high lying / mountain areas) is now considered as critical biodiversity area and inappropriate for farming given that the peninsula area is now a global biodiversity hotspot.

Those few remaining agricultural farms are now considered very important from a heritage and cultural landscape perspective. This is now arguably more important a consideration than the agricultural value of the lands.

Of growing importance in relation to this are tourism economy activities, such as wine-tasting, restauranting, cycling and walking, concerts etc. This is allied with the comparative uncompetitiveness of farming in an urban area where adjacent property prices are so high and the viability of historic farming operations are questioned by landowners. Suffice to say that the

generally historic farms, including the iconic Groot Constantia, are increasingly significant destination places and playing an increasingly important role in the local tourism economy.

4.7 Supportive land uses

Given its proximity to the ocean and mountain, there is a significant number of tourist-related accommodation establishments across the district, especially in coastal villages and the Constantia - Tokai winelands area. This continues to be an application type that is consistently submitted to the district for evaluation, including for guest houses, restaurants etc. embedded within residential areas.

Other supportive land use requests include retirement villages, hospitals, schools, early childhood development centres (of varying scales), and the expansion of existing community facilities (inclusion of after cares, special needs facilities) where previous conditions or zoning schemes limited such uses to a single land use.

4.8 Development Pressures

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

- The Far South generally but especially to the west (Kommetjie area)
- Imizamo Yethu
- Masiphumelele
- Westlake

4.9 Vacant Land

Figure 16 depicts all the vacant land opportunities in the Southern District. The vacant land has been grouped into four categories using the following criteria:

Table 18: Vacant land categories

Code	Category	Description
1	**Underutilised vacant land:**	Vacant Land **without any** of the following attributes: • reservations, • public projects (human settlements; social facilities etc.) • building plan approvals • rezoning land use approvals. 2.
2	**Potentially-utilised vacant land:**	Vacant Land **with any** of the following attributes: • reservations, • pending building plan approvals, • any public projects in pipeline stage, 3.
3	**Utilised Vacant Land:** (vacant land under development or a registered intent to be developed)	Vacant Land **with any** of the following attributes: • any public projects in planning or construction stage, • existing building plan approvals, • rezoning land use approvals

4	**Vacant Land Reserved and/or Zoned for Community or Recreational use:**	This will include vacant land currently zoned OS1, OS2, OS3, CO1, CO2. [Only applicable layers that did not fall within the utilised (3) of potentially-utilised (2) categories]
5	**Vacant Land Zoned for Transport Use:**	This will include vacant land currently zoned TR1, TR2 and Utility. [Only applicable layers that did not fall within the utilised (3) of potentially-utilised (2) categories]

It must also be noted that land located in the Critical Natural Assets and Discouraged Growth STAs as designated by the City's approved MSDF have been excluded in Figure 16.

Vacant land in the district is highly constrained, with very little of this in public ownership (especially where it is needed most – including in Hout Bay and the Far South).

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.

(the land use & development trends map needs substantial revision – await revised map)

4.

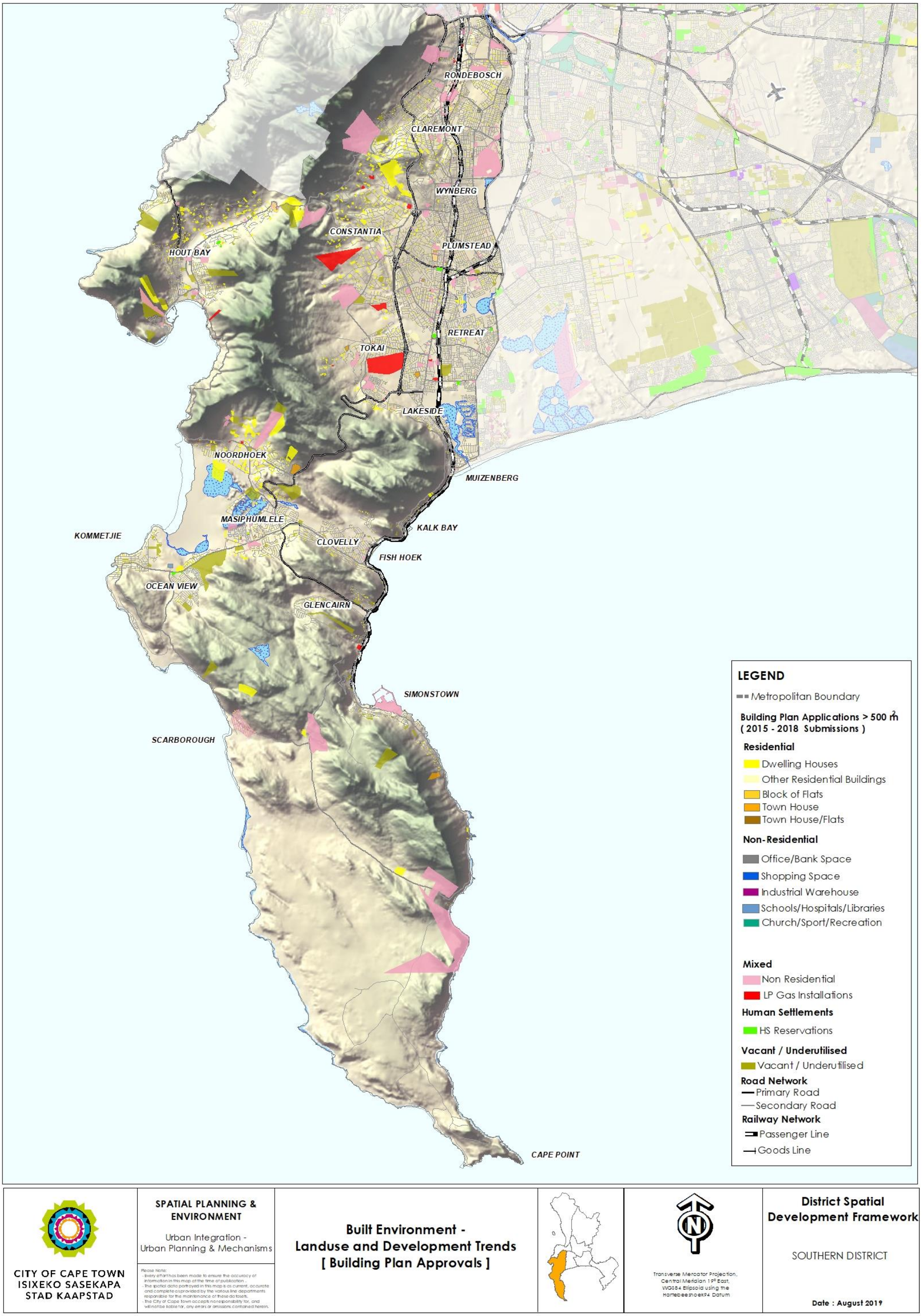


Figure 20: Building Plan Approvals 2012-2018

4.10 Key Challenges and Opportunities

4.10.1 Opportunities and Management Priorities

- Good existing transport infrastructure, particularly in the northern part of the district;
- Good service provision in most parts of the district relative to other districts of the CoCT; the proposed medium-term relocation of Victoria Hospital could have a significant boost for the area surrounding this.
- The roll-out of high-speed internet fibre represents a significant development disrupter opportunity (re- working flexibility, remote studying etc.).
- High quality living environment due to an abundance of 'special places' within the district, including Kirstenbosch, Llandudno, Constantia wine farms, Tokai 'forest' plantation, Zandvlei, Muizenberg, Simon's Town, Boulders, Smitswinkel Bay, Cape Point, Noordhoek beach and wetlands, Table Mountain range etc.

4.10.2 Challenges

- Unique topographical attributes in association with other city attractions ('pull' factors), and 'push' factors elsewhere in South Africa resulting in continuing strong middle & upper income residential demand within the district.
- Unique bio-physical attributes of the Southern District, including mountains, sea, wetlands and high biodiversity areas (including areas falling within the TMNP), limiting the availability of developable land and the provision of transport infrastructure and services, particularly to the southern peninsula (there is only one water and sewerage mains running from Cape Town to Simon's Town);
- In-migration resulting from a lack of facilities, employment and services in rural or low-income urban areas is putting pressure on well-located areas in the City to supply housing and services. The Southern District has experienced pressure in this regard, e.g. in the informal settlements of Imizamo Yethu, Hangberg and Masiphumelele;
- Continuing market-driven development, occupying more 'marginal' lands, e.g. in the Noordhoek wetlands or on the mountain slopes of the Noordhoek / Fish Hoek corridor and around Simon's Town;
- Increasing demands on limited transport infrastructure for private cars, especially from residents of the Peninsula;
- Continuing population growth in the district requires upgrades to services infrastructure (e.g. Wildevoëlvlei and Athlone WWTWs, replacement of Noordhoek's septic tank system with a waterborne sewerage system);
- Steadily increasing demand for cell mast stations posing an increasing impact on urban (scenic) landscape.
- Limited capacity of the receiving environment to absorb e.g. wastes from development without sustaining permanent damage;
- Scarcity of developable, suitable and available land within the urban edge, which it makes it difficult for the CoCT to provide low cost housing in the district;
-

4.10.3 Management Priorities

- Restrict development to within the urban edge;
- Avoid development within the CPPNE or other areas that are earmarked for future inclusion in the TMNP by SANParks;
- Upgrade informal settlements by providing – as a minimum – basic services;
- Enhance the reliability, safety and efficiency of public transport, with particular focus on the rail line to Simon's Town, Integrated Rapid Transit routes and pedestrian and non-motorised transport;
- Intensify land use along major transport routes and identified nodes (e.g. along Main Road);
- Identify vacant and under-utilised land within the urban edge that could be available for lower income residential development;
- Maintain, enhance, promote and invest in open spaces for residents and visitors. Areas identified for upgrading and enhancement include:
  - Tokai forest;
  - Princessvlei;
  - Maynardville; and

  - A new district park with linkages to surrounding open space systems at Princessvlei;
  - William Herbert sportsgrounds
  - Beachfront destinations areas (Muizenberg etc.)
- Enable and optimise linkages between urban open space networks and the TMNP, where possible;
- Facilitate inclusion of biodiversity areas into protected and managed areas and investigate opportunities for their sustainable utilisation (e.g. for education, tourism, medicinal plant harvesting, recreation etc.);
- Develop new infill residential and mixed-use areas within the urban edge where possible (areas that have been identified in the SDP include Fernwood, Constantia 'waste' site, Kendal Road depot site, Wynberg Military Camp, land adjacent to the Steenberg Station and Pollsmoor Prison agricultural lands); and
- Provide improved east-west transport linkages, particularly extension of the R300;
- Facilitate access to basic needs, health and social services, particularly in the South Peninsula; and
- Appropriately increase urban densities in residential areas (particularly those along the Main Road corridor). Appropriate densification should ensure that the character of residential areas is retained.

5 TRANSPORT AND ACCESSIBILTY

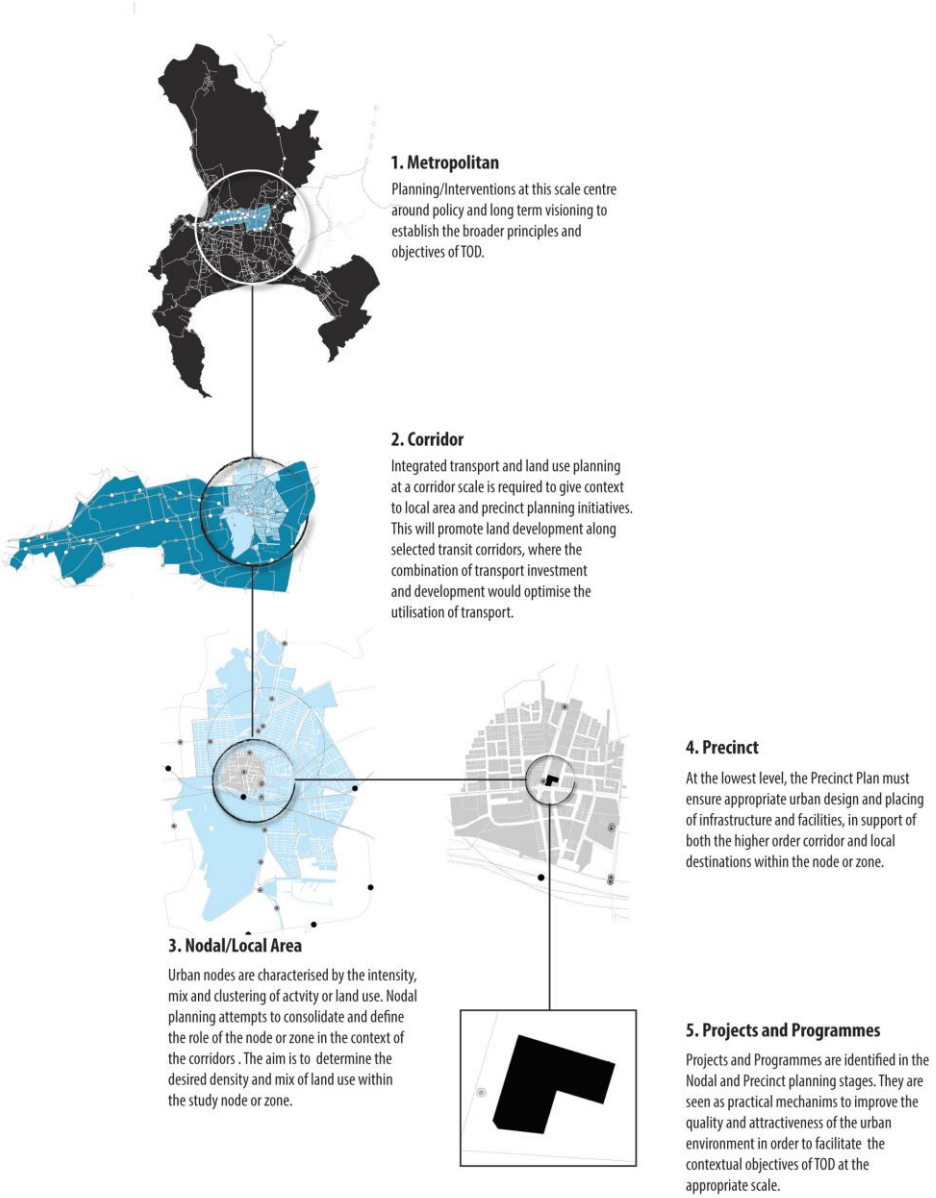
5.1 Introduction

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

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

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

Figure 21: Transit Oriented Development Concept at Various Scales (Source: TOD SF, 2016: 24)



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

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

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

5.2 Strategic Parameters & Informants

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

5.2.1 District Specific Transport Strategies

5.2.1.1 Far South Transport Plan

The Plan was developed to address the transport challenges being experienced in the area in terms of congestion and poor public transport. In relation to this district spatial plan, the transport plan relies on two premises:

iv. That the area will become more "self-contained", by providing for the employment, educational and service needs of a broad range of its residents
v. That the need for travel can be reduced through the intensification (densification and diversification) of land use at nodes and along corridors
vi. That there should be a focused precinct planning process for the Fish Hoek node, incorporating the beachfront, the public transport interchange, and the civic node

5.3 State of Public Transport

5.3.1 Existing Infrastructure and Services

5.3.1.1 High Order Public Transport

Rail

The Southern rail line route comprises, along with Main Road, the primary urban structuring route in the district. As the oldest rail line in the country the southern line is also arguably the rail route most integrated into the surrounding urban context in the country.

The eastern part of the district is hence very well served by the passenger rail infrastructure, with 24 rail stations located in the area along the line from Mowbray to Simons Town. Several of these stations form significant interchanges with road based public transport including Mowbray, Wynberg, Claremont, Retreat, and Steenberg. Retreat station also has one of the most utilised park-and-ride facilities in the city.

Rail and road based public transport utilisation is, with the exception of residents from Imizamo Yethu, Masiphumelele and Ocean View, almost exclusively by people living to the east of the railway line. Their strong reliance on public transport is reflected by the fact that several public transport facilities in the District are amongst the busiest in the city, including Mowbray, Claremont and Wynberg public transport interchanges.

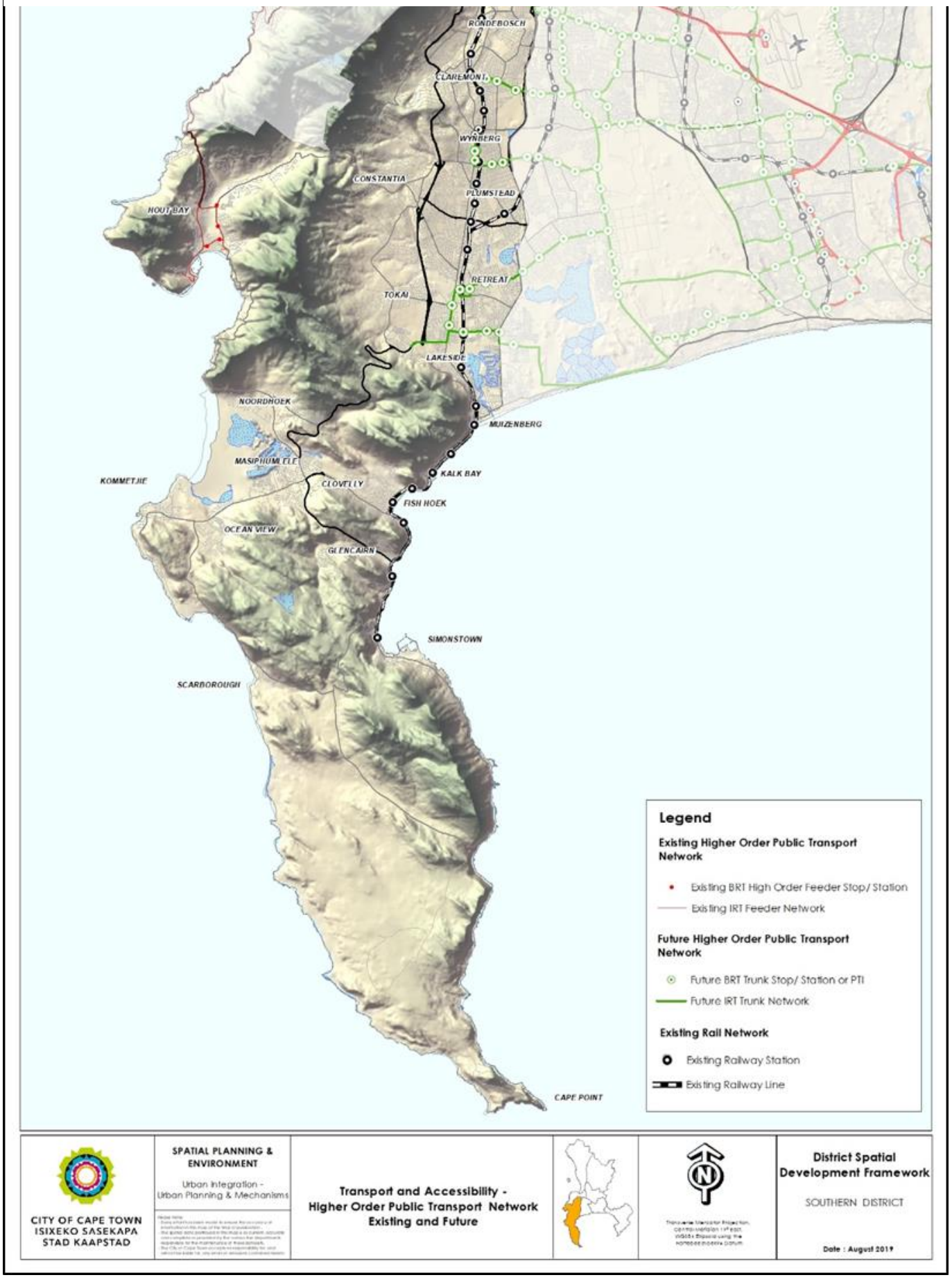
While the rail service has deteriorated since 2012, as a result of institutional failure, lack of maintenance and investment, and ongoing vandalism and crime, the system will endure, and it is expected that service improvements will eventually attract back choice users, even if this is only in the medium term. Hence the rail network continues to be an important structuring element in this plan. It follows a very scenic route on the South Peninsula up to Simon's Town, with all the elements necessary for a tourism and recreational experience.

Bus Rapid Transit (BRT): Phase 1 and Phase 2A

The only part of the District which is currently served by MyCiTi is Hout Bay: two feeder services connect it to the CBD via the Atlantic Seaboard, and are well-patronised.

There is currently no BRT service operating in the eastern side of the district (as the rail forms the "trunk service"). However, Phase 2A planning is well underway, and will serve part of the district (see section below on future transport plans).

Figure 22: High Order Public Trasnport Services showing Current MyCiTi Service to Hout Bay



5.3.1.2 Low Order Public Transport

Minibus Taxis and Golden Arrow Bus Services (GABS), and related Public Transport Interchanges (PTIs)

The main road-based public transport networks are concentrated on higher order routes. Klipfontein, Imam Haron, and Wetton Roads, and Retreat Road (into 5th Avenue) are the most significant in terms of high frequency commuter based services *in an east-west direction from the Cape Flats urban areas into the Main Road corridor.*

The following list of public transport facilities can be found in the district. These provide important opportunities not just for access, but are associated with informal trading and existing or potential transit-oriented developments and intensification of development.

Table 19: Public transport facilities in the district

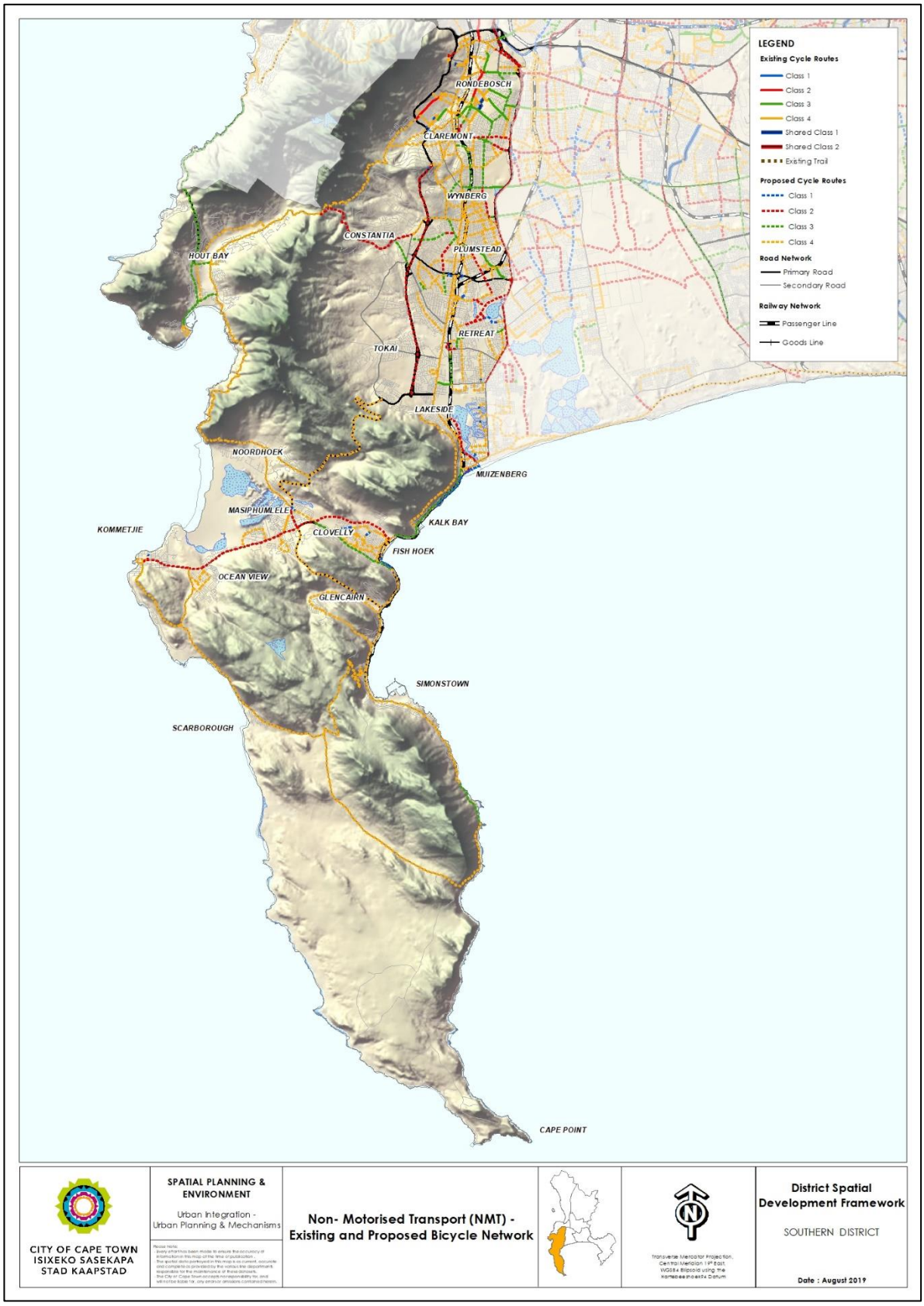
No	Name	Formal/ Informal	Any plan for upgrading
1	Mowbray Station Transport Interchange Eastern Side	Formal	
2	Mowbray Station Transport Interchange Western Side	Formal	
3	Claremont Station Transport Interchange	Formal	
4	Constantia Minibus-taxi Rank	Formal	
5	Fish Hoek Station Transport Interchange	Formal	
6	Hout Bay Minibus-taxi Terminus	Formal	
7	Imizamo Yethu Minibus-taxi Terminus	Informal	
8	Masiphumelele (Site 5) Minibus-taxi Terminus	Informal	New asset completed (2019)
9	Ocean View Public Transport Interchange 1	Formal	
10	Ocean View Public Transport Interchange 2	Formal	
11	Retreat Station Transport Interchange Eastern Side	Formal	Procurement
12	Retreat Station Transport Interchange Western Side	Formal	Procurement
13	Simon's Town Red Hill Minibus-Taxi Rank	Informal	
14	Simon's Town Station Transport Interchange	Formal	
15	Steenberg	Formal	
16	Sun Valley / Noordhoek Minibus-taxi Terminus (Longbeach Mall)	Formal	
17	Tokai Blue Route Mall Minibus-taxi Rank	Formal	
18	Westlake Minibus-Taxi Rank	Formal	
19	Wynberg Station Transport Interchange Eastern Side	Formal	
20	Wynberg Station Transport Interchange Western Side (North)	Formal	
21	Wynberg Station Transport Interchange Western Side (South)	Formal	

NMT

The relatively short commuting distances because of the mix of land uses lends the district to cycling particularly, and is home to the oldest sections cycling network (Rondebosch), as well as some of the newest (Diepriver, Tokai to Kirstenhof). While not on formalized routes, commuter cycling is common in the Far South, particularly between Ocean View / Masiphumelele and Noordhoek / Fish Hoek.

Pedestrian movement is very limited in the district, excepting for middle and lower middle income areas to the east of Main Road in the south (Retreat and Steenberg). High pedestrian movement zones are, however, located around the transport interchanges (stations) at Mowbray, Claremont, Wynberg and Retreat in particular.

Figure 23: Existing and Planned Cycle Routes



5.3.2 Planned Transport Infrastructure and Services

5.3.2.1 BRT feeders and trunks

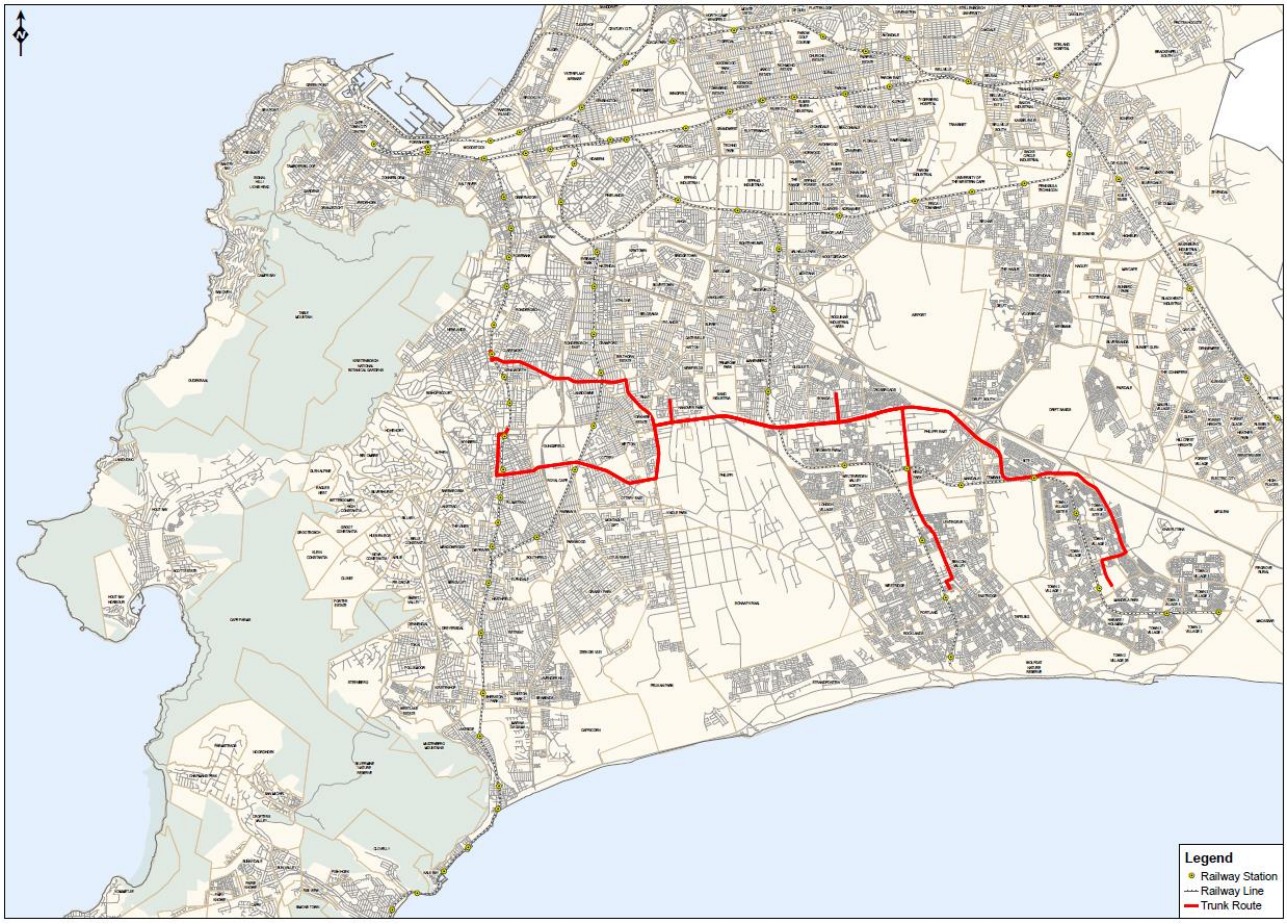
As part of Phase 2 of the City's public transport plan (IPTN), three MyCiTi trunk routes, and a number of feeder routes are proposed for the district. Feeder routes are still to be determined: but their purpose is to extend the trunk service through providing easier access to it. In Phase 2A, which is currently

being planned for implementation, trunk routes will run from Mitchell's Plain and Khayelitsha along Govan Mbeki Rd, Jan Smuts Drive, Turfhall Rd, Racecourse Rd, Chichester Rd and Imam Haron Road into Claremont, and along either New Ottery Road or Wetton Road into Wynberg (see map below). A district route is planned in a further phase along Klipfontein Road, from Mitchells Plan to the CBD via Mowbray.

The Phase 2A feeder routes are only indicative at this stage, but are planned to link areas of employment such as the southern suburbs, as well as more remote areas such as Hout Bay, to the trunk service.

Kenilworth Centre, Wynberg and Claremont are the locations of the planned stations.

Figure 24: Planned Phase 2A MyCiTi Trunk Routes



5.3.2.2 Rail

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

One possible future change could be the conversion of the rail section between Fish Hoek and Simon's Town into a feeder service. If that were to be a quality bus service, it creates the possibility of extending the service into the heart of Simon's Town (and beyond); freeing up land south of the station in Fish Hoek to reinforce the node's connection to the beachfront; and adapting to the increased sea level intrusion onto the railway line.

5.3.2.3 PTIs

Retreat PTI is planned for upgrading.

5.3.3 Level of Public Transport Accessibility

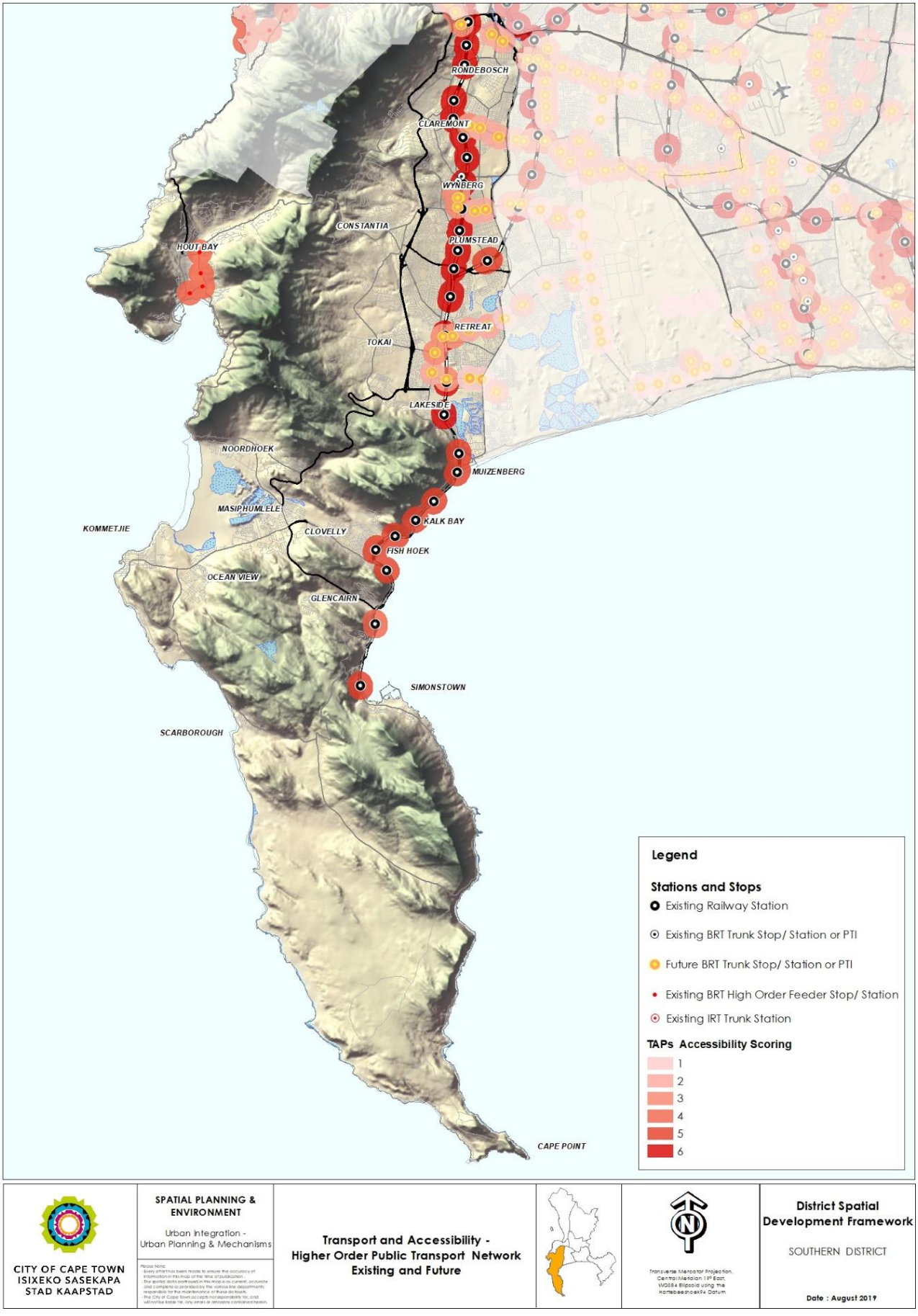
As part of the TODC model a scoring of the various Transport Accessible Precincts (TAPs) around stations and stops in the city was conducted. The overall score provides a measure of the level of accessibility of the City's current public transport network using the following indicators:

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

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

- The TAPS scores are generally high in the district, representing generally high accessibility
- However, the district also has areas with very low accessibility scores, particularly because of little development due to topography
- There is notably little to no accessibility west of the Main Rd (current or planned) from Mowbray to Fish Hoek

Figure 25: TAPs Accessibility Scoring



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

SPATIAL PLANNING & ENVIRONMENT

Urban Integration - Urban Planning & Mechanisms

Please Note:
Every effort has been made to ensure the accuracy of information in this map at the time of publication. The spatial data portrayed in this map is as current, accurate and complete as provided by the various line departments responsible for the maintenance of these datasets. The City of Cape Town accepts no responsibility for, and will not be liable for, any errors or omissions contained herein.

Transport and Accessibility - Higher Order Public Transport Network Existing and Future

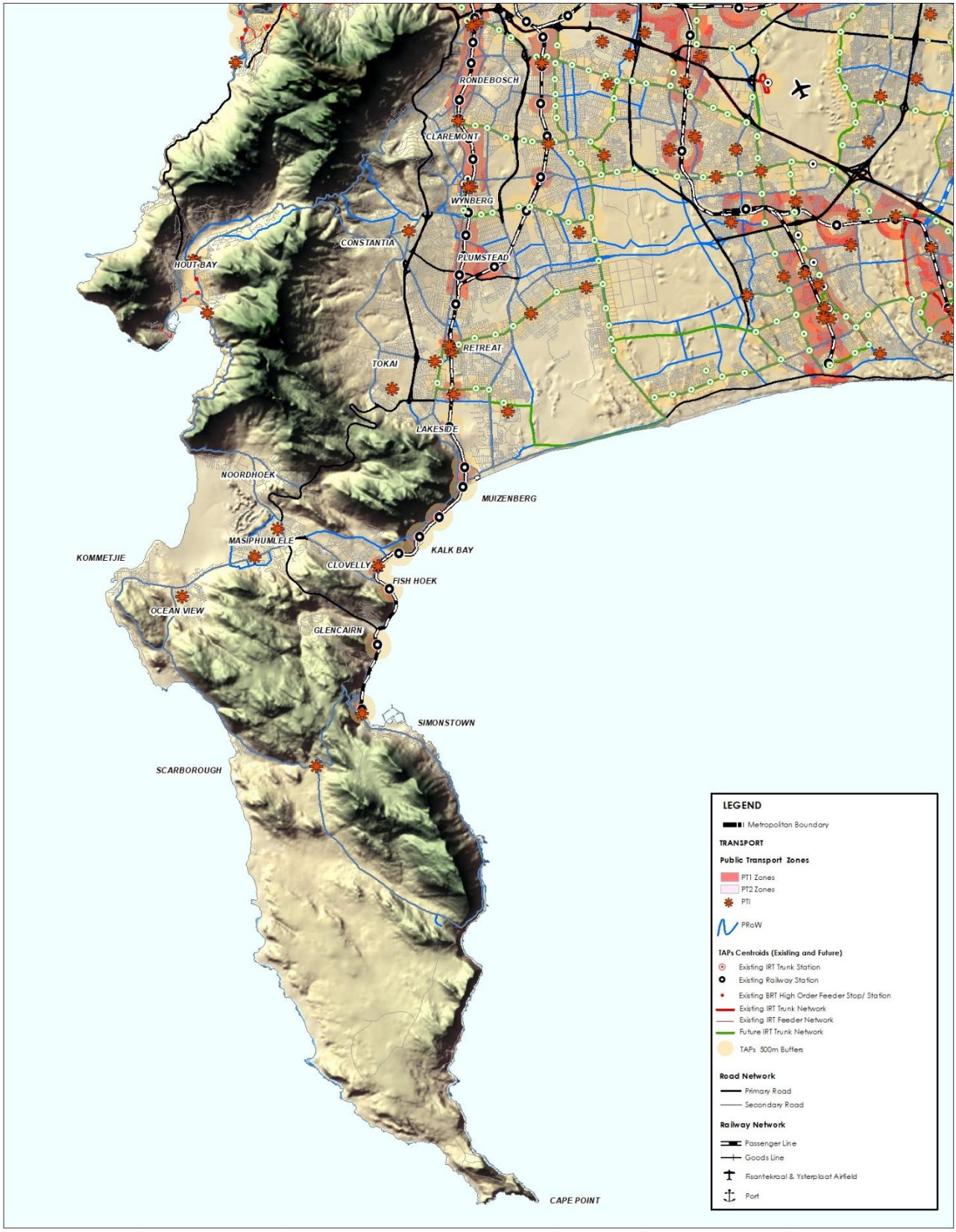
Transverse Mercator Projection, Central Meridian 19° East, WGS84 Ellipsoid using the Hartebeesthoek94 Datum

District Spatial Development Framework

SOUTHERN DISTRICT

Date : August 2019

Figure 26: Current Public Transport and Related Infrastructure



5.4 State of Road Infrastructure

5.4.1 Overview of the district road network

The eastern side of the Southern District is well endowed with transport infrastructure. Two motorways, the M3 and M5, as well as Main Road provide the main north-south road linkages in the northern part of the Southern District. Ou Kaapse Weg, Chapman's Peak Drive and Main Road link the southern part of the district to the north. The western areas are connected by a single roadway to the north and one to the east (over Constantia Nek).

In terms of the functioning of the network:

Connection of the district with the eastern metro remains a constraint. This is due to factors both within the district, such as the north-south alignment of many of the rivers and waterways (eg. Zandvlei) and also the railway line, as well as outside the district, such as the Philippi Horticultural Area (PHA) and False Bay Waste Water Treatment Works and the Zeekoevlei complex of vleis.

The road network in the study area is characterised by the provision of a strong mix of mobility and activity oriented routes, most particularly in a north-south orientation.

With the exception of the M5, most of the arterial road network was already engrained in the urban form of this area 50 years ago. The result is that a number of arterial roads in the area provide only limited mobility because they also serve as activity corridors.

5.4.1.1 Roads constructed over the past 5 years

The Main Rd rehabilitation with upgraded NMT facilities between Muizenberg and Fish Hoek was completed in 2017. While it did not increase road capacity, it greatly improved the walkability of the route and cycling provision.

See the map below for recently constructed / upgraded roads, and possible future roads / upgrades.

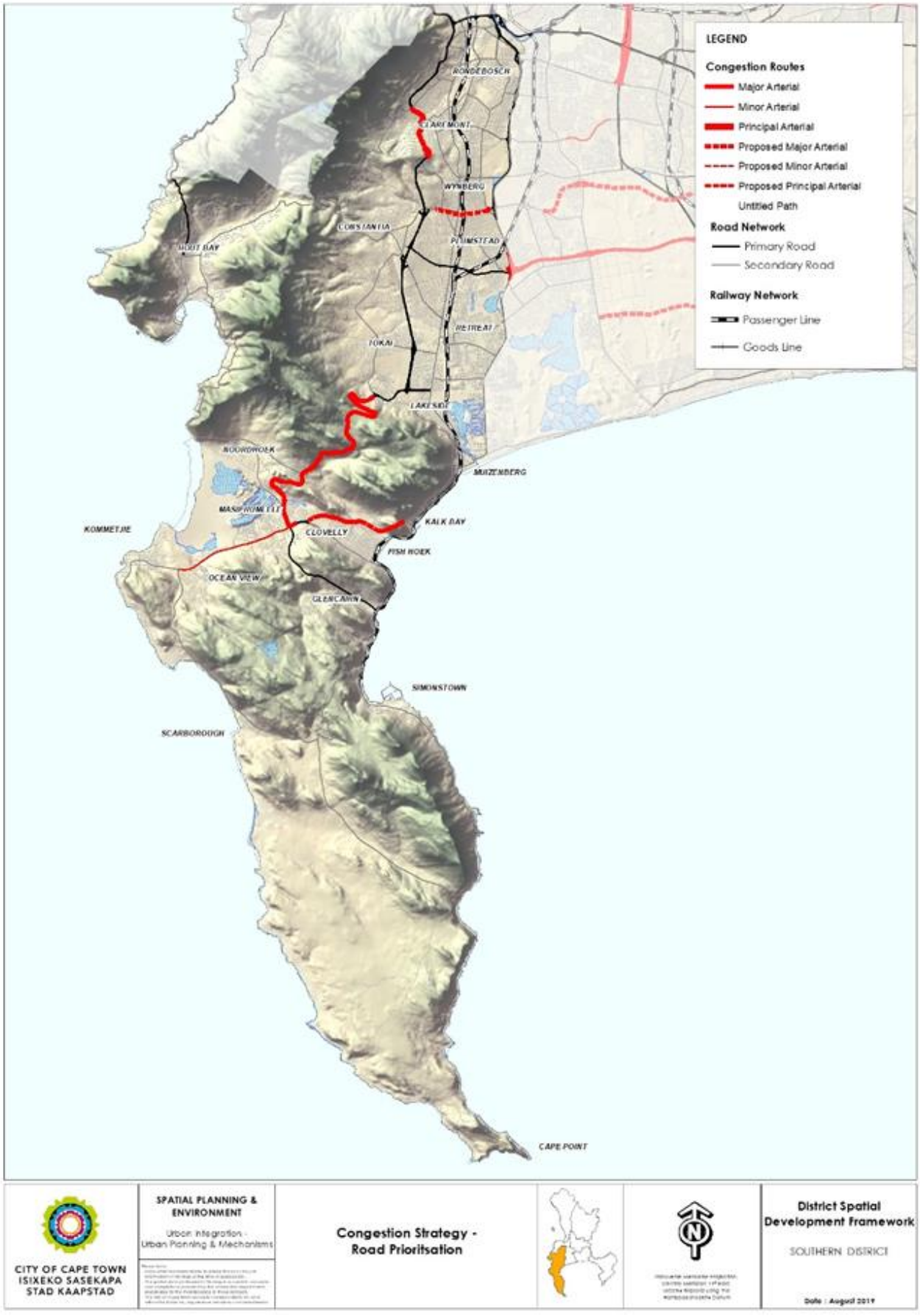
This district is home to one of the biggest roads upgrade projects outside of the BRT system. The upgrading of intersections and road sections along Kommetjie Rd and the urban portions of Ou Kaapse Weg was identified as a priority in the congestion management strategy of the city. This upgrading gives priority to public transport as well as NMT, and does not only meet the needs of private motorists.

5.4.1.2 Historic Road Schemes to be reviewed

Most of the City's historic road schemes fall within this District, including approximately 15 which must be reviewed (in light blue in the map below). These schemes are significant to the district plan as they do provide for future connections, as the pressure on the network increases. But they also have a dampening effect on the development of erven adjacent to the scheme, as owners wait for certainty before realizing their rights.

5.4.2 Congestion Management

Figure 27: Congestion Strategy Road Prioritisation



5.4.3 Parking

Parking is becoming an increasingly contentious issue in this district in particular. The relatively strong economic health along the historic southern line attracts many trips, resulting in regular on-street parking in some adjacent zones. While the local residents may find this inconvenient, such off-site and slightly remote parking does support the local economy, through increasing footfall, and security, through increasing the "eyes on the street". This plan could contribute towards a new vision for parking: making reference to the City's Parking Policy, and the emerging Parking Management strategy.

5.4.4 Planned Road Infrastructure

5.4.4.1 Roads required in the short term (5 years)

Because the area is so well developed, there are few roads new roads required, but there are some requiring upgrading or missing links, as shown on the map below.

Few short term projects are planned:

- Dualling of Royal Rd, Muizenberg;
- Houmoed Ave missing link;
- Connection of South Road to Constantia Main Road (in support of the MyCiTi roll-out).

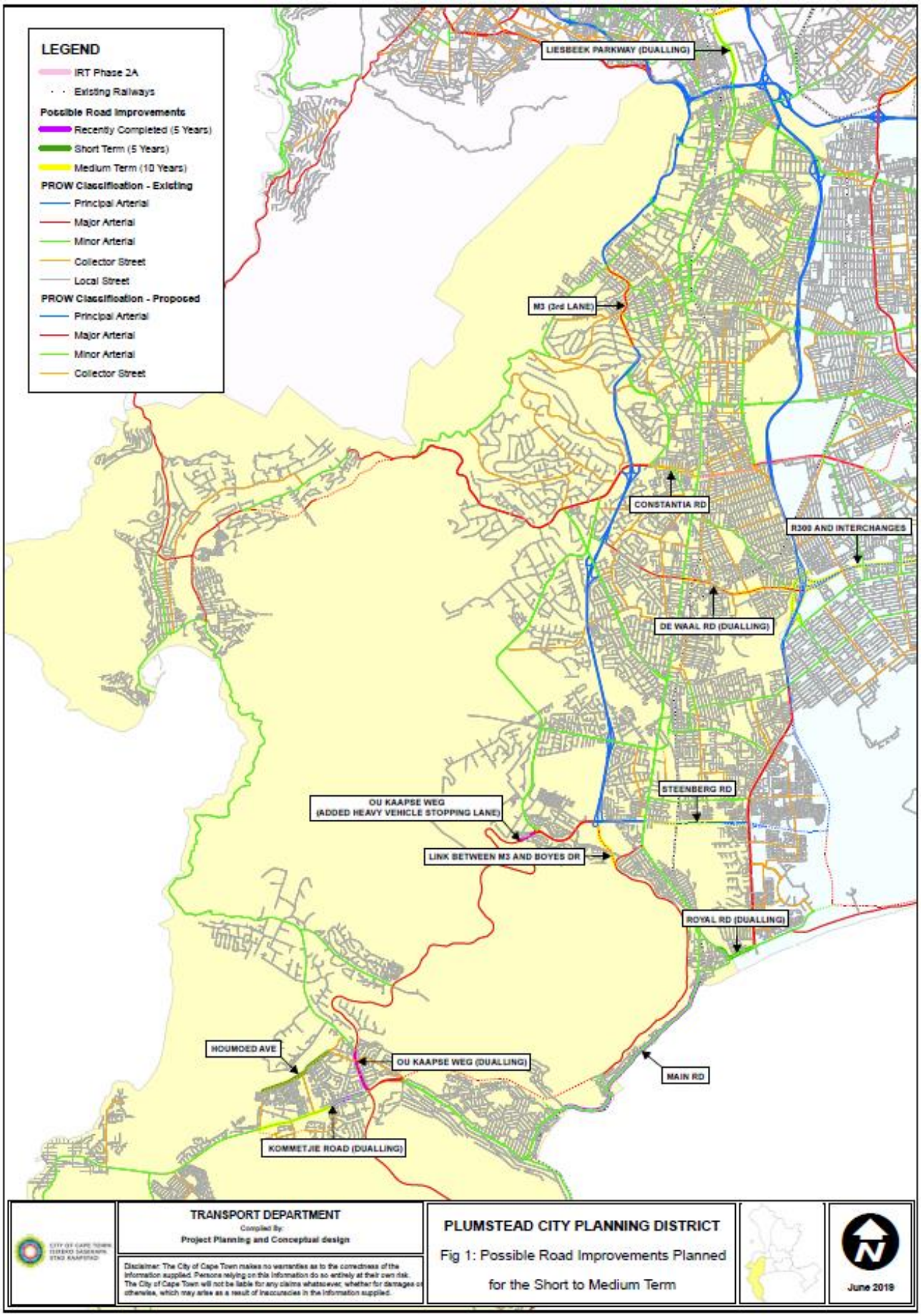
5.4.4.2 Roads required in the medium term (10 years)

Planned links in the Cape Flats District will assist in addressing this district's east-west connectivity, but is constrained in the vicinity of the False Bay coastline (particularly south of the waste water treatment works), and for the foreseeable future is limited only to improved management of Baden Powell Drive, and the extension of Steenberg Rd east to Prince George Drive.

In addition, some upgrades and missing links are planned within the district.

The Far South Transport Plan has identified the need to improve access to that area, either through dualling Ou Kaapse Weg, or linking the northern Fish Hoek bypass to a contour route around Trappieskop, linking it to Boyes Drive.

Figure 28: Possible Road Improvements



5.5 The State of Freight

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

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

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

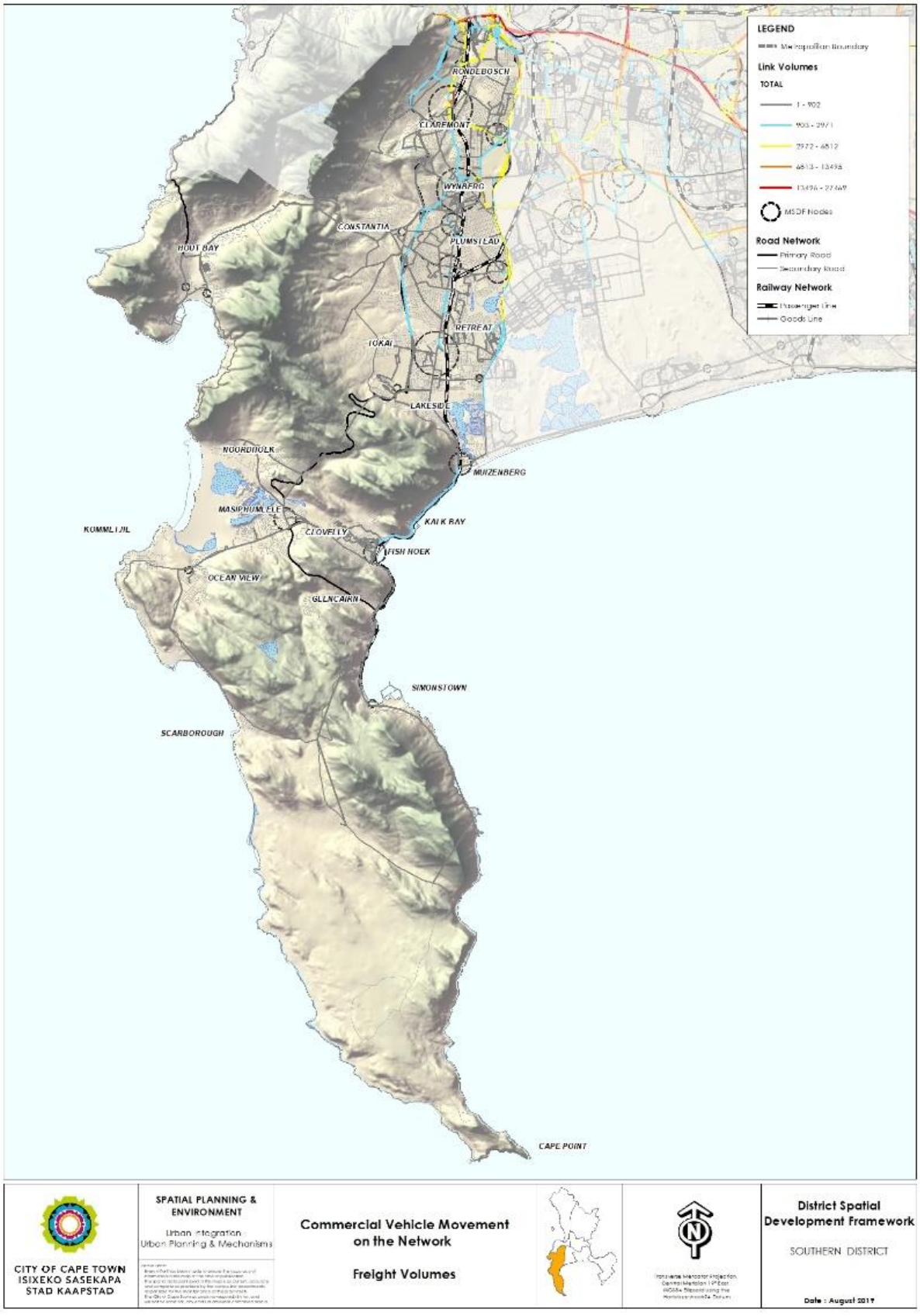


Figure 29: Commercial Vehicle Movement

The map shows that the district experiences little freight traffic compared to the rest of the metropolitan area, which could represent the lack of industrial activity in the area, as well as possible suppressed demand because of the mountainous nature of the district.

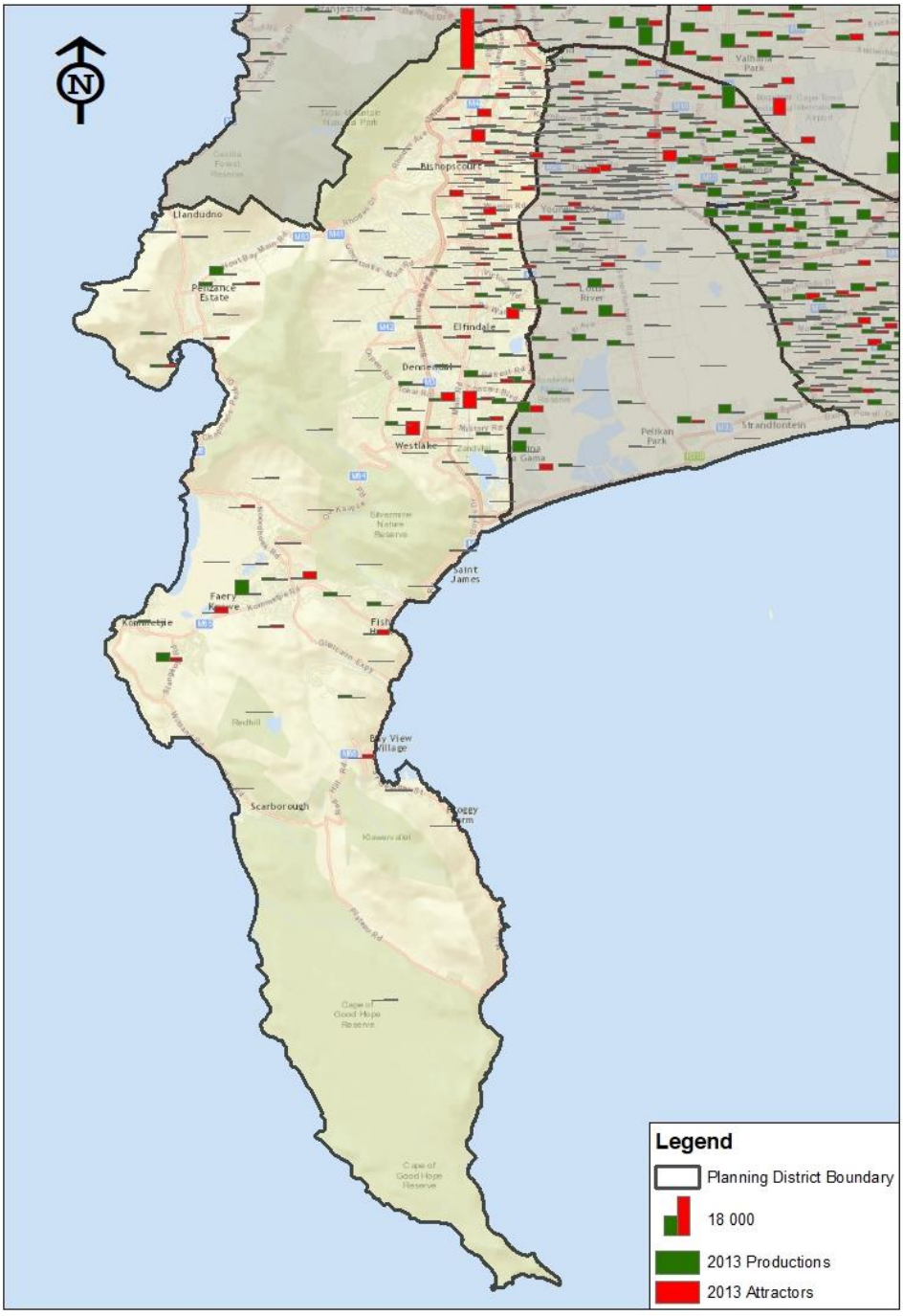
5.6 Travel Patterns

5.6.1 Current (EMME Demand – Base year 2015)

The following features for the district as a whole are observed:

- The intensity of trip generators and trip attractors are generally very low in the district, with the highest trip generators concentrated in areas of population density far from work opportunities
- The major trip attractor is the University of Cape Town, then Claremont CBD
- Trip attractors and generators cluster along the Southern suburbs line, with a predominance of trip attractors: this results in an in-flow of people into the district for employment and education purposes.

Figure 30: Current Distribution of Trip Generators and Attractors



5.6.2 2013 Origin Destination Movements for the District

The metropolitan origin-destination maps for this district show the following patterns:

- There is greater movement into the area than out, mainly from the metro SE. Public transport is the major mode of transport into the district, except from the adjacent Cape Flats district, with almost equal volumes of public and private trips.
- The major movement routes out of the area by both public and private transport are to the Cape Town CBD and adjacent inner city.
- Tygerberg and Cape Flats districts also attract trips.

Figure 31: Origin- Destination of All Commuter Trips (2013)

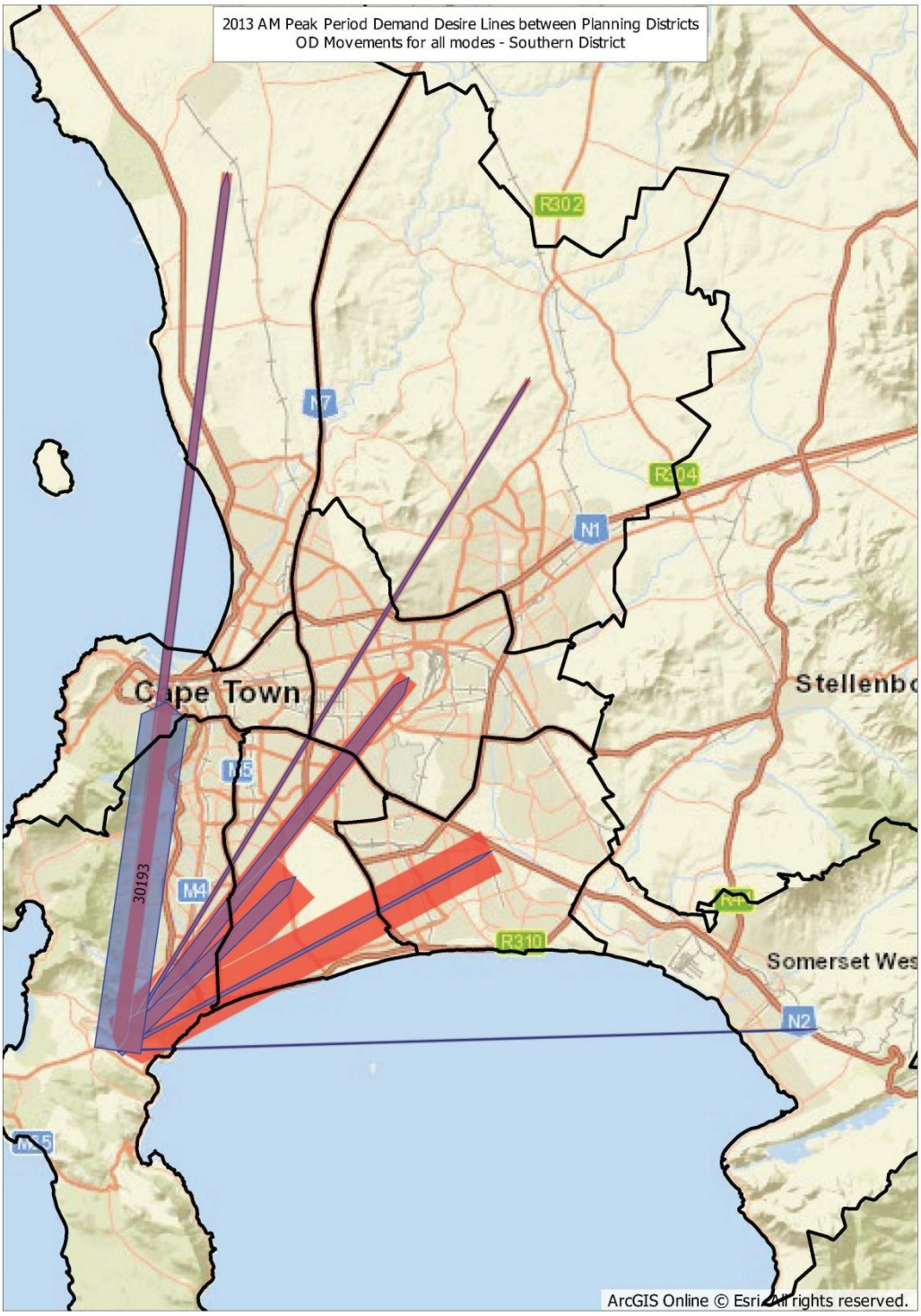


Figure 32: Origin-Destination of Private and Public Transport Trips (2013)

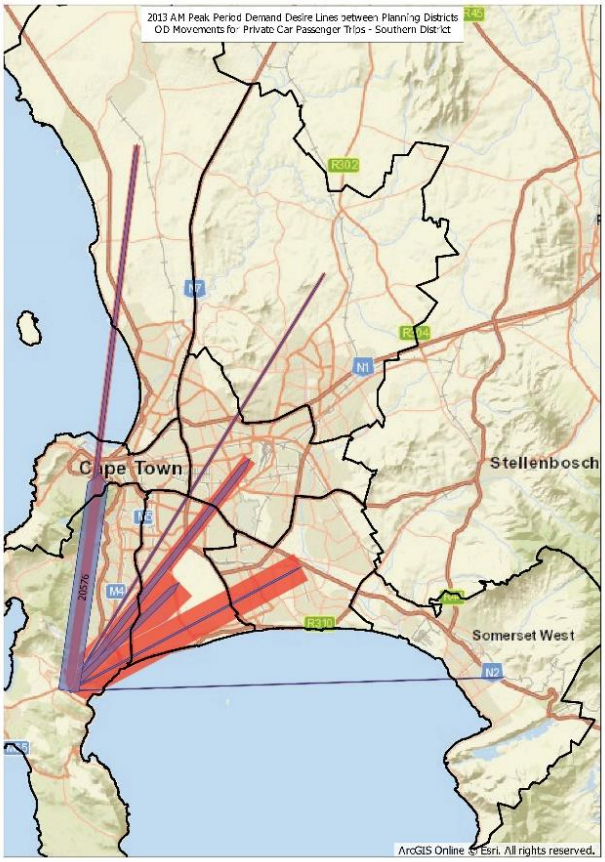


Figure 33: Origin-Destination of commuter Trips (2013)

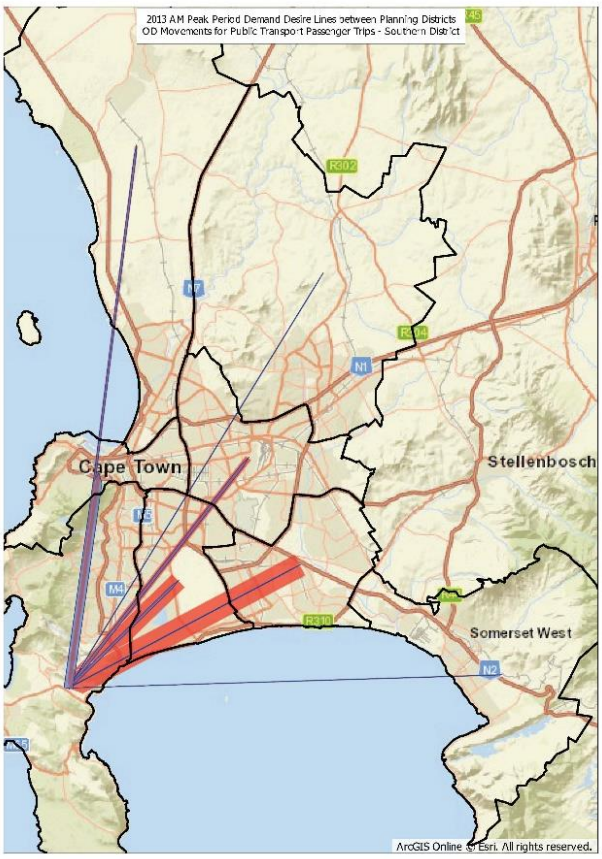
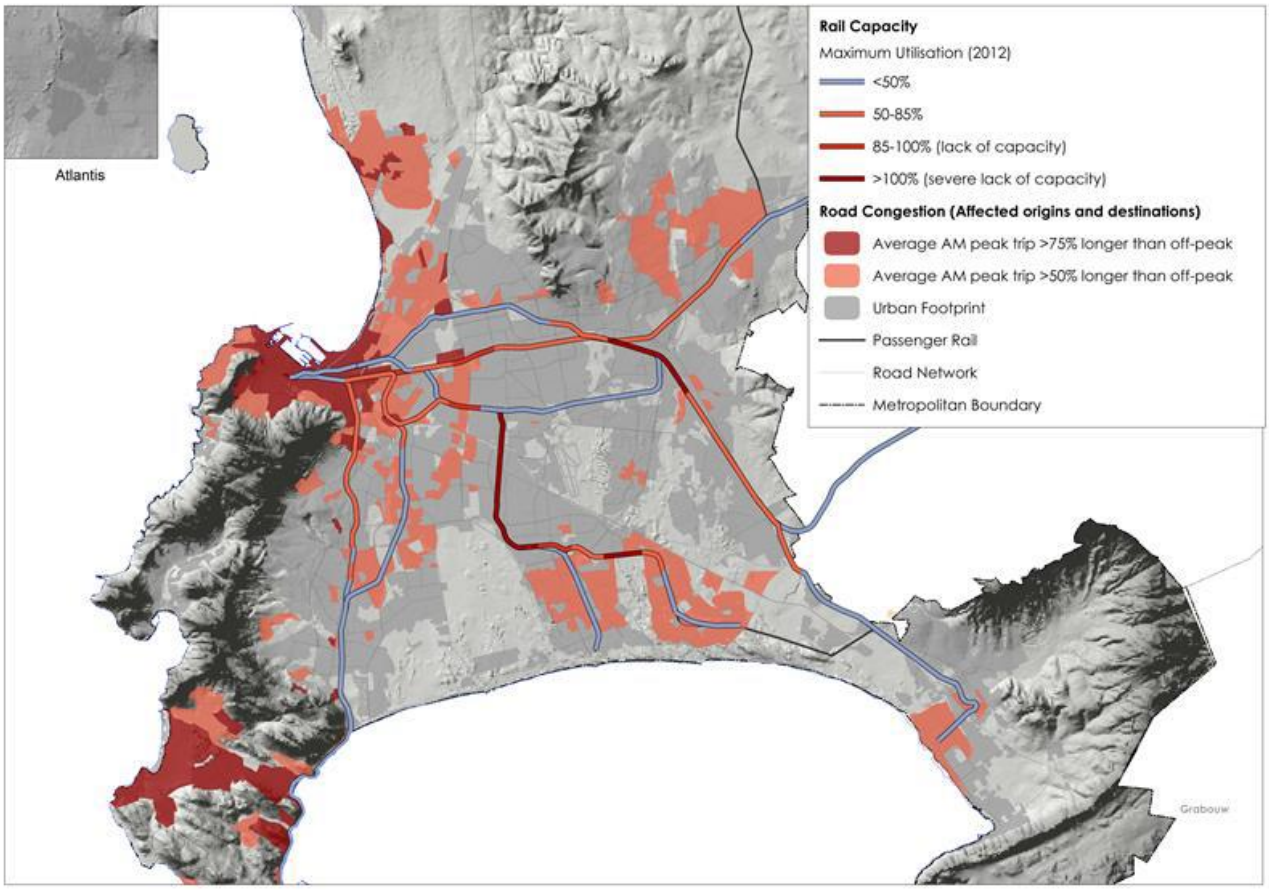


Table 20: Trip generation

Origin	Destination	NMT	Car	Taxi	Bus	BRT	Train	Public Transport	Total
Southern	Table Bay	329	5804	1478	1114	200	3423	6216	**12349**
Southern	Blaauwberg	7	1503	428	254	18	459	1160	**2670**
Southern	Northern	0	929	80	73	0	745	898	**1827**
Southern	Tygerberg	3	2546	433	352	1	3048	3835	**6384**
Southern	Helderberg	0	256	72	71	0	646	789	**1045**
Southern	Khayelitsha / Mitchells Plain	0	396	77	101	2	511	690	**1086**
Southern	Cape Flats	297	2548	454	401	0	1001	1857	**4701**
		636	**13982**	**3023**	**2367**	**221**	**9834**	**15445**	
Southern	Southern	1560	15269	2204	2287	105	1754	6349	**23178**
Table Bay	Southern	201	2584	858	446	15	1209	2528	**5313**
Blaauwberg	Southern	42	688	574	549	9	254	1386	**2116**
Northern	Southern	0	341	132	163	2	734	1031	**1372**
Tygerberg	Southern	6	396	1743	886	1	1947	4576	**4978**
Helderberg	Southern	0	400	1134	707	0	1878	3720	**4120**
Khayelitsha / Mitchells Plain	Southern	12	950	2754	3670	22	3376	9822	**10783**
Cape Flats	Southern	1046	5499	3720	3306	0	2760	9786	**16331**
		1307	**10857**	**10916**	**9726**	**50**	**12158**	**32849**	

At the same time, the map below shows the areas of greatest road congestion and the railway services of greatest overcrowding, in the map below. This has directly informed the location of road upgrade projects: in this district the Kommetjie Main Rd – Ou Kaapseweg suit of upgrades which began in 2016.

Figure 34: Congestion Hotspots in the Metropolitan Area



5.6.3 Cost of Travel

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

5.6.3.1 User costs

The newly-developed Urban Development Index (UDI) measured the cost of travel for different income groups, different travel modes, and to their top 5 destinations[15] in terms of travel time, travel distance, and direct costs.

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

The western part of the district, similar to the Helderberg district, displays a high modal split in favour of private car use: between 60% and 90%.

The "Far South" area (south of the Muizenberg mountain range) experiences the longest travel distances by public transport to the top 5 destinations (26-32km), and average distances decrease towards the north of the district. The Hout Bay area experiences the longest average travel times by public transport (38min by minibus taxi; 55min by MyCiTI) and the 122min by bus from the Muizenberg area. By private transport, the longest travel times are from the Muizenberg, then Grassy Park, Hout Bay, and Westlake areas (35min to 29mins).

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

Direct travel costs as a percentage of income are highest in the Hout Bay area for the low income group (28%), but relatively good for all income groups in the central and eastern parts of the district. On the other hand, private travel costs are high for all income groups in the Sunnydale, Fish Hoek, Muizenberg and Hout Bay areas, with Westlake and Grassy Park also being expensive for the middle and high income groups.

5.6.3.2 Operational costs

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

5.6.3.3 Environmental and Economic costs

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

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

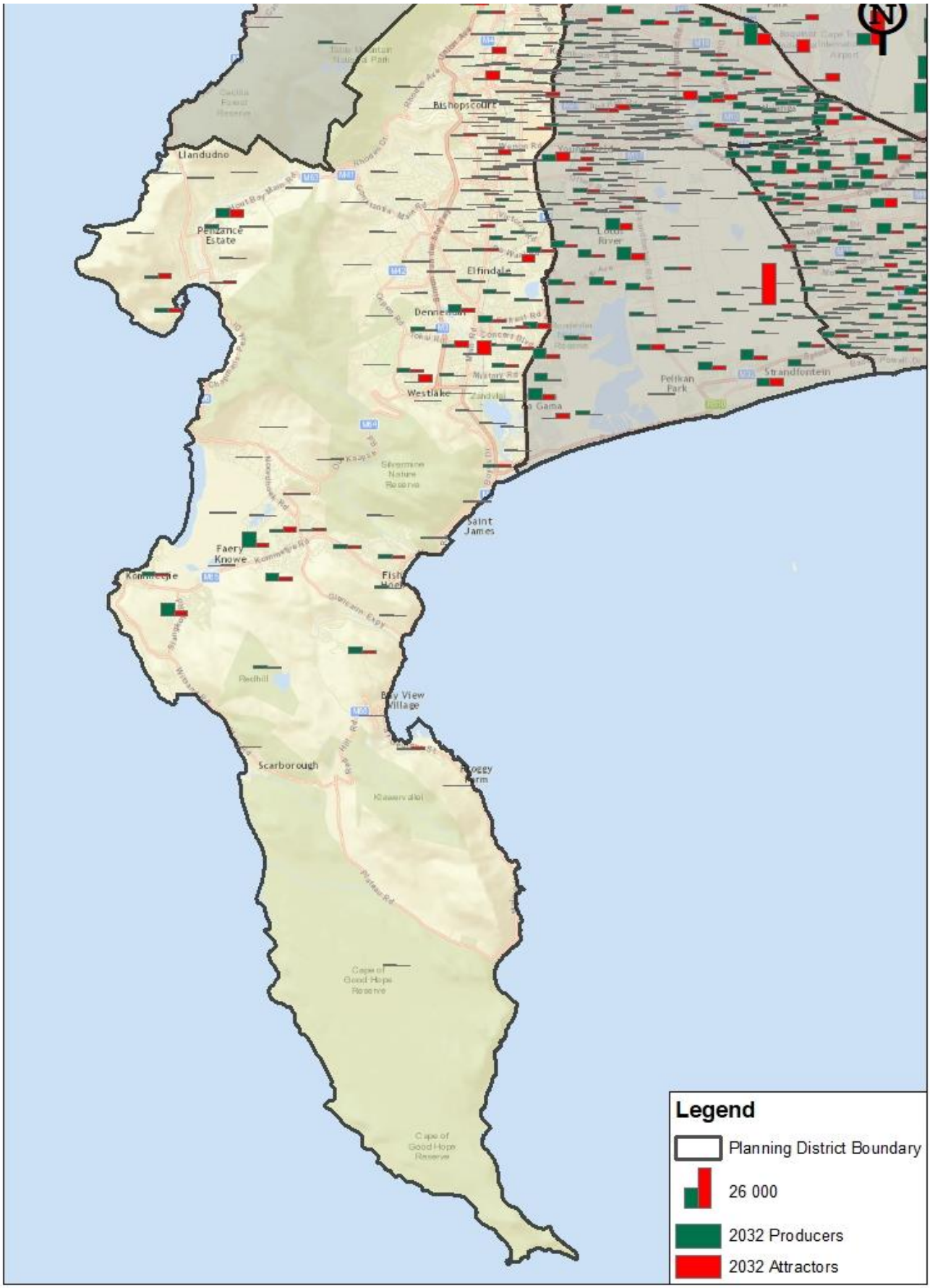
In modelling the future land use patterns which would generate the demand for trips to be served by the IPTN, an "ideal" scenario, namely "Comprehensive Transit Oriented Development", or CTOD, was run for 2032. The CTOD response is to try to balance trip attractors and trip producers in all areas, to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

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

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

While growth is projected to be fairly evenly in this district, additional trip attractors are required throughout, and additional trip producers are required along the Southern line.

Figure 35: Future Trip Generators and Attractors (2032)



5.7 Key Transport Challenges and Opportunities

5.7.1 Constraints

5.7.1.1 Poor access to and from isolated urban enclaves

Hout Bay and the Far South (inclusive of Fish Hoek, Simon's Town, Noordhoek, and Kommetjie) are two unique urban areas in Cape Town. They are attractive high amenity areas which have or are undergoing rapid urban growth. However, both are comparatively small valley basins separated from the rest of the district and metro area by rugged mountains, and as a result linked by limited, tenuous road infrastructure, comprising in the main mountain passes. All the linking routes would be very expensive to develop further to increase capacity. As a result these two enclave areas often experience high congestion in and out of them, with any event that impedes this access (such as veldfire or car crash) resulting in them nearly being cut-off, which has serious implications for emergency services.

5.7.1.2 Poor east-west accessibility

Development in this district historically first occurred along a north-south roadway linking the original city bowl settlement with farms and later residences in Rondebosch and Wynberg, and sea activities in Muizenberg and Simon's Town. As settlements grew this was reinforced over time with rail and more developed road infrastructure. However, until comparatively recently (50 years ago) little development had occurred to the east of this spine. Furthermore, linkages to Somerset West and Stellenbosch were constrained by dunefields and wetlands, so tended to occur further north along already established connections from the old city centre. By contrast linkages westwards into the Hout Bay and Noordhoek valleys were, and still are, constrained by the mountainous topography.

Development to the east of the district from the 1960's, in firstly Hanover Park, Manenburg and Gugulethu, and further to the south in Grassy Park and Lavender Hill etc., and then more recently in Mitchells Plain and Khayelitsha has been both rapid and considerable. This has been largely low income development and marked by little accompanying economic (and quality recreational) opportunities, and has resulted in massive and growing demand for movement to opportunities in the Southern District and other more established and integrated areas. Movement infrastructure, as well as public transport services, haven't managed to meet this demand sufficiently.

Despite the majority of the city's population not owning a car there is nevertheless rapidly increasing road congestion on the existing road network. This is not helped by the barrier effect of the Cape Town – Simon's Town and 'Cape Flats' railway lines (with limited bridge access points) or by the absence of an east west railway line linking the southern suburbs to Mitchells Plain and Khayelitsha.

The massive capital costs associated with railway line construction and rolling stock would suggest that developing an east-west rail connection is inappropriate. Developing road based public transport systems are considerably cheaper and more flexible, and can be as efficient, safe and of high quality. Emphasis should be on identifying as well as upgrading strategic east-west road linkages, focussing on public transport capability. Private car based linkages cannot be ignored, and may be critical to improving overall accessibility, but the public transport emphasis would suggest the R300 extension may be of lessor importance in the medium term, unless the development of future commercial opportunities (eg. freight services) become seriously constrained by the lack of high speed east-west mobility.

5.7.1.3 Movement safety & security & reliability

NMT is increasingly highly constrained due to perceived and real safety and security concerns. Safety in relation to increasingly poor, less respectful, and inadequately policed vehicle-driving such that NMT users, and cyclists and children in particular, are reluctant to utilize NMT routes/ facilities. Security in relation to increasing crime such that users, especially school children, are reluctant to utilize NMT routes/ facilities.

Train services along the southern corridor have steeply deteriorated over the last 5 years due to poor management, loss of rolling stock, crime and grime.

The outcome in relation to the above has been steadily decreasing levels of NMT and rail public transport utilization and concomitant increase instead of private vehicular use and congestion, particularly at peak school start and end times.

5.7.1.4 Low transport densities

Despite its mature form, transport densities are still low, because private car use predominates, particularly to the west of the corridor. These are not simply population densities, but the density of public transport users specifically.

5.7.1.5 Low seat renewal and little bi-directional flow

While performing better than the other districts, and except for the Main Road, the predominant pattern is for commuters to be travelling right through to the CBD in the morning peak, and back in the afternoon peak. This makes for an inefficient transport system, and few opportunities for TOD adjacent to destination points, except at the PTIs.

5.7.2 Opportunities

5.7.2.1 Main Road Corridor Integrated Transport and Development Potential

The Main Road corridor is arguably / potentially one of (if not) the most optimal integrated transport - land use urban development corridors in the country. Comprising Main Road itself, the passenger railway line, the M3 and M5 expressways, and a number of supporting mobility connector/bypass routes, as well as a range of intersection east-west road routes, as well as clearly discernable high access development nodes / concentration areas, this corridor has steadily developed and intensified over the last few centuries, but the last 50 years in particular. However, notwithstanding some key infrastructural upgrades and associated operations, there remains massive unrealized urban development capacity yet.

5.7.2.2 Incremental road based public transport service

The potential in the future for the current MBT and GABS services to be upgraded incrementally into a quality bus service, in line with the BRT, exists, particularly in this area with its large proportion of choice users.

5.7.2.3 New generation technologies

New generation technologies may enable a different form of movement pattern, for example increased working from home; remote working at office hubs; app-based carpooling; app-based tools supporting a quality bus service; e-hailing reducing the need for parking; etc.

5.7.3 Spatial Implications

The district plan will need to address the potential conflict between the metropolitan imperatives, and the local interests. At a metropolitan transport level, greater intensification (diversification and densification) is required along the Southern corridor, which will inevitably result in an erosion of the suburban character. Similarly, population densities need to increase to support a quality public transport system. This has and will continue to elicit localized opposition from a preservationist perspective. This plan will need to balance servicing metropolitan and local needs; considering social, economic and environmental development imperatives. It may well be worthwhile aligning with the Resilience Strategy process: some of its related pathfinding questions have relevance to the District:

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

6 INFRASTRUCTURE

Medium Term Infrastructure Investment Framework (MTIIF)

Figures x and x current level of supply of water, sanitation, electricity and stormwater infrastructure in the Southern district as identified in the 2015 Medium Term Infrastructure Investment Framework.

6.1 Electricity

Bulk electrical infrastructure includes:

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

Most of the information used for the assessment of bulk electrical infrastructure capacity is from 2014 peak loads at distribution stations. The information was processed and each substation supply area classifies according to its level of existing capacity. There are 114 substation supply areas in the metropolitan. 82 of these are within the City of Cape Town's distribution area, while 38 are within Eskom's area of distribution. The table below gives the definitions used to classify the capacity of a substation area. The assessment was done using Transport Analysis Zones (TAZ's), which have different geographical delineations when compared to the substation supply areas.

Table 21: Definition of electrical system capacity (MTIIF, 2017 Draft, pg 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

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

- Tokai, Coniston Park and Kirstenhof
- Parts of Steenberg, Bergvliet, Constantia, Westlake, Lakeside and Marina De Gama

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

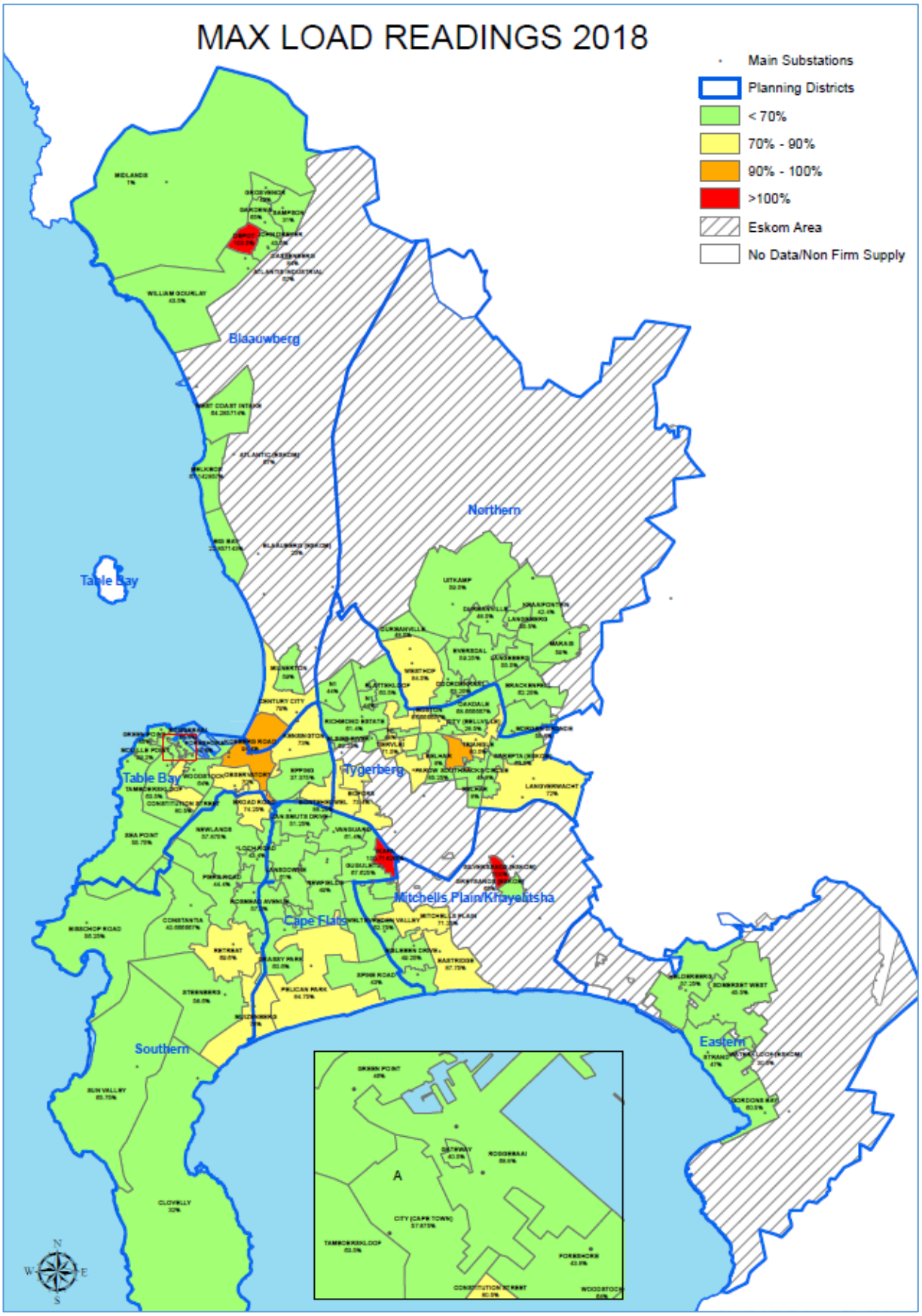
- Parts of Constantia, Bishopscourt, Kenilworth, Elfindale, Southfield, Meadowridge and Wynberg.

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

- The entire Sub-district 1: Hout Bay and Llandudno
- The entire Sub-district 4: The 'Far South'
- Mowbray, Rosebank, Rondebosch, Newlands, Claremont, Plumstead and Heathfield
- Part of Constantia, Bergvliet, Southfield and Muizenberg

[Awaiting further/updated information, and a list of current and planned projects (Eskom vs COCT), from the line department]

Figure 36: Substation Loading 2018



6.2 Water

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

- Bulk supply system from the water sources to the water treatment works (WTW)

- WTWs
- Supply pipelines from the WTW to reservoirs
- Reservoirs
- Pump stations and rising mains
- Distribution pipes ≥250 mm diameter (nominal)

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

Table 22: definition of water system capacity

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

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

- Ocean View, Noordhoek, Kommetjie, Capri- all severely constrained areas located within sub-district 4: The 'Far South'.

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

- Most of Retreat and parts of Steenberg and Tokai.

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

- Muizenberg, Lakeside, parts of Retreat and Steenberg. Including everything from Heathfield up to Mowbray.
- The entire Sub-district 1: Hout Bay to Llandudno
- The entire Sub-district 2: Bishopscourt- Constantia- Tokai with the exception of parts of Tokai
- Fish Hoek, Glencairn, Scarborough, Misty Cliffs and Simon's Town.

[Awaiting further information, and a list of current and planned projects, from the line department]

6.3 Sanitation (Waste Water and Solid Waste)

6.3.1 Waste Water

Waste Water infrastructure includes the following components:

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

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

Table 23: Waste water capacity definitions

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 Southern district, the following areas have a **severe lack of capacity**:

- The entire sub-district 2 is experiencing severe lack of capacity;
- Most of the areas within sub-district 2 is experiencing severe constraints, including: Muizenberg, Lakeside, Kirstenhof, Heathfield, Bergvliet, Meadowridge, Claremont, Newlands, Rosebank, Mowbray and parts of Steenberg, Retreat, Kenilworth and Rondebosch;
- In the Far South the areas with severe lack of capacity include: Simons Town and Kalk Bay

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

- The entire Llandudo and parts of Hout Bay;
- Parts of Sunnydale, Capri, Simon's Town and Glencairn

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

- Fish Hoek, Noordhoek, Kommetjie and Ocean View
- Parts of Hout Bay
- Plumstead, Southfield, Kenilworth and parts of Steenberg, Wynberg, Heathfield and Retreat

6.3.2 Bulk solid waste

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

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

The information is based on data from 2019

Table showing existing bulk solid waste management infrastructure capacity status

Table 24: Existing bulk solid waste management infrastructure capacity status

Infrastructure type	Capacity status	Comment
Landfills and mechanical plant	The total banked airspace is >10 years in the city, but less than the international	Landfill sites are not area bound. The city only has 3 operational landfills. Due to Limited capacity at landfills, based on license conditions.

	benchmark of 15 years. Excludes regional landfill site of which the authority is under consideration.	All landfills have a limited life, per their specific license, and hence will close as the said conditions are met. Infrastructure, plant and equipment at all landfill sites are sustainable managed and compliant with License Authority regulated audits. The Regional landfill will receive most household/business waste via RTSs.
RTSs	The total transfer capacity available currently meets the demand capacity. Additional RTSs are being planned and included in the SWM IWM Plan. RTSs are primarily designed for the waste compactor fleet servicing household/businesses.	RTSs are strategically located throughout the city and hence do not necessarily coincide with the city area model. TRSs service large catchments, structured in terms of resource economic models. Due to the sensitivity of obtaining land/authority of these type of activities closer to high demand areas, they are in most instances built at landfill sites or on main roads to improve accessibility. More RTSs are however required as existing centralized landfills are closing. At an RTS the waste collected by refuse compactors are downloaded, re-compacted, containerized and then hauled to landfill sites. These new required additional RTSs will where practically possible be developed on landfill sites (operational or closed) or be strategically located on city owned land.
Drop-off facilities	Currently the city has adequate capacity in terms of drop-off floor area. The actual number of drop-offs are significantly less than what is required to improve accessibility.	The need for drop-offs closer to communities is a major challenge. The current spread is a drop-off within 7km of each household. Due to many economic and social factors communities find it difficult to effectively utilize these facilities. To improve accessibility and to decrease illegal dumping the planned spread of drop-offs should not be one within 3km of each household, with even a higher density in poorer communities. It is extremely difficult to find suitable land that is compliant with city policies and by-laws, additional to the resistance from adjacent or close-by property owners. Pressure is on SWM to close existing facilities as development is allowed closer to the same.

Buy-back centers/ recycling facilities	Nil	There is a huge desire to develop buy-back centers or recycling facilities, to be operated by SMME's, CBO's, NGO's or the city in poorer communities throughout the city. Whilst the land requirement is <1000m², it is difficult to secure city land within communities that are compliant with city policies and bylaws. Support for these type of facilities is increasingly provided by Councilors and lately also from City Urban Renewal and Sub Councils.
Fleet - Collection vehicles	Adequate number of collection compactors	Replace and supplement Collection fleet in accordance with city growth and service requirements (different communities, local conditions, different vehicle types). Ensure collection fleet has an average replacement age of < 7 years
Fleet - Workshop	Adequate capacity	City operates own dedicated workshop for servicing at Hillstar. Emergency repairs & maintenance, tyre services and overhauls are outsourced.
Cleansing vehicles	Lack in capacity of the correct vehicles, heavy plant and equipment	Replace and supplement Cleansing fleet in accordance with city growth and service requirements (different communities, local conditions, different vehicle types). Ensure cleansing fleet has an average replacement age of less than the 5 years, 7 years and 12 years respectively. The number of vehicles need to increase significantly, also the type of vehicles in use., such as mechanical cleaning equipment, loaders and tippers.
MRFs	Lack of capacity in the city	Growth in recycling is hampered due to the unavailability of MRFs. The city has developed a MRF in Kraaifontein and 2 more are planned for development, at Coastal Park and at ARTS. The city will supplement these larger MRFs with mini-MRFs to increase capacity, to improve accessibility by all and to create SMME opportunities. Current larger drop-offs are earmarked for this added function.
Alternative treatment technologies	No capacity	In terms of legislative requirements, the city is obliged to meet stringent diversion targets for several waste

		types. Organic and food waste diversion is a major challenge that falls in this category for alternative treatment technologies. Best technologies, required infrastructure and business requirements are being investigated in an effort to identify the basic requirements. Where practically possible existing land at landfills or RTSs will be used to host the new integrated waste infrasytructure.

6.4 Stormwater

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

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

- Piped networks (excluding provision for minor drainage system associated with road provision)
- Culverts
- Open channels, lined and unlined, including watercourses
- Detention and retention facilities
- Energy dissipation structures
- Water quality management facilities
- Outfalls to watercourses or the sea
- Storm surge and flood protection infrastructure
-

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

6.5 Key Opportunities and Constraints

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

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

Figure 37: Infrastructure - Areas with adequate or spare capacity

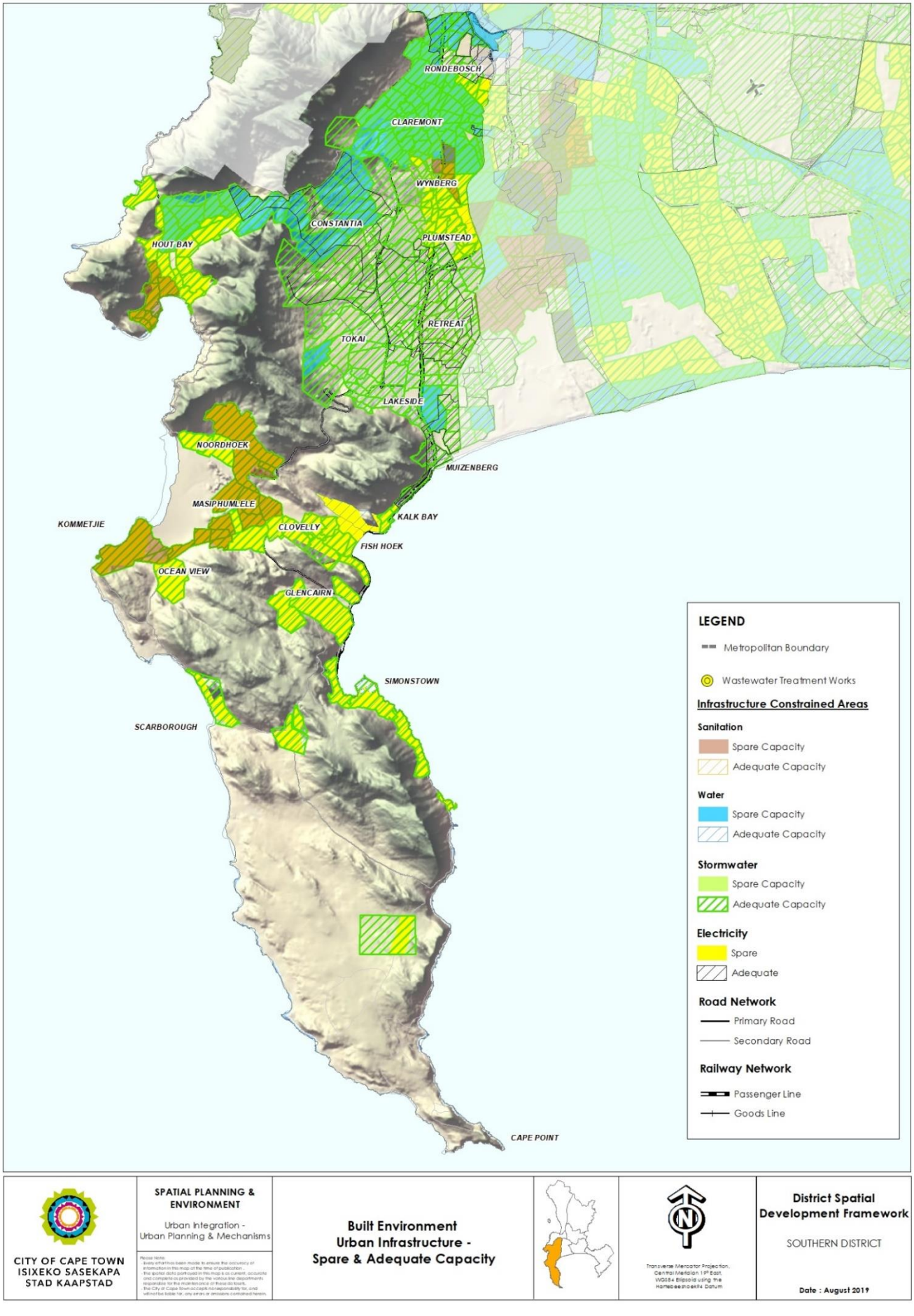
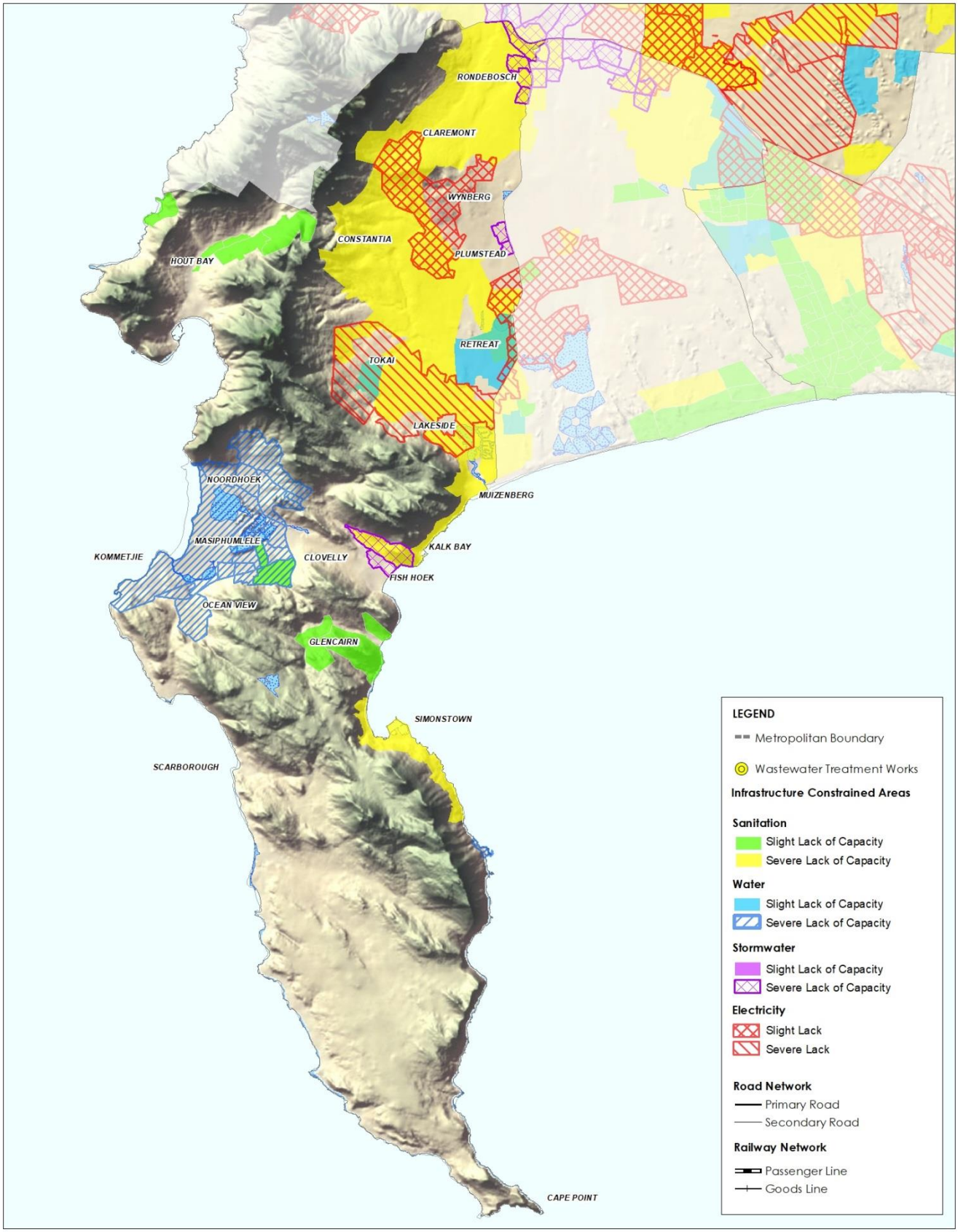


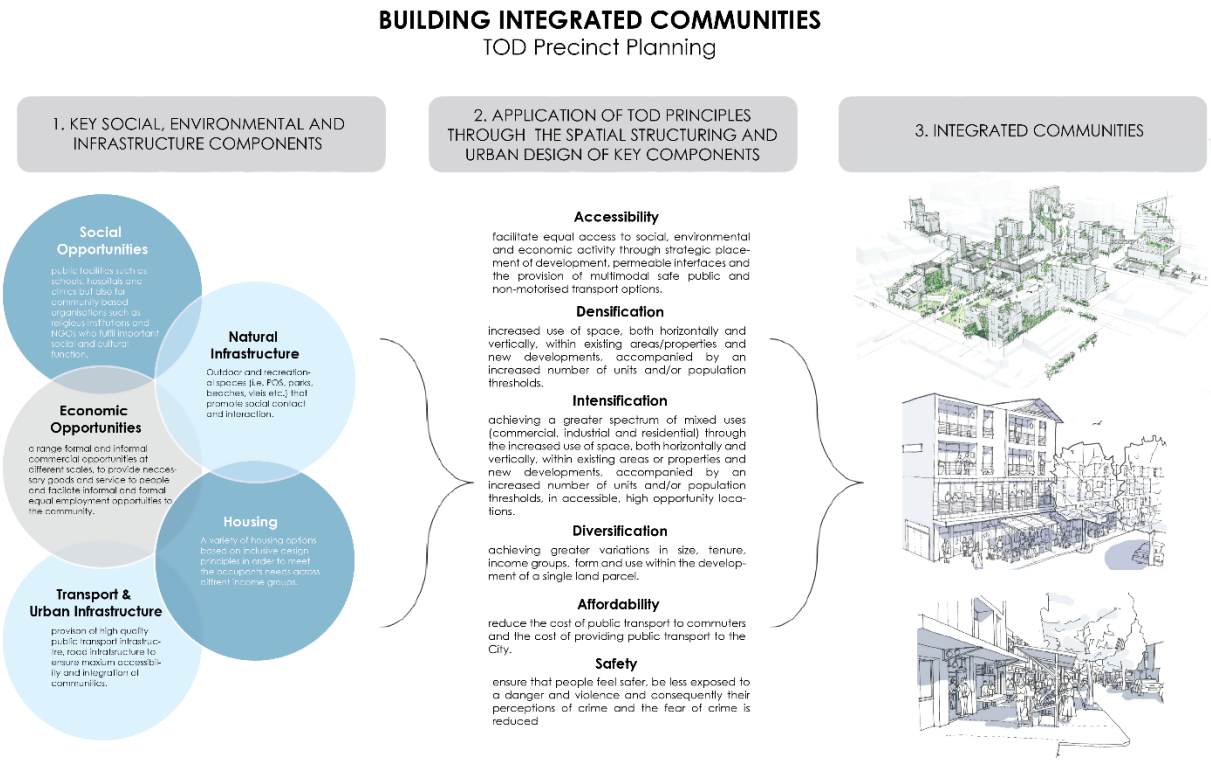
Figure 38: Infrastructure - Areas with slight & severe lack of capacity



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 **Error! Reference source not found.** 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 39: Building Integrated Communities



7.1 Housing Overview

7.1.1 Housing typology

The majority of structures in this district are formal dwellings (58.6%), compared to 11.6% informal dwellings, which includes both informal backyarders and informal settlements. Flats and freestanding houses make up the majority of the formal housing typologies within the district. The district also has a large number of semi-detached houses (5107-4.8%). See Table 6 and 7below for a detailed breakdown of dwelling typologies. The spatial distribution of the various formal typologies is shown in Figure 10 below.

Figure 41: Dwelling typologies in the Southern

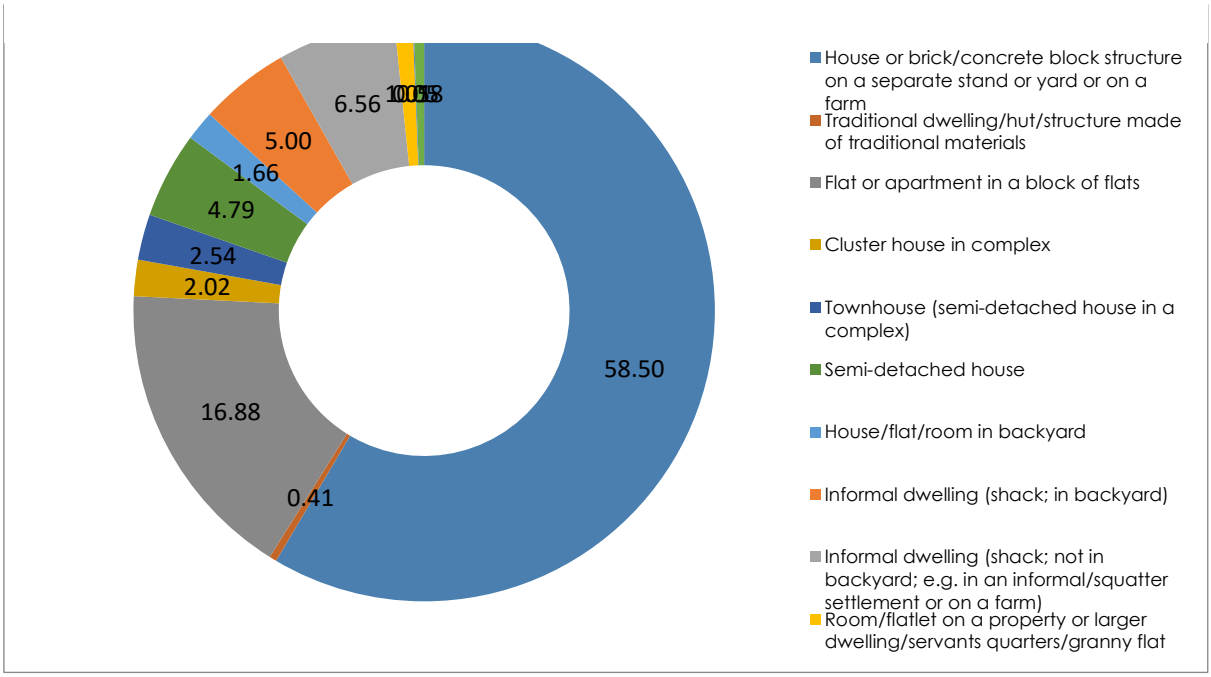


Figure 40: Dwelling Typologies pie chart

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

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

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

The residential informal structures in the Southern District are shown in Figure 10. These are –based on the 2017 informal door and roof count. Informality is scattered across the district however there are certain areas where this informality is much higher than others, these high numbers of informality typically occurs in the informal settlements of Imizamo Yethu, Masiphumelele, Red Hill and Hangberg. There are also pockets of informality in areas such as Wynberg, Retreat, Ocean View and Diep River.

Figure 42: Spatial distribution of dwelling typologies, Southern District

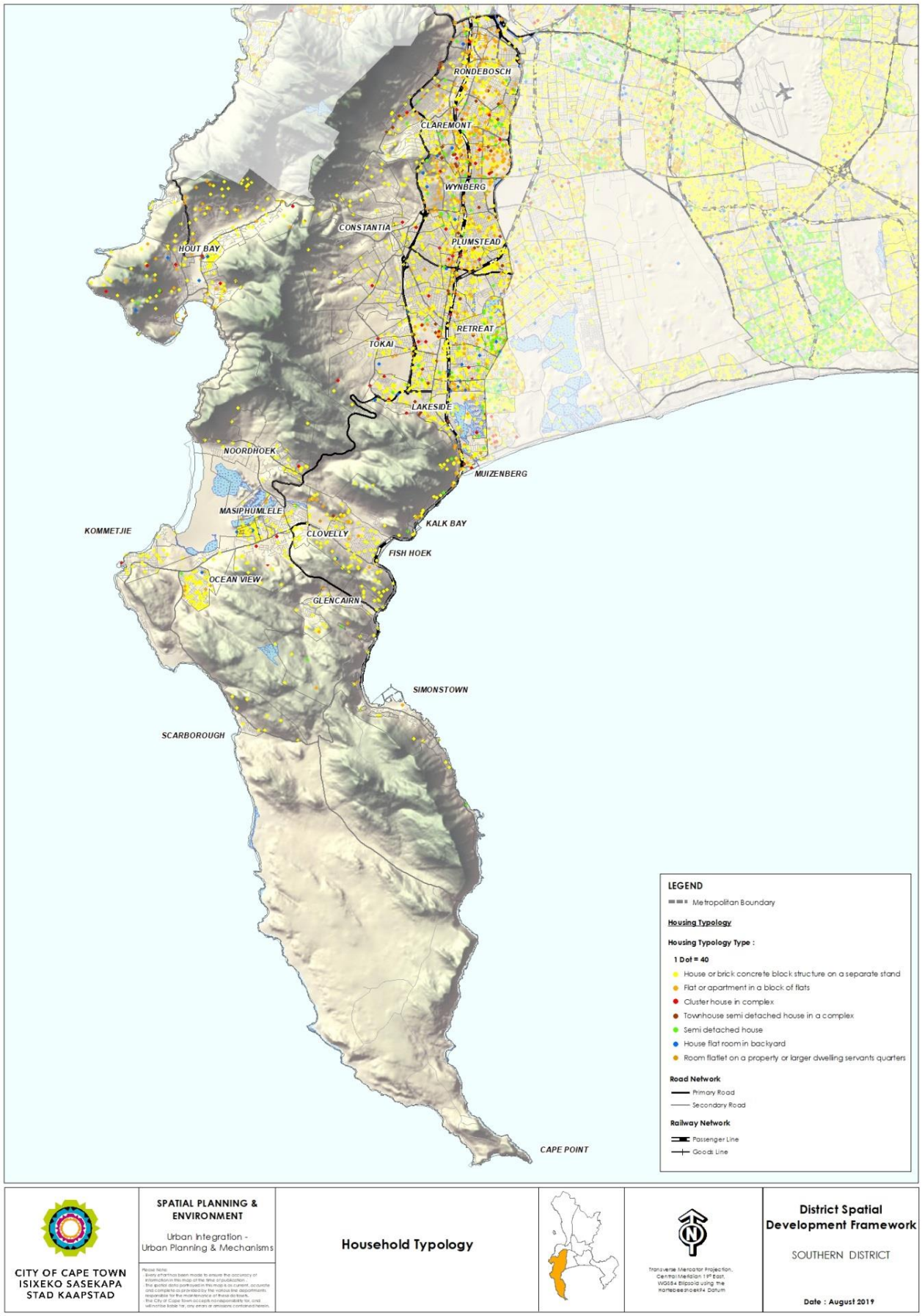
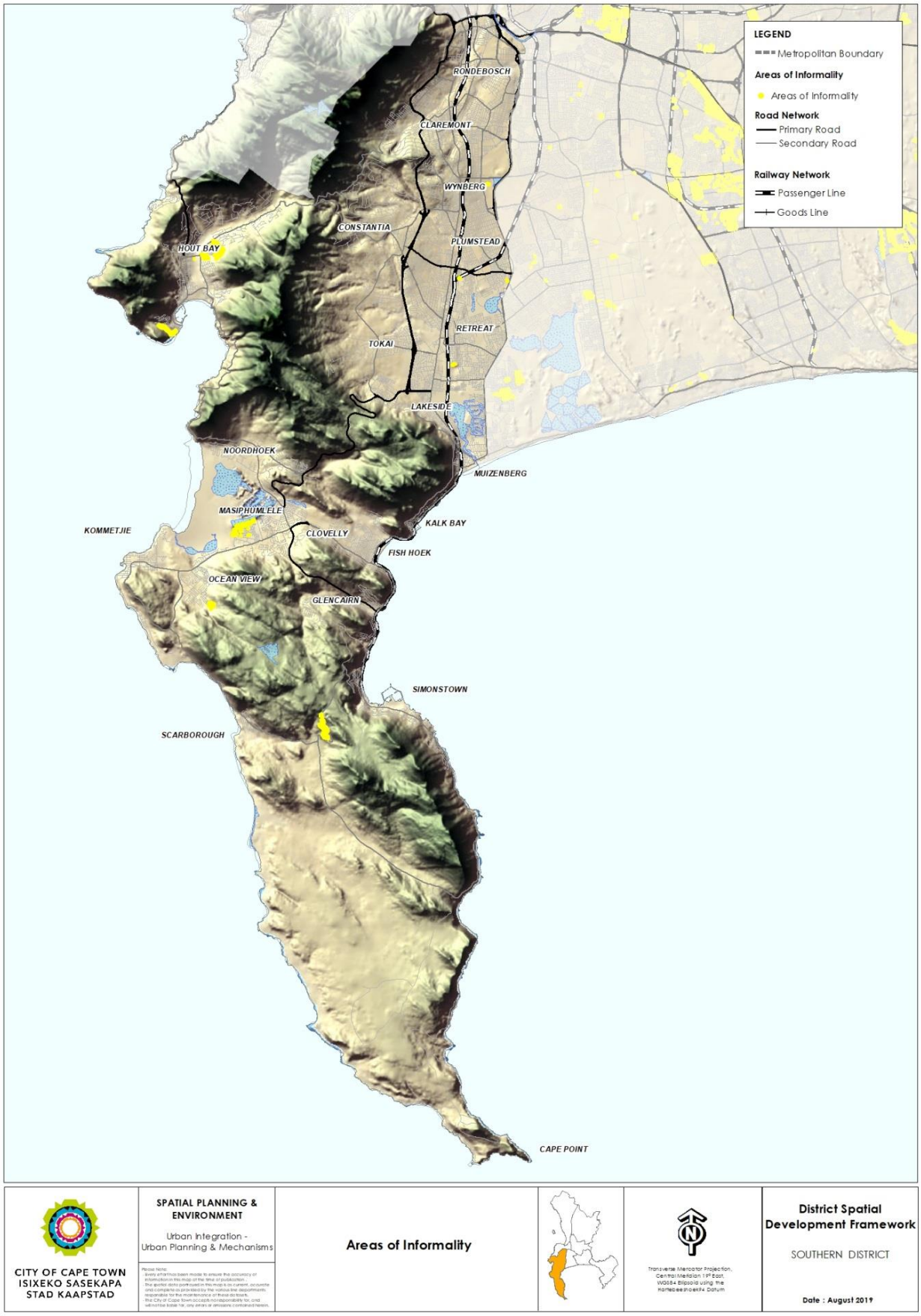


Figure 43: Distribution of housing typologies in the Southern District



Given that freestanding structures are dominant; it is difficult to see a clear area where another typology is prevalent. Instead, household typology seems to be fairly scattered among sub-places except for the informal settlements where informal dwellings are dominant.

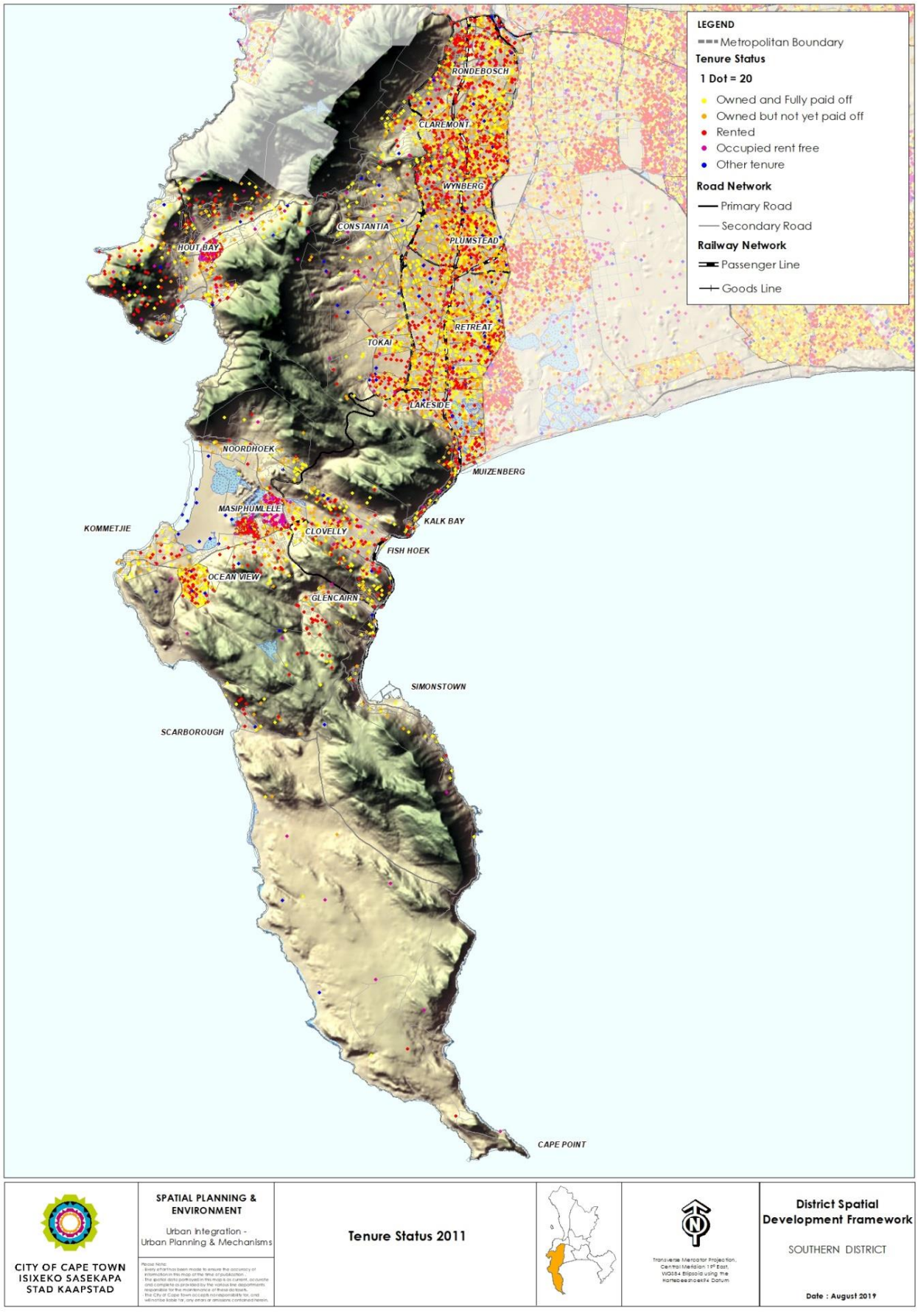
7.1.2 Tenure Status

Based on census 2011 data on the tenure status of the Southern District, the majority of the households are in properties they own (±55%) with ±36% households renting. Interestingly the informal settlement of Masiphumelele has the highest number of rented households which stood at 3691, approximately 747 more than Claremont which followed with 2944 households being rented. Retreat has the highest number of owned and fully paid off households at 2487, followed by Plumstead at 2194 households. Plumstead also has the highest number of owned but not fully paid off households at 2361 and is closely followed by Claremont at 2142 households.

Table 25: Southern District tenure status

Tenure Status	Number	%
Owned and fully paid off	33687	31.6%
Owned but not yet paid off	25916	24.3%
Rented	37840	35.5%
Occupied rent-free	6984	6.5%
Other	2237	2.1%

Figure 44: Tenure status- Southern District



The distribution of tenure status of households in the Southern District is shown in Figure 12.

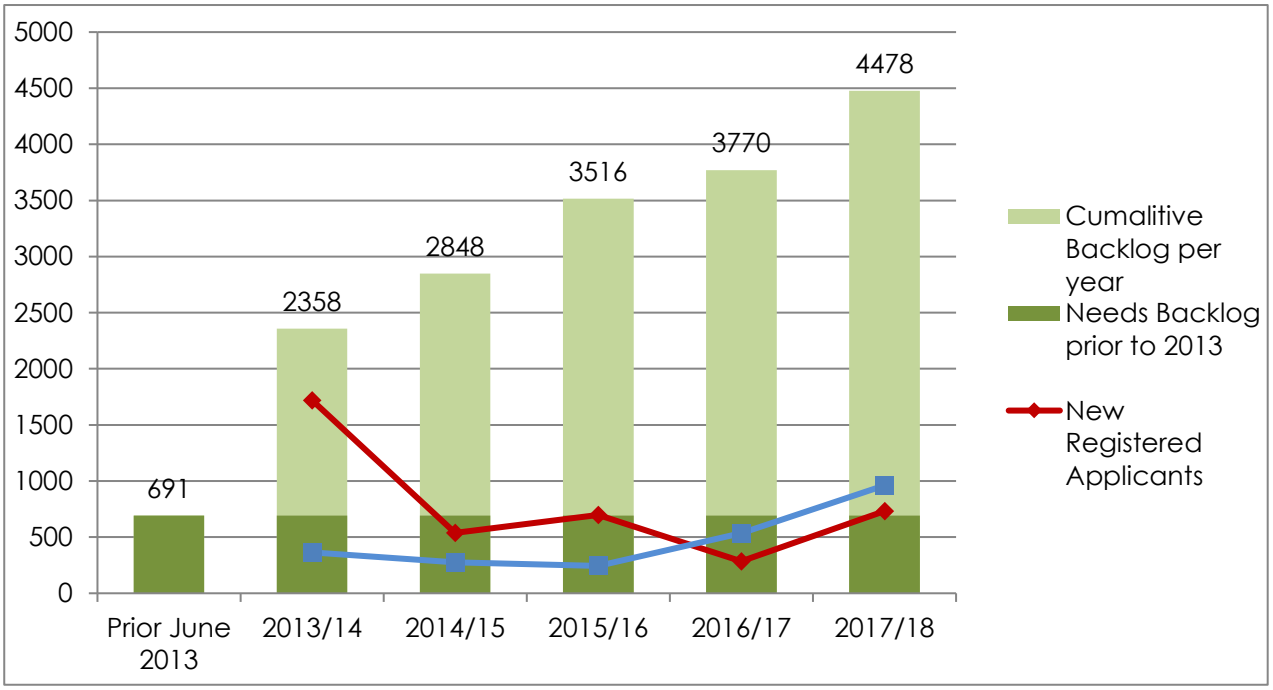
- Most owned and fully paid up houses are in Retreat

- Plumstead has the most houses owned but not yet paid off
- Masiphumelele has the highest number of rented dwellings (3691), followed by Claremont (2944) and Wynberg (2520).
- In the occupied rent-free category, Imizamo Yethu has the largest number of dwellings (2466) followed by Sunnydale (1404) and Masiphumelele (399).

7.2 Housing Demand

Housing demand in the Southern District is assessed using a proxy[16] of the number of informal structures in the District, as well as the number of people that have registered their need for housing on the City's Housing Needs Register. NOTE: People who have registered their need for housing might also be living in informal settlements in the area.

Figure 45: Housing database



There were 8492 informal dwellings in the District, according to a 2017/18 roof count by the City of Cape Town. Most informal dwellings were located in Masiphumelele and Imizamo Yethu. The Southern District District has the second lowest number of informal dwellings in the City.

By the end of 2018, 8328 people had registered their need for housing on the City's Housing Needs Registry. This accounted for 2.9% of all people who have registered their need across the City. NOTE: Anyone is able to register their need for housing on the Housing Needs Register, however many of the people registered might not qualify for housing, or their circumstances may have changed over time, thus the data needs to be treated with caution. A background check of beneficiaries registered on the database is only done at project inception.

The population growth and increase in households in the Southern District suggest that housing demand will continue to grow in the area. This is particularly the case in Masiphumelele and Imizamo Yethu – both areas that have seen increases in population growth - are areas with large numbers of informal dwellings.

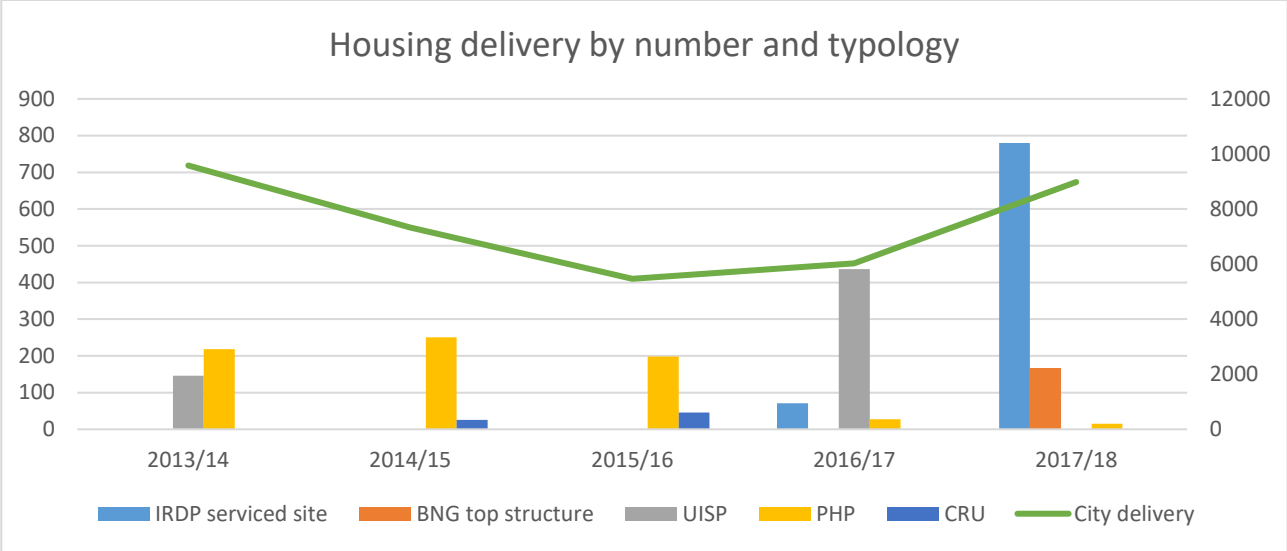
Of concern is the increase in the number of households in the Southern District with no monthly income. These individuals are likely to be living informally, and would rely on the state to provide formal housing.

[16] A comprehensive picture of housing demand showing all income levels in relation to housing stock at various prices, is not included in this section.

7.3 Housing Supply

7.3.1 Constructed/Delivered

Figure 46: City's Human Settlements delivery data, 2013/2014 - 2017/2018



Over the 5 year period from 2013/14 to 2017/18, a total of 2380 housing opportunities were created in the Southern District.

This included the following: 851 Integrated Residential Development Programme (IRDP) serviced site beneficiaries (<R7000monthly household income); 166 Breaking New Ground (BNG) houses (built in Masiphumelele and Dido Valley) transferred to housing beneficiaries on the City's Housing Needs Register who earned R3500 and below; Some 582 households were relocated to better sites within Hangberg, Imizamo Yethu and Masiphumelele as part of the Upgrading of Informal Settlements Programme; Over the same period, 709 top structures were developed for households as part of the People's Housing Process, in Ocean View and Masiphumelele. This programme allows households to be actively involved in decision-making around the housing process and product, and caters for households earning R3500 and below; Finally, 72 GAP housing units were developed in Hangberg, which catered to households earning R15 000 and below. This income bracket has since been increased to R22 000.

While government is a key provider of housing households earning lower incomes – particularly those who earn below R3500 – the private sector plays a crucial role in the provision of housing at all income levels.

The City's housing programmes have not been able to keep up with housing need expressed by registrations on the Housing Needs Register. As indicated above, in the period 2012/13 to 2017/18 some 2380 housing opportunities were developed in the Southern District. However, over the same period some 3972 additional individuals in the Southern District expressed their need for housing by registering on the City's Housing Needs Register, over and above the 4356 that were already registered in the District. This means that while housing delivery increased by an average of 14% per annum over this period, the number of people registered on the City's Housing Needs Registered increased by an average of 62% per annum. The City is thus failing to make headway in reducing the registered housing need – with housing need continuously outstripping housing supply.

7.3.2 Pipelined, Planned and in Construction

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

Limitation within Housing Demand and Supply data:

Needs Summary:

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

Supply Summary:

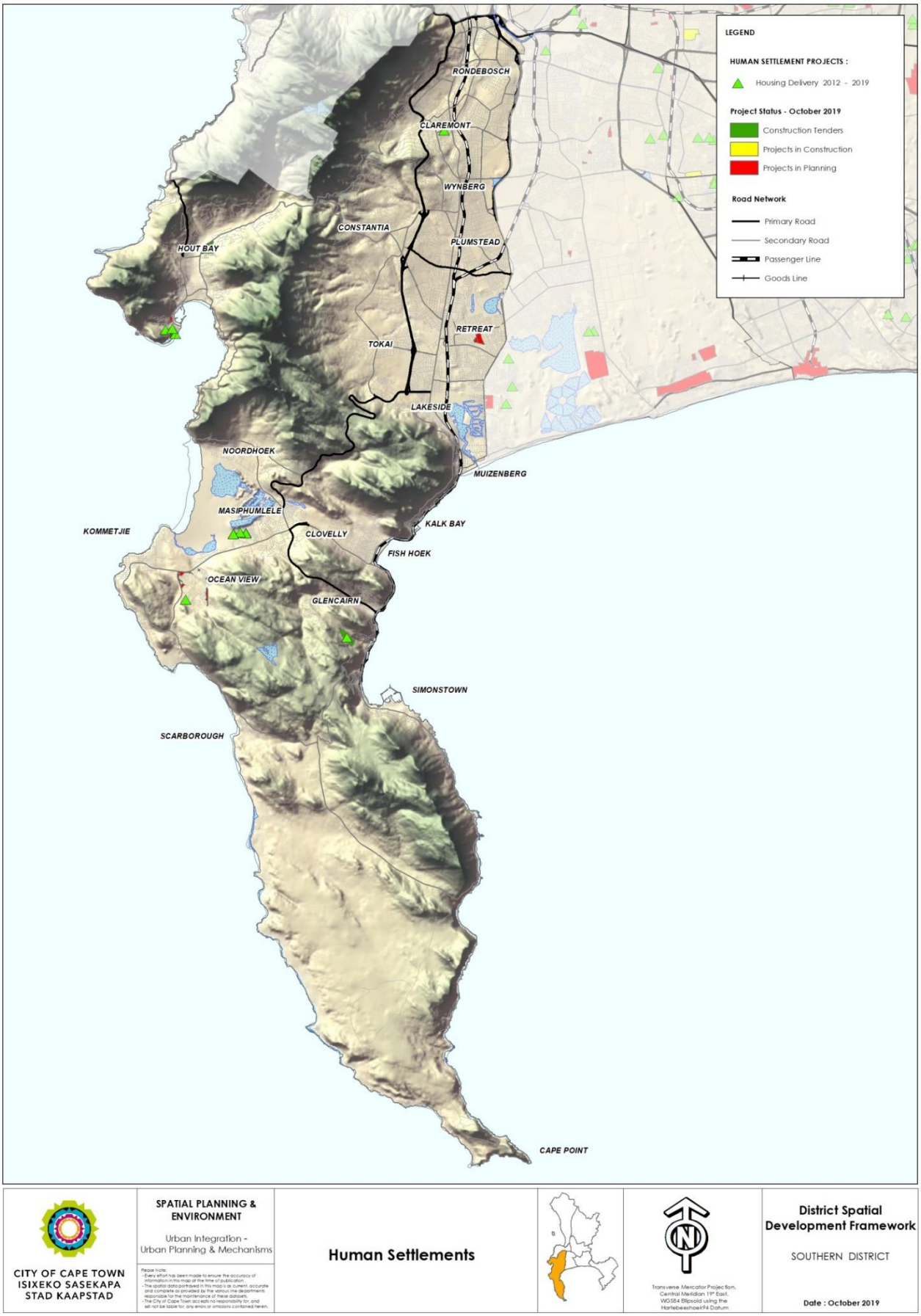
- UISP – persons who are beneficiaries within a Upgrading of Informal Settlements Project are not necessarily registered on the City's Housing Needs Register as this is not a mandatory provision as per the prescripts of the National Human Settlements Policy. The idea is to upgrade the identified Informal Settlements regardless of a person's eligibility criteria. A person's eligibility criteria is however taken into account during the transfer of ownership of a services site and/or top-structure.

- GAP – person who are beneficiaries within the GAP market are not necessarily registered on the City's Housing Needs Register. Eligible persons apply directly to the developer to purchase the property and will apply directly to the Western Cape Department of Human Settlement for the Financed Linked Individual Subsidy Programme (FLISP) subsidy.

- Land Restitution/ Institutional - persons who are beneficiaries within this housing programme are not necessarily registered on the City's Housing Needs Register.

- Social and rent to buy - persons who are beneficiaries within this housing programme are not necessarily registered on the City's Housing Needs Register as this housing programme caters for households with an income up to R15 000 per month. Prospective tenants apply directly to the respective Social Housing Institutions for rental vacancies.

Figure 47: Status of Human Settlement projects



7.4 Key Opportunities and Constraints

7.4.1 Generic constraints:

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

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

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

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

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

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

7.4.2 Local constraints and opportunities:

Constraints

Demand for state-assisted housing remains a key, and indeed crisis, problem in and around low income settlements in the district, and Masiphumelele and Imizamo Yethu in particular. This trend, together with a proportional increase in household numbers, as well as an increase in households earning no income suggest that government housing interventions need to be appropriate, targeted, and integrated with other socio-economic imperatives and state-assisted responses .

There is an existing threat of land invasion and encroachment on to recreational, public open space, and environmentally sensitive and/or high risk (e.g. floodprone) development areas due to high demand. These areas are incredibly dense, which makes utilising in situ upgrading through the Upgrading of Informal Settlement Programme a challenge. The City should therefore concentrate on enabling formalisation by the local community, and encourage the development of an affordable property market in the area.

Opportunities

Mixed-income developments, which could have elements of social or GAP housing should be encouraged in identified densification and intensification areas in the district that are accessible by public transport. This is primarily the Main Road corridor between Mowbray and Muizenberg, and could include proportions of medium and high rise developments where potentially increased development rights are potentially possible as a trade-off. This, however, is not likely to amount to many units in total.

Nevertheless, the rapidly increasing demand for student accommodation, as well as the steady move towards smaller residential units and flats, provides opportunities for increasing the range of income levels targeted within this priority corridor area. Furthermore, encouragement and support for more intensive development in hitherto under-performing property market areas, such as in Wynberg, also represent an opportunity for widening the range of housing opportunities in this area (as has happened to a limited extent already in Wynberg).

A relative opportunity has arguably arisen around key housing problem areas of Imizamo Yethu and Masiphumelele, thanks to the subdued property market and comparatively depressed property prices and reticence of landowners to develop vacant land they own in these areas, where government could acquire this land for future development for a lower income target market (re-primarily GAP housing).

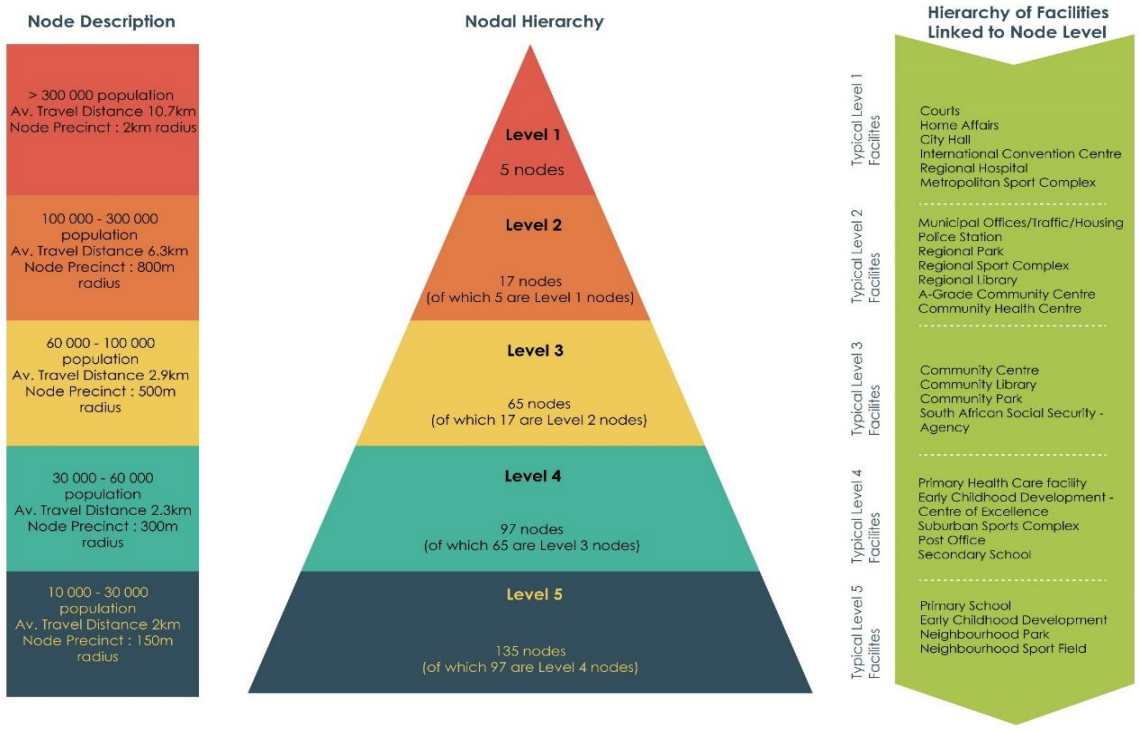
8 PUBLIC FACILITIES

8.1 State of Supply and Demand

The following analysis and proposals on Community Facilities are informed by the updated Community Facility Guidelines and Standards for Facility Provision reviewed in 2020. Each facility has a set of planning standards for providing facilities which have been articulated by line departments, work-shopped and agreed to with key stakeholders. The facilities guidelines and standards were incorporated into a modelling exercise that sought to understand sufficiency or insufficiency in the distribution of community facilities and build a hierarchy of civic clusters (a network of nodes with community facilities) across the City illustrated in Figure 45.

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

Figure 48: Conceptual Hierarchy of Community Facility Nodes/Civic Clusters



8.1.1 Analysis

Map 1 illustrates the distribution of existing facilities and highlights sufficiency/insufficiency in the form of a heat map, neighborhoods that fall within areas shaded red, orange and yellow are the most underserved areas in the district. The Southern District is fairly well served with community facilities compared to other districts, however the Retreat/Tokai node has a need for community facilities. The

Retreat/Tokai node includes the following suburbs in its catchment: Lotus River, Muizenburg, Grassy Park, Seawinds, Pelican Park, Retreat and Tokai.

Figure 49: Distribution of existing facilities within Southern District

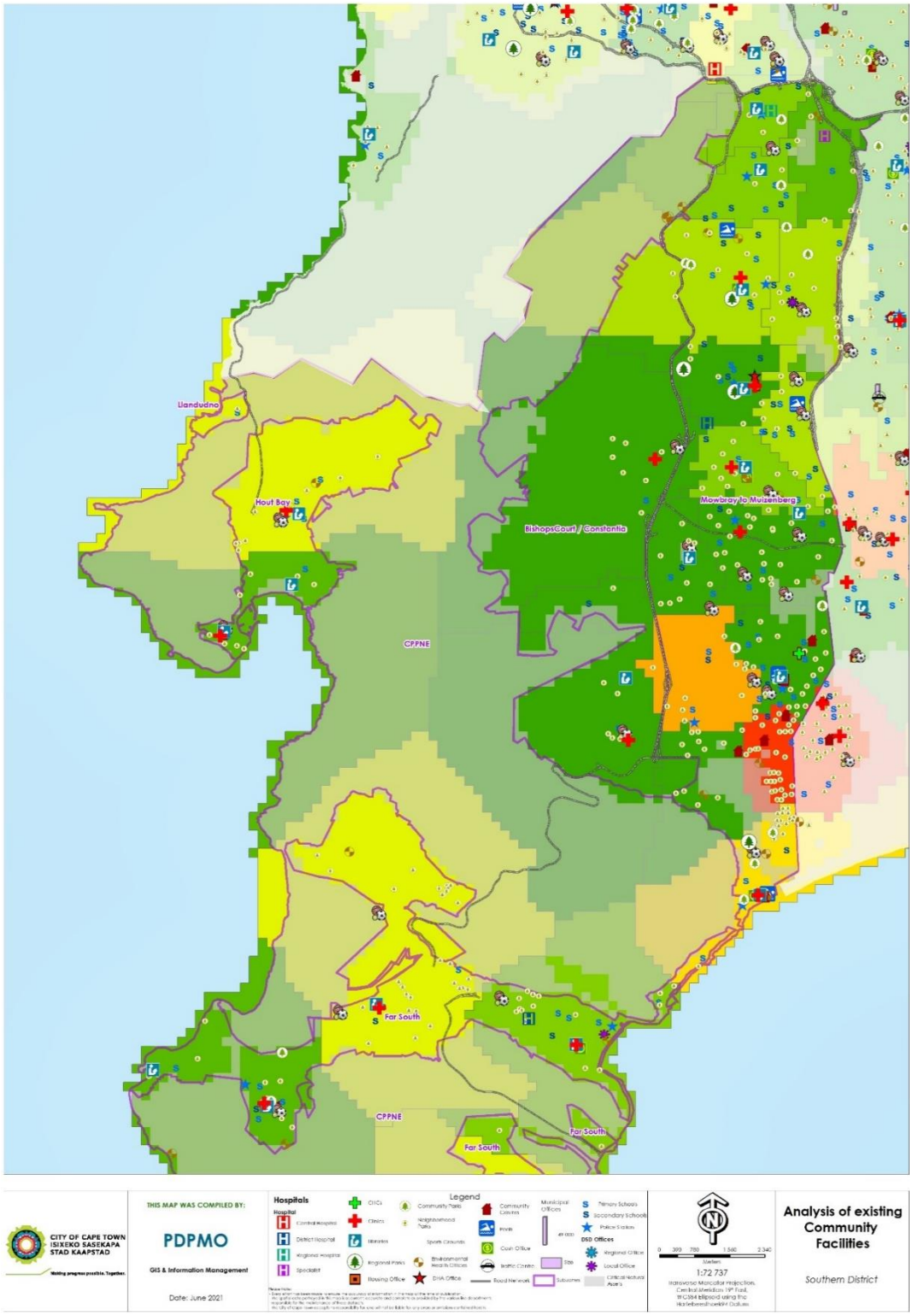


Table 1 show results generated from a modelling exercise that was undertaken to identify nodes/ service catchment areas of need and the type of facilities required in the district in order to meet the needs of the population in 2020 and 2040 taking into account sector specific assumptions, guidelines and standards for facility provision. It can be seen in both the 2020 and the 2040 outlook that there is

a need for community facilities in the Retreat/Tokai node and there is a significant need for sporting facilities.

Table 26: Top Areas of need in the Southern District for 2020 and 2040

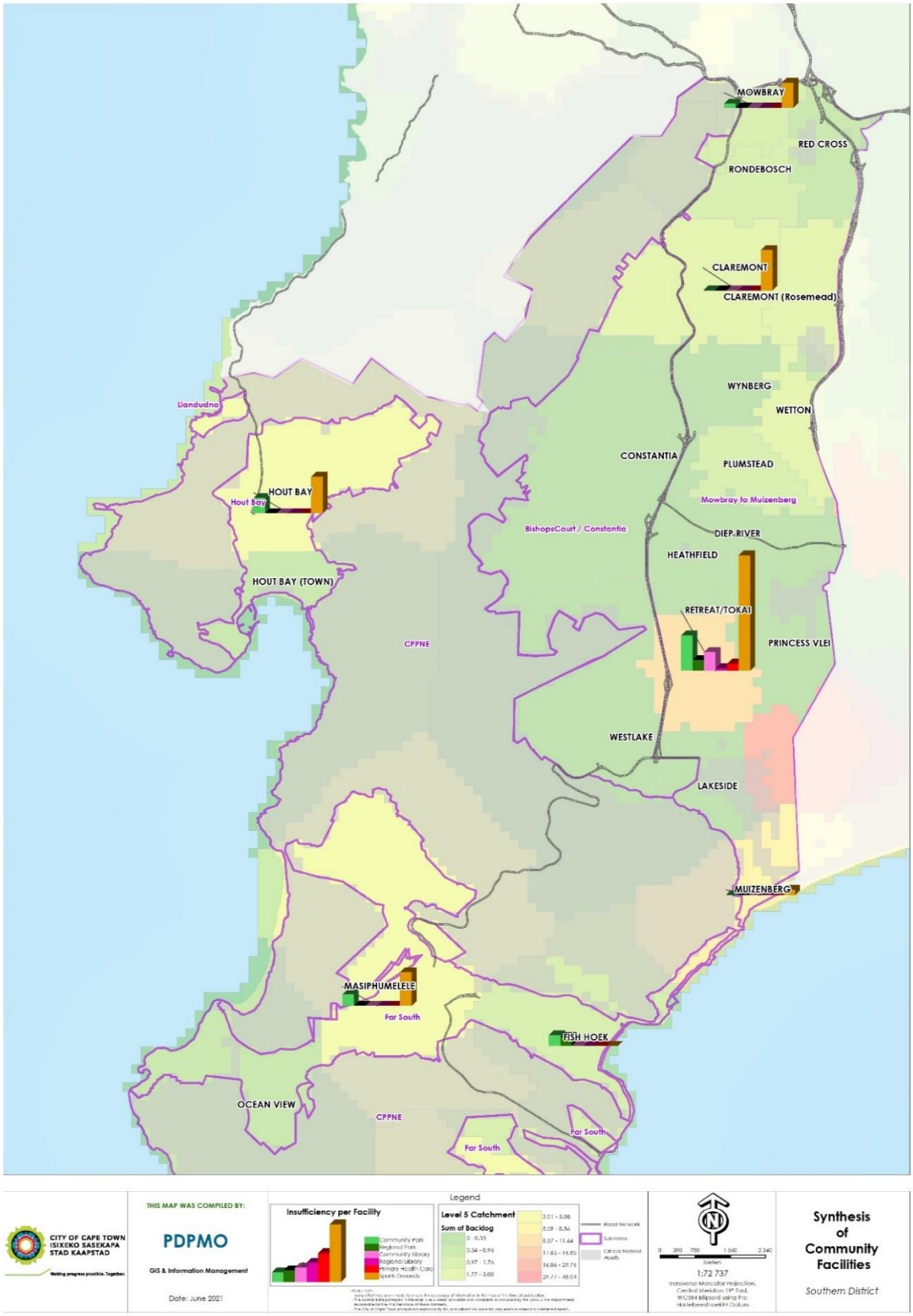
	2020			2040		
Facility Type	**Node/Area**	**Population Demand**	**Facilities Required ***	**Node/Area**	**Population Demand**	**Insufficient Supply***
Community Centres	• Plumstead	491 230	1.4	• Plumstead	631 680	1.4
Education	**Primary Schools** n/a	48 774(PS learners)	-17 139(number of PS learners)	**Primary School** n/a	60 394(PS learners)	-27 829(PS learners)
	Secondary School n/a	25 677(SS learners)	-3 940 (number of SS learners)	**Secondary School** n/a	33 518 (SS learners)	-9 518(SS learners)
Libraries	**Community**	491 230	1.1	**Community**	631 680	2.7
	Regional	317 749	0.1	**Regional** • Retreat/Tokai	758 891	1.2
Primary Health	**Clinic** • Retreat /Tokai	286 107	0.4	**Primary Health** • Retreat/Tokai	350 949	0.9
Parks	**Neighborhood**	424 396	**-**28.6	**Neighborhood**	541 599	-53.0 (ha)
	Community • Retreat /Tokai	491 230	-18.4	**Community** •	631 680	-26 (ha)
	Regional • Retreat /Tokai	554 710	-9.3	**Regional** Retreat/Tokai	758 891	-16.7 (ha)
Sports grounds	n/a	491 230	-17.9	n/a	438 138	-31.8 (ha)
	*** Equivalent to No. of Facilities / No. of unserved population/ha of land required**			*** Equivalent to No. of Facilities** Positive values indicate an over provision; Negative values indicate a shortfall relative to the standards		

Map 2 unpacks the detail related to insufficiency, specifically reflecting facility insufficiency or need in relation to the nodal hierarchy. It should be noted that this is based on the modelling and

interpretation of data (current supply of facilities, population number, facility standards, distance) specifically for the following facilities: Neighbourhood Parks, Community Parks, Regional Parks, Community Library, Regional Library, Primary Health Care, Sports Grounds, Schools (Primary & Secondary). It can be seen from the map that the Retreat/Tokai node is the top area of need in this district with a significant need for sports facilities.

The insufficiency has been depicted through bar graphs that highlights the number of facilities needed per nodal catchment area. However, the education facilities have been omitted from the bar graphs as the needs are expressed through the number of learners requiring access to education facilities and schools are provided at different scales namely small, medium and large schools.

Figure 50: Facility need Southern District

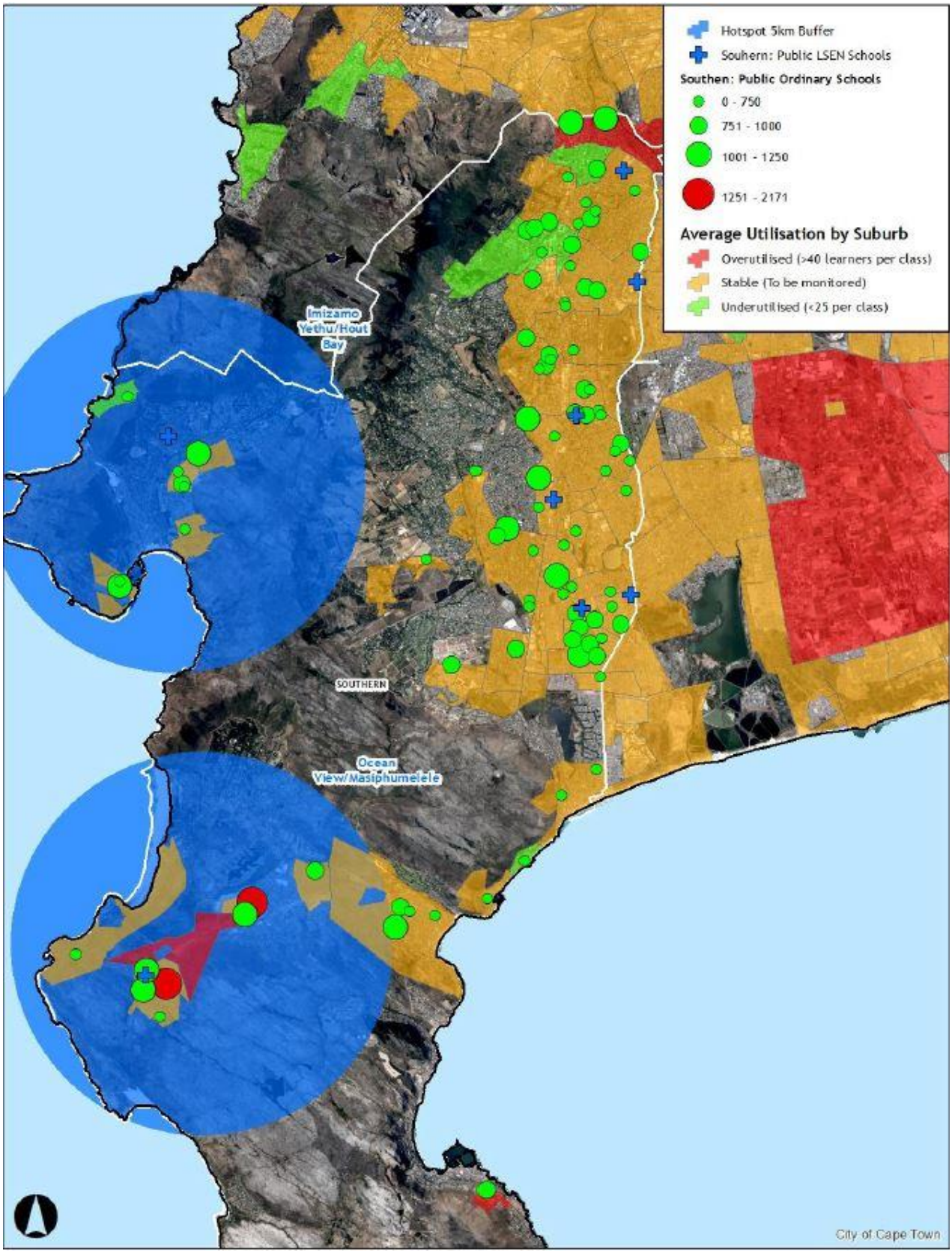


8.1.2 Education

The Western Cape Education Department has identified 6 hotspot areas across the city based on the current service delivery challenges and provision of education services. The aim is to stabilize these areas from an overall education provision perspective through implementation that is directed in a spatially targeted manner that ensures that the demand/need is met at a provincial level. These areas are: Dunoon, Bloekombos/Wallacdene, Delft/Mfuleni, Imizamo Yethu/Hout Bay, Ocean View/Masiphumelele and Lwandle/Nomzamo

The overall Southern District is mainly characterised by 2 parts, schools along the Main Road corridor and Imizamo Yethu/Hangberg/Ocean View/Masiphumelele areas. While the schools along the Main Road corridor is considered 'stable', it is monitored from a utilisation aspect and expansion projects are geared towards where it is required. Masiphumelele and Hangberg are faced by education challenges (various levels) due to the lack of land. Therefore, the provision of specific education programmes is aimed at being located in accessible locations which can benefit the wider learner groups.

Figure 51:Title???



8.1.3 Medical

These encompass all public clinics, district and regional hospitals and private hospitals in the city.

In 2011 the Southern District had approximately 16 operational Primary Health Care (PHC) facilities. Numerous hospitals of district importance are located in this zone, including the Mowbray Maternity Hospital, Victoria Hospital, Claremont Medi-Hospital and Kingsbury Hospital, Wynberg Medi-Hospital, 2 Military Hospital, and Constantiaberg Medi-Hospital.

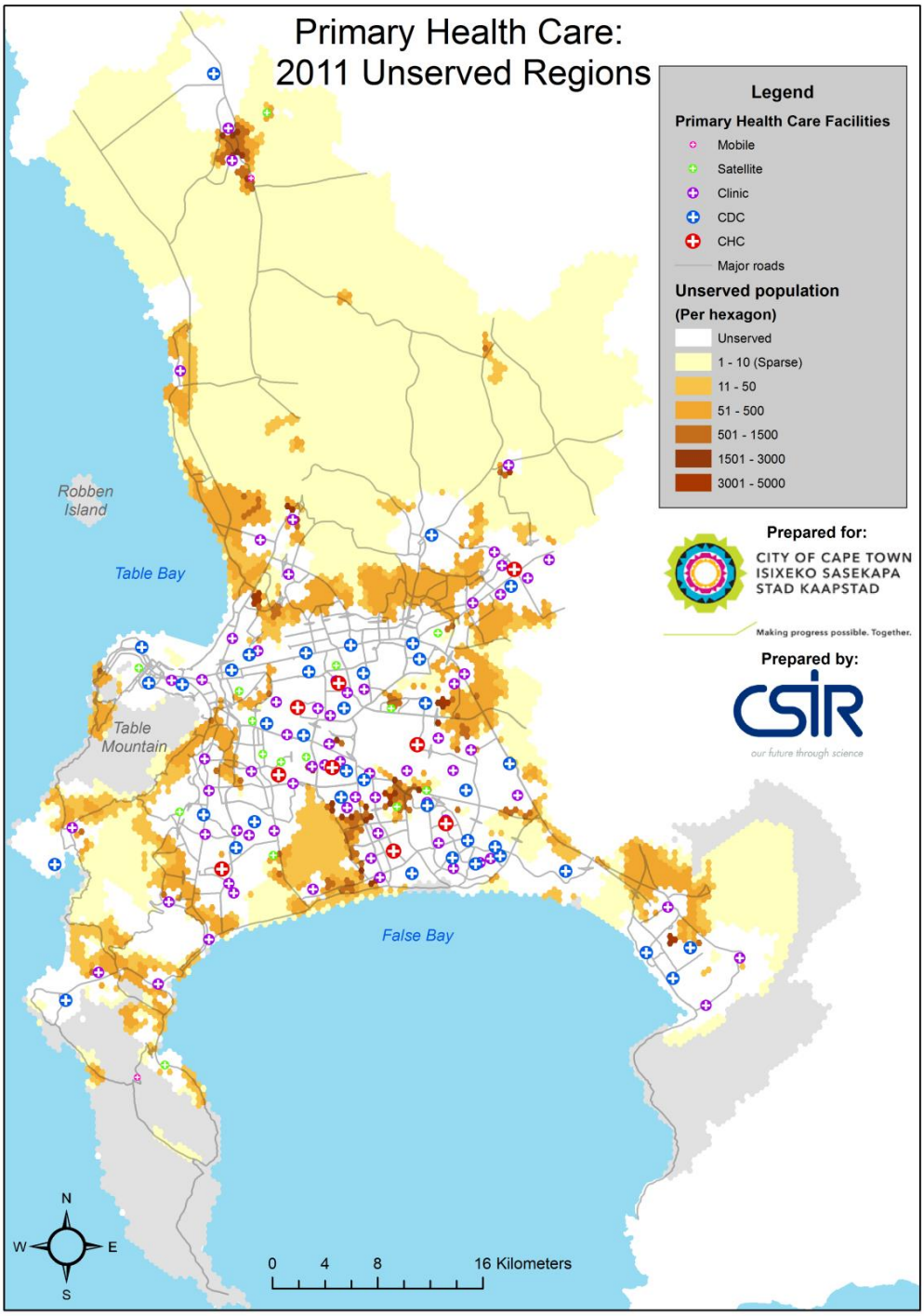
The table below indicates the number of people served and unserved per **Health District** for the entire City of Cape Town. There is a clear indication that facilities are very well distributed in the City and that service problems are more likely related to issues of service capacity than to travel distance. However Metro SE, growth areas and periphery of City experienced limited capacity in 2011.

Table 27: PHC served and unserved regions

PHC 2011 Served and Unserved Regions					
Health District	**Served within 1km**	**Served within 2.5km**	**Total pop. served < 4km**	**Unserved at 2.5km**	**Unserved at 4km**
Eastern	124591	293590	340318	123921	77193
Khayelitsha	137005	365782	380892	23584	8474
Klipfontein	141920	254875	304550	53421	3746
Mitchells Plain	176769	355486	408558	111255	58183
Northern	77501	131893	164707	86074	53260
Southern	104918	233113	298098	122325	57340
Tygerberg	157084	414251	450234	45512	9529
Western	96657	192573	218930	143207	116850
Percentage	**34%**	**76%**	**87%**	**24%**	**13%**
Grand total	**1016444**	**2241562**	**2566286**	**709299**	**384574**

Thus without any change to the capacity of current facilities, 76% of the dependent population can be accommodated within system based on a 2.5km access distance, while 87 % can be served within 4km from their place of residence.

Figure 52: 13% unserved within 4km.



GAPS:

1. Disaggregation of the above information for the District
2. Access and capacity analysis per facility
3. Building programme since 2012
4. Current programmes for upgrades / enlargement of existing or new facilities;

Different types of facilities

Figure 53: Health care facilities

8.1.4 Community/Social Facilities

These encompass all public and communal facilities in the city including: libraries, halls, community centers, post offices, magistrate courts, fire stations, police stations, municipal offices and cemeteries.

The district is generally also very well served with lower order community facilities (including police stations, community halls, libraries, courts and post offices), although there are one or two exceptions which have emerged as a result of very rapid, and unplanned, population growth (eg. Imizamo Yethu, Masiphumelele and Red Hill). These facilities are generally clustered at accessible locations.

8.1.4.1 Municipal Halls

In 2011 the Southern District had approximately 17 municipal halls which included both Civic Centre and Multi-purpose centres.

The following key assumptions relating to this section were made:

- Demand: Entire population.
- Access distance: 5km.

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 28: Service Stats 2011: Distance and capacity constraints: within 5km & current supply

District	Served	Unserved	%Served	Total population
Southern	245 138	41 267	85.59%	286 406

The table above illustrates that the Southern District has sufficient supply of municipal halls across the district with more than 85% of its population being served by municipal halls within a 5km distance.

8.1.4.2 Fire Stations

There are six fire stations within the Southern District which includes Wynberg, Lakeside, Constantia, Fish Hoek, Simons Town and Hout Bay. These fire stations serve the entire district. The table below indicates the 2011 area and population served per fire station.

Table 29: 2011 area and population served per fire station

Station Name	Station #	Area served (ha)	Population served	% of population
Wynberg	6840	3800	110204	30.1%
Lakeside	2384	6680	137845	3.76%
Constantia	6458	5080	32361	0.88%
Fish Hoek	4127	5320	47241	1.29%
Simons Town	2595	2920	6220	0.17%
Hout Bay	5908	4440	33060	0.90%

Wynberg Fire station serves the largest percentage of the population across a relatively small area when compared to the rest of the fire stations. This is generally due to the high population densities within the Wynberg fire station's service area.

The table below indicates Fire stations service statistics for 2011 at a metropolitan level, this needs to be disaggregated per district

Table 30: Fire stations: 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**

The above table shows that 89% of the metro area, representing 95% of the population, is served by fire stations.

8.1.4.3 Libraries (Community and Regional)

In 2011 there was 18 Community and 5 Regional Libraries within the Southern District. Key assumptions regarding libraries (Community and Regional) include:

- The entire population of the City of Cape Town was deemed to be users of public library services;
- Larger facilities preferred up to a maximum of 120 000 thresholds per facility;
- Distance limit set at 5km maximum for Community and 10km for Regional Libraries; and
- All Regional facilities also serve as Community facilities but not *vice versa*.

Table 31: Community vs Regional libraries service coverage statistics

Type	Unserved	Served	% served	% served Metro	Total population
Community	21 123	296 149	93.34%	76.50%	317 272
Regional	37 705	390 055	91.19%	63.04%	427 760

The table above provides and overview of the served and unserved in relation to the population. In 2011 the community libraries in the district served 93.34% of its population, this is considerably higher than the metropolitan average of served population (76.50%). In terms of the population served by regional libraries, the Southern District seems to be performing much better than that of the metro as it has managed to serve more than 91% of its population, compared to 63%.

Gaps in information

- The table 3- Fire stations service statistics for 2011 at a metropolitan level and needs to be disaggregated per district.
- Spatial representation of the facilities.

Figure 54: Community facilities

8.1.5 Parks and Recreational Facilities

These encompass all parks and sports facilities in the district.

8.1.5.1 Sports facilities

Sports facilities are categorized into Municipal Multicode Sports Grounds and School Sports Grounds. The Southern District has approximately 82 sports facilities consisting of 20 municipal sports grounds and 62 School sports grounds.

The following assumptions have been made in this section:

- A maximum distance threshold of 10km was used in the analysis.
- School sports fields were also considered as additional supply.
- Only outdoor ball sports facilities were analysed.
- 0.2ha/1 000 people for formal ball sports facilities to provide sufficient facilities to meet the needs of residents was used in the final analysis.
- Excluded: Pools, single code facilities (e.g. tennis & bowling greens) even though part of the 0.2ha/ 1 000 people provision standard.

Supply of existing sports grounds

The table below provides an indication of the number of sports grounds that is located within the Southern District in comparison to the metro total. It should be noted that the population figures used was as per the Census 2011 data.

Table 32: Sports Grounds

	Municipal Multicode Sports Grounds		**School Sports Fields**		**Municipal + Schools**
Area	**Nr of grounds**	**Total size (ha)**	**Nr of fields (at schools)**	**Total size (ha)**	**Total hectares available**
Southern	20	91	59	84	175
City of Cape Town	147	784	445	429	1213

The table below provides an overview of the size of sportsgrounds in the Southern area in relation to the number of people that are being served by them. The Southern District is well served with the largest number of MMSGs when compared to the rest of the metropolitan. It can also be noted that approximately 48% of the total area used for sport facilities are located at schools.

Table 33: Supply of total sports Facilities

Planning District	Total population	Total Sports Facilities Supply in Hectares (Municipal & School)	Total Supply- People Equivalent (Municipal & School)	Total Supply- People Equivalent (Municipal Only)
Southern	262 275	175	875 000	455 000
City of Cape Town	3 664 441	1213	6 065 000	3 920 000

Travel Distance statistics

The following table provides an overview of the accessibility of Sports Fields as reflected in 2011 in relation to the number of the population. It can be seen that approximately 83% of the population are located within 2km of a municipal sport ground and approximately 89% of the population are located within 2km of a school sport ground. Thus it can be deduced that the majority of the population within the Southern District are within close proximity (2km radius) of sport grounds.

Table 34: Travel distance based on capacity and distance constraints

Type	0-1km	1-2km	2-5km	5-10km	Total
Population served by MMSG	71 020 (27%)	120 973 (46.8%)	61 127 (23.6%)	5 440 (2.1%)	258 560(100%)
Population served by school sports fields	218 295 (83.2%)	13 894 (5.3%)	18 304 (7%)	11 781 (4.5%)	262 274 (100%)

*8.1.5.2 **Parks –** Community & District Parks*

In 2011 the Southern District had approximately 232 community parks and 5 District Parks.

The following key assumptions were made:

- Parks include: Developed open space (hard and soft spaces).
- Excluded any facilities with entrance fees.
- Excluded nature reserves (but may include specific picnic areas within reserves).
- Provision standards applied:
  - 0.35ha / 1 000 people for Community Parks at 1.5km access distance; and
  - 0.15ha / 1 000 people for District Parks at 20km access distance.

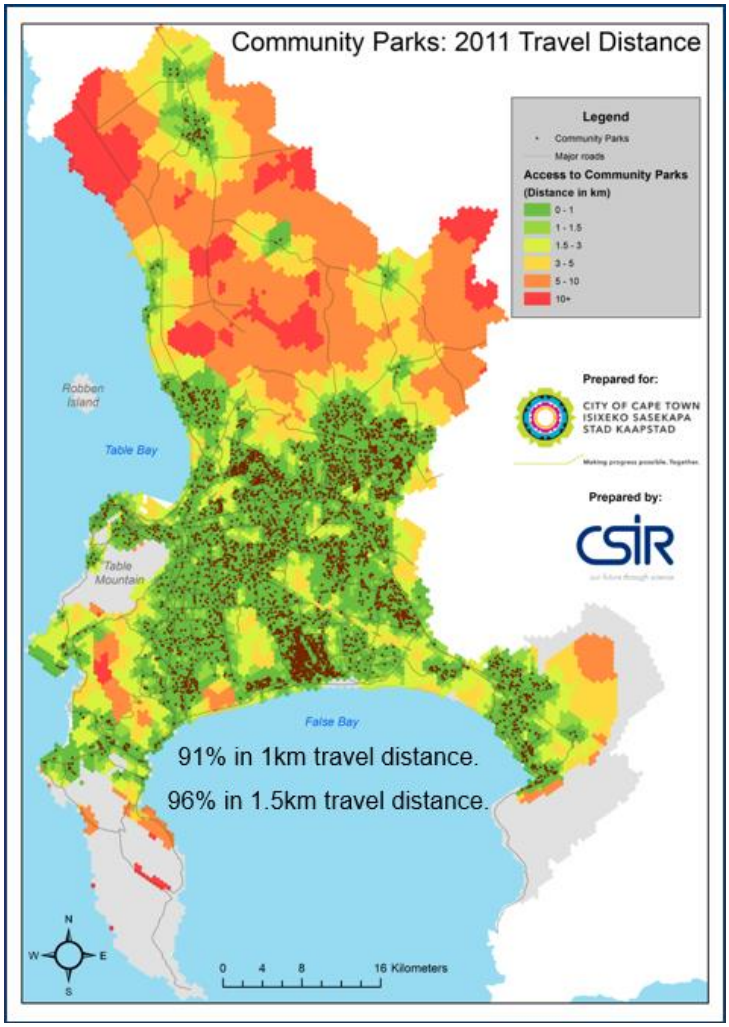


Figure 56: 2011 travel distance to Community Park

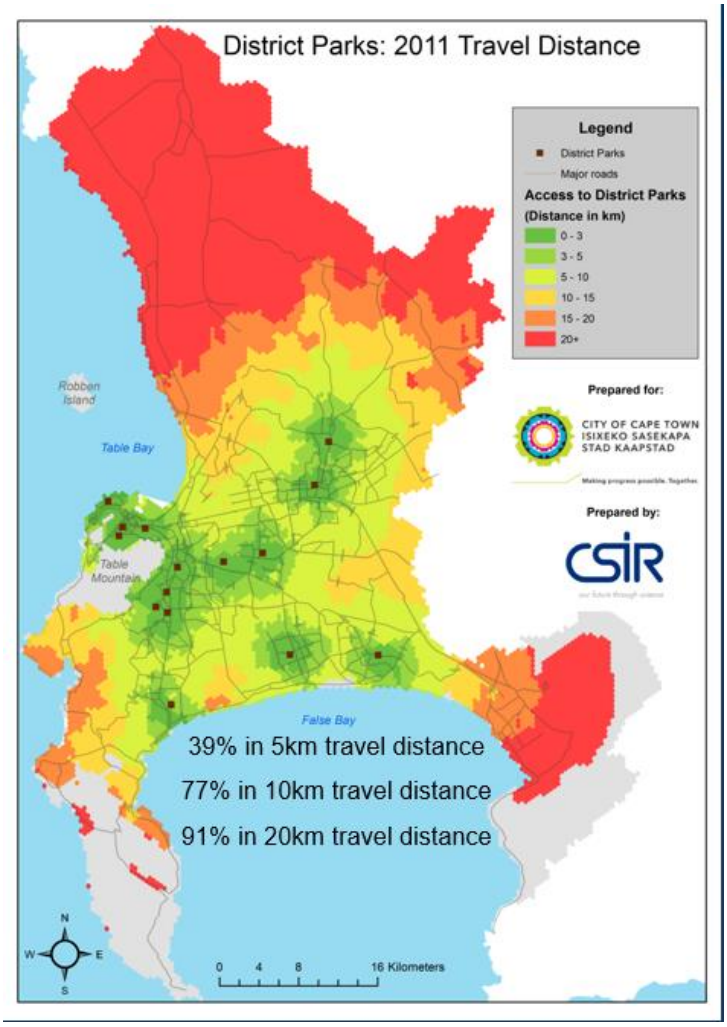


Figure 55: District Park travel Distance

The figures above shows that at a metro level there was good access to parks in 2011 with 90% of the City's population being within 1.5km of a Community Park. However, when taking into consideration the provision ratio of Community Parks, the service coverage of Parks was at 61% of the population for the 2011.

Areas of unserved population are thus evidence of a lack of Park capacity to serve local demand and not access distance.

According to the travel Distance Map it can be deduced that the there is a relatively good spread of District Parks as most residents (90%) are within the travel distance standard of 20km, except for Atlantis and the Helderberg District.

Although at a city level there is overall sufficient developed District Park space, the service coverage statistics at a district level have shown that the Khayelitsha / Mitchells Plain areas are poorly served (12% in 2011 and 10% in 2032) when considering the provision ratio of District Parks.

What this means is that although the city has sufficient developed District Park space there is a spatial mismatch of supply and demand rather than an actual undersupply of District Park space, i.e. not in line with density patterns.

In addition to the above the table below indicates the service coverage statistics for 2011. It can be seen that community parks served approximately 70% of the population and the 5 district parks served more than 98% of the district's population. Thus it can be seen that majority of the population have access to parks of this size. However, the available information did not make any qualitative

analysis in terms of the quality and management of these parks. The increasing population and number of housing developments that are happening in this area would however necessitate the need for developing new or optimization of existing facilities.

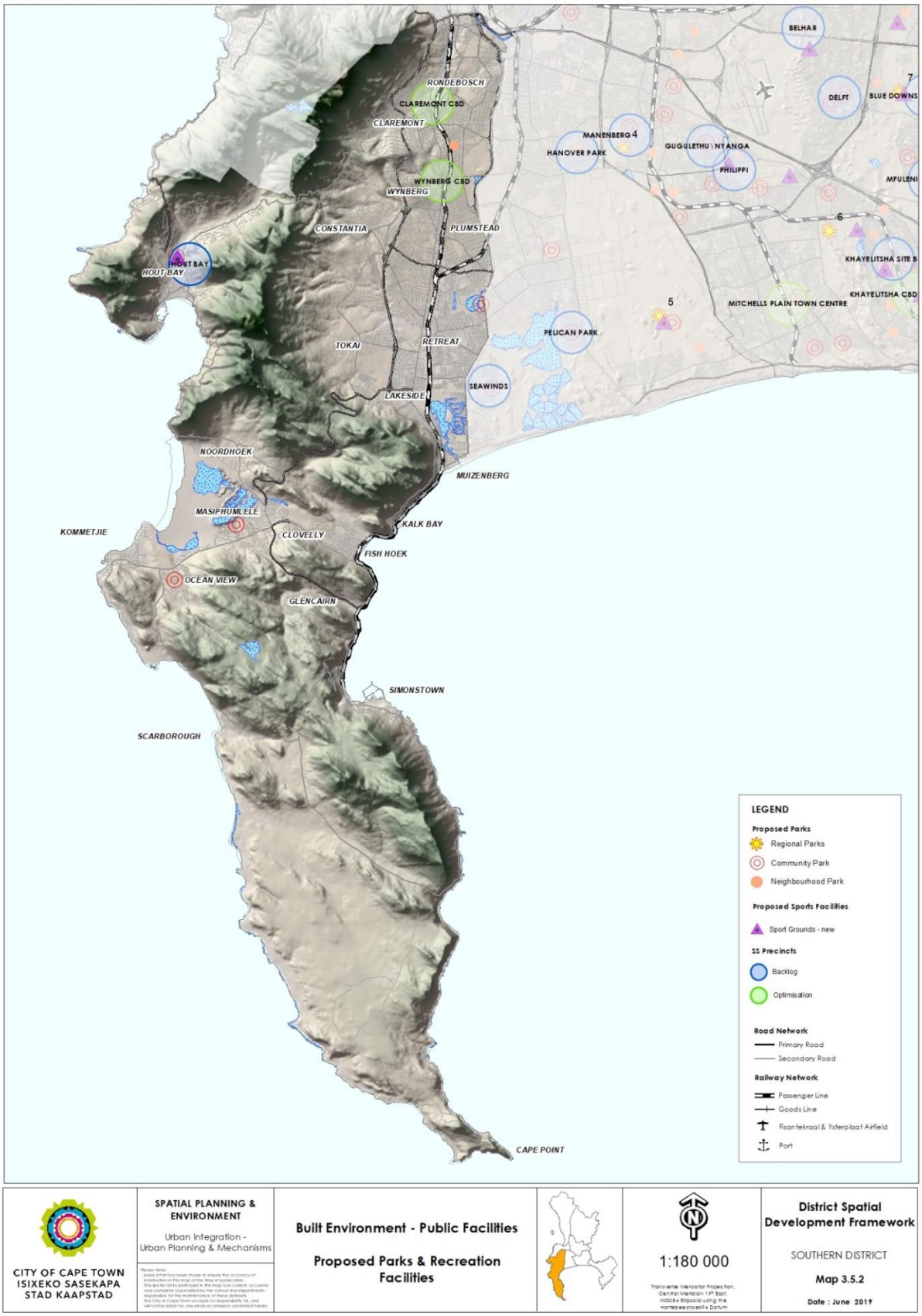
District	Unserved	Served	%Served	Total population
Community Parks	88 314	207 555	70.15%	295 870
District Parks	15 023	804 743	98.17%	819 767

Table 35: Southern Service Coverage statistics- community parks (2011)

Public open space is well developed across the region, with the exception of the area south of Ottery Road and north of Military Road.

Figure 57; Parks and Recreation

Given the above there are no widespread or comprehensive future plans within this district. Future proposals, primarily for local community parks, are targeted to a few limited under-served and under-performing areas related to massive recent growth, including Imizamo Yethu, Masiphumelele, Ocean View, and Retreat.



8.2 Required Facilities

Figure 49 and Table 26 depicts the required facilities for the Southern district based on the current population and projections for 2040.

Required additional public facilities are generally closely aligned with where need is greatest and provision most compromised. In Masiphumelele there is a need for a new primary school, community health centre, and open space areas including formalised park facilities and also small quality public

open space areas. A fire station is currently close to completion close to Masiphumelele, and planning for a new local police station is proceeding.

8.3 Key Observations

The Southern District is generally well serviced in terms of a range of community and public facilities both at a local and district scale. These facilities are also in general well maintained, although some facilities are not functioning optimally.

In terms of access, facilities within the district are generally publicly accessible and located on or close to major public transport routes. The exception to this are the isolated enclave areas of Hout Bay and the Far South where local area facilities are generally well catered for and accessible, but higher order district and metro facilities are not due to the comparative isolation of these areas.

Despite the above facilities within (and for) lower income areas such as Imizamo Yethu and Masiphumelele, and to a lesser extent Hangberg and Ocean View, are generally heavily oversubscribed and poorly maintained. Open spaces and sports fields within these areas are under continual pressure from settlement encroachment, and in IY and Masiphumelele have been invaded by informal settlement and effectively no longer exist. Due to massive population growth existing facilities such as Community Health now require additional capacity or replacement by bigger/higher order facilities to service these communities.

Facility provision in the more recently developed areas such as in the far South is largely privately funded (e.g. private schools, medi-clinics etc.). Public provision of facilities such as schools, sportsfields, clinics etc. has to date been limited.

The well-established Main Road corridor includes many higher order district and sub-regional public facilities. Most of these are accessed by significant numbers from outside the district due to their quality and accessibility. As such these are significant attractors to the district.

8.4 synthesis

8.4.1 Summary of issues and trends

1. Massive internal growth of lowest income areas of Imizamo Yethu and Masiphumelele, and massive associated overcrowding and service incapacity and management problems, such that **these areas are the pre-eminent urban crisis areas within the district**.
2. Housing in lowest income areas is closely associated with economic activity / income generation through sub-letting to 2nd, 3rd and even 4th households in backyard shacks. This tends to result in growth of an existing nearby informal settlement as unhappy or thrown out tenants seek a cheap nearby alternative. It also tends to support demands for settlement expansion as longstanding backyarders eventually qualify for subsidised housing but on receiving it tend to immediately sub-let as an economic strategy (often the only one they have).
3. The availability of land to accommodate new settlement in the area is a severe constraint. There are limited extensive areas suitable for new greenfield development, most of which are in areas some distance from daily opportunities (work, education etc.) and public transport. This is allied with high unit development costs (vis-à-vis tenure type and compatible design interfaces) as well as substantial local community opposition to the development in such areas
4. An increasing securitisation of residential areas, through gated security villages, orientation of development away from (perceived to be dangerous) open spaces, and walling, gating and electrification of property boundaries.
5. A general view that once one is in an area then no others should join, unless one is an owner / developer who will gain from leveraging later entrants
6. A generally high lack of trust between poor and rich and between both these and the authority.
7. Business encroachment into residential areas
8. Warehousing, wholesale retailing, institutional, and even residential, encroachment into industrial areas.
9.

8.4.2 Pressures and Constraints

1. Very limited available vacant developable land.
2. High botanical and scenic attributes (of recreational and tourism economy significance) a significant constraint to urban expansion.
3. A subdued economy which limits expenditure on intensification of development and potentially compromises quality of built outcome.
4. Economic trap of many low income households who are unable to access the economy and depend on survivalist economic strategies.
5. Deterioration of key infrastructure, most notably the rail system.
6. The threat of climate change and sea level rise.
7. The still continuing peak hour surges of people to and from places of work outside of the district (in the CBD etc).
8. The accessibility barriers of the railway line (for east-west movement) and the mountains and sea (for access into and out of the isolated urban enclaves of Hout bay and Far South), exacerbated over traffic morning and evening peak hours and, increasingly, holiday and weekend peaks.
9. The inhibiting effect of the movement system constraints on tourism and recreation in the district (e.g. trains and road congestion).

8.4.3 Opportunities

1. Due to its integrated historical development legacy the Southern District has the potential to gain most from improvement of the rail system and train services.

2. The urban development and natural area diversity, and interface and integration between these two across this district, represents a unique and substantial recreational and tourism economy potential still arguably only partially tapped. Key elements include:
    a. close interface between sea, mountain and urban development,
    b. diverse historical urban areas of character including coastal villages
    c. agricultural winelands
    d. 3 harbours, including a naval base, 1 launch pier, and 3 (separate) slipways
    e. Most of the TMNP
    f. Education hub between Mowbray and Wynberg including UCT, various other tertiary colleges, and numerous highly sought after 'southern suburbs' schools.
    g. Low income and informal settlements
    h. Cultural landscape areas including Constantia – Tokai and Noordhoek
    i. Sports centres including Newlands cricket & rugby
    j. Proximity of established development to many small diverse beaches and rocky shores
3. General spare services capacity in the most important (northerly) parts of the Main Road corridor can support further land use intensification and densification in these areas.

8.4.4 Implications for the spatial plan

1. The district, and particularly the area between Mowbray and Plumstead, is very well served with health, education and sports facilities. In fact the district acts as a major attractor to the rest of the metro in this respect, and in all likelihood will continue to do so. Hence the great importance attached to ensuring good access and movement into and within the district.
2. A greater degree of social compacting required between different local communities and between these communities and the authority. This needs to be at the metro, sub-regional and local level, and needs to include identification of reality/ies, elements that all parties can agree on, what the obstacles are & how best to address them, and identification of potential win-win outcomes.
3. Spatial transformation through facilitating the movement of lower income households into well located / accessible areas. This can include & inclusionary housing.
4. More intensified use of that land which is already developed, but within the constraints of local area context in relation to protection and enhancement of scenic character and natural attributes.

<u>Key land use issues requiring district plan guidance:</u>

	Major land use decision-making issues	Implications for District SDF
1	Business into residential areas	• Specific (unique) site-specific reasons required, based on the unique locational qualities of the specific site, to motivate deviation from the prevailing approach - of limiting business encroachment into residential areas as well as ensuring agglomeration of employment generating activities in identified high access nodes and corridors. • Site-specific reasons would usually relate to location in relation to a primary road or intersection (e.g where noise makes residential challenging) in the area and either appropriate screening or quality design that enhances the area. • Generally business encroachment should be confined to peripheral locations in relation to primary roads (which tend to be dividers) and never extend into the heart of the residential area.
2	Residential into industrial areas	• District plan to indicate industrial areas as mixed use intensification areas. • However, the principle should be that the residential development should not be responsible for subsequent displacement of a legitimate (existing) negative/noxious industrial activity. • Any residential in such areas must account for potential negative externalities associated with industrial areas (e.g. noise, smell) and include appropriate mitigation measures (e.g. sound-proofing).
3	'Illegal land invasion' into areas inappropriate for urban development	• Provide minimal legally required and humanely acceptable basic infrastructure support in such areas and maintain informal settlement status until such time as community ready to vacate it at which time it is progressively reverted back to its original state – rather than prioritising (usually in response to local community activism) the development formalisation of the settlement. • Re-affirmation in district plan of identification and significance of land identified as critical not to develop. This includes risk related (e.g. flooding or high visual impact or unstable slopes) or of high ecological or productive importance (e.g. conservation area or urban agric.). This should include identification of areas of highest risk in this regard, as well as proposed means to address this risk. • Re-affirmation also of land that is under or un-developed that is appropriate for development. This needs also to include support for this development to be expedited.

4	Facilitating the movement of lower income households into well located / accessible areas & inclusionary housing & spatial transformation	• Support for the ramping up of development of more affordable dwelling units, for both ownership and rental, in well-located areas. This requires a wider range of units, at high density in a range of strategic locations. • Means to achieve this (objective) requires incentives such as enhanced rights linked to affordability requirements & parameters. • Support for significantly smaller units & higher densities in these areas than is currently the case or permitted. • Spatial transformation is also achievable by expediting the development a quality trunk (dedicated) route public transport system / network to facilitate movement to and from all parts of the city.
5	Better / expanded sub-district guidance (in-lieu of the formulation more local area plans)	• Further local area development guidance where necessary should be included into the district plan to obviate the need for further local area policies. • Reviewing existing applicable local area policy for inclusion of development guidance statements that are still appropriate and relevant. • Linked to this, local area policies that are now dated should in general be withdrawn.
6	• Better guidance where appropriate of existing zoning scheme provisions which can potentially substantially assist with the district plan goals & objectives. • This includes also dated minimum erf size overlay zones, as well as existing potential intensification areas.	• A clearer indication in the district plan of where significant unutilised development rights still exist (e.g. GR4 in Wynberg & Kenilworth). • This requires explicit sub-district and local area development guidance which clearly and specifically identifies areas for densification, and the broad desirable nature thereof.
7	Initiating development in identified new coastal nodes	• This needs to include (political) commitment and support for this development to be expedited, including the identification of any available or proposed mechanisms or processes that assist in this. • This should comprise precinct component part phased development stages based on a broad development framework. • As far as possible the private sector should be encouraged and incentivised to undertake the primary developer role here. • This should include clear broad development principles and parameters, as well as substantial infrastructure grant finance assistance.

8	Guidance for facilitating apparently contradictory development (e.g. densification in Constantia but retaining or actually enhancing the cultural landscape through doing so; other cases??)	
9	Improving an area's safety & security through development	• An emphasis in the district plans of where surveillance is desirable and required, which relates inter alia to density and design (re- over-looking features).
10	Maximising amenity & tourism leverage in key amenity locations	
11	Trend/tendency to id and occupy POS in high density low income areas to meet pressing/vocal housing need	• Provide minimal legally required and humanely acceptable basic infrastructure support in such areas and maintain informal settlement status until such time as community ready to vacate it - at which time it is progressively reverted back to its original state – rather than prioritising (usually in response to local community activism) the development formalisation of the settlement.
12	*Dev pressure in & near the PHA*	
13	Addressing Gentrification (concerns)	• Support for significantly smaller units & higher densities in these areas than is currently the case or permitted.
14	…NIMBY (a reluctance for other land uses & income strata / housing types in an area)	• Support for progressive widening of range of residential options across all areas. • Clearer engagement and buy-in on, and communication of, primary development vision for the city, sub-districts and local areas, as well as development implications and related benefits thereof for respective communities. • With continuing relative move from ownership to rental as proportion of residential tenure this (NIMBY) factor will progressively diminish.
15	Leveraging appropriate econ opportunity in or adjacent to appropriate open space areas	• Open space areas need better maintenance and management. • Support greater density, and specifically 2 or multi-storey development adjacent to these open spaces to increase over-looking surveillance and 'feet on the ground' in the open space re- surveillance. Higher numbers of users is likely to stimulate higher propensity and capacity for community involvement in maintenance and management.
16	Additional level of guidance to that currently provided by TAPs which only apply to IRT trunks – what about other public transport routes re-locational benefits of being close to feeders & taxi routes?	• TAP development guidance should apply to all existing medium and high frequency public transport routes (e.g. activity routes and streets)

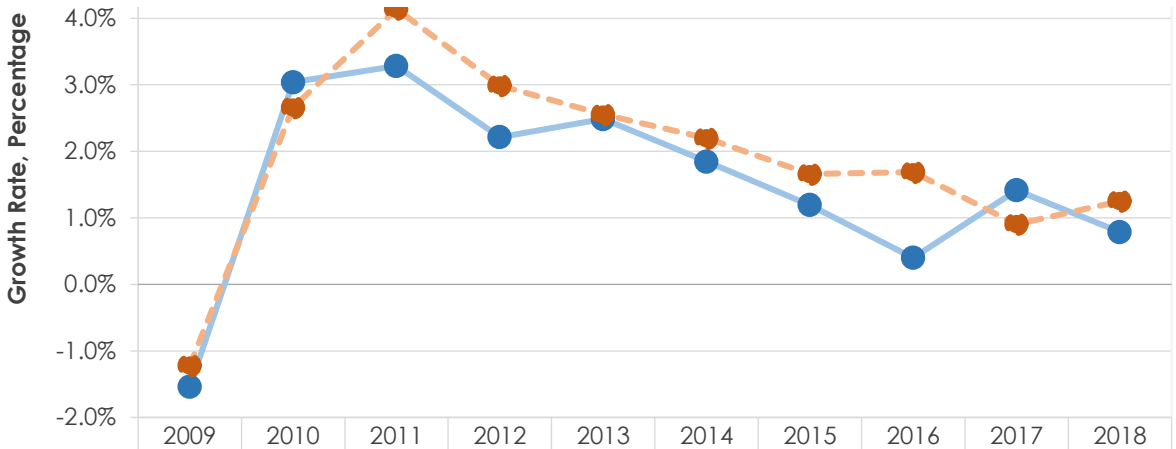
17	Public distrust in planning policy and planning procedures and processes governing land use planning decisions	• More and better engagement in policy development • Greater transparency in planning processes and decision-making

9 THE ECONOMY

9.1 Macro-Economic Factors

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

Figure 58: Average annual Gross Domestic Product (GDP) growth, South Africa vs. Cape Town for 2009 to 2018 (Source: IHS Markit, 2019).



	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%

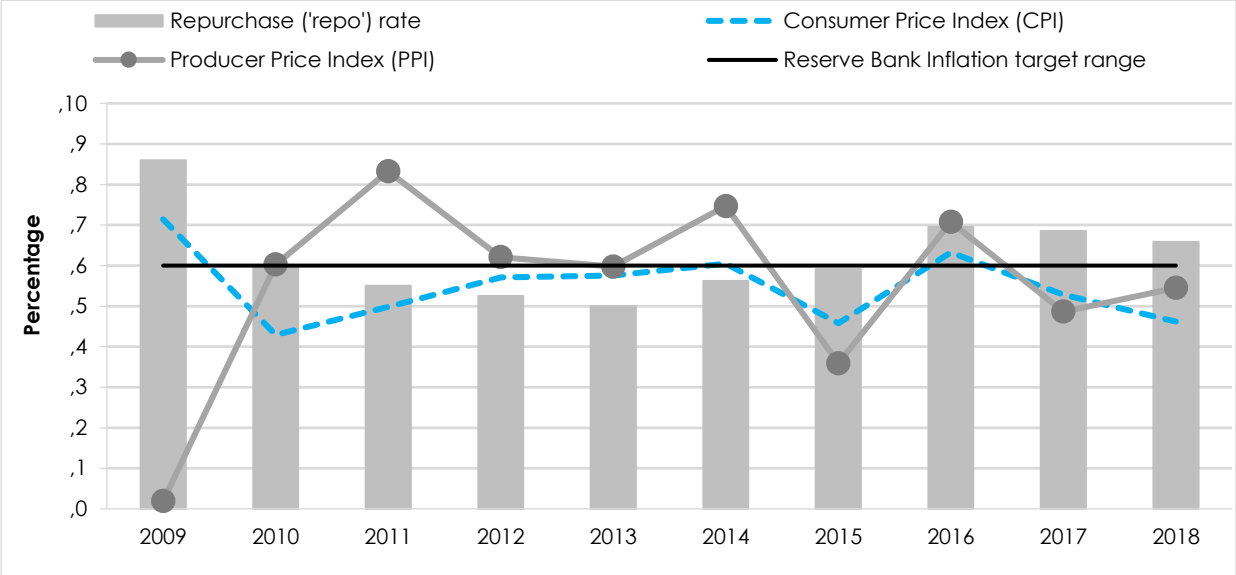
Economic activity in Cape Town largely mirrors trends at the national level though often exceeding the national GDP. Deviations in these trends are observed since 2016; which may be attributable to the recent drought conditions faced in the region. Between the year 2009 and 2018, Cape Town's real GDP growth averaged 2.1%, outperforming South Africa's average Real GDP growth of 1,67%, however both still reflecting an overall downward trend.

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[17] (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.

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

Figure 59: CPI and PPI trends in South Africa, 2009 to 2018 (Source: CPI and PPI extracted from Statistics South Africa, 2018-2019, and repurchase rate extracted from SARB, 2018-2019).

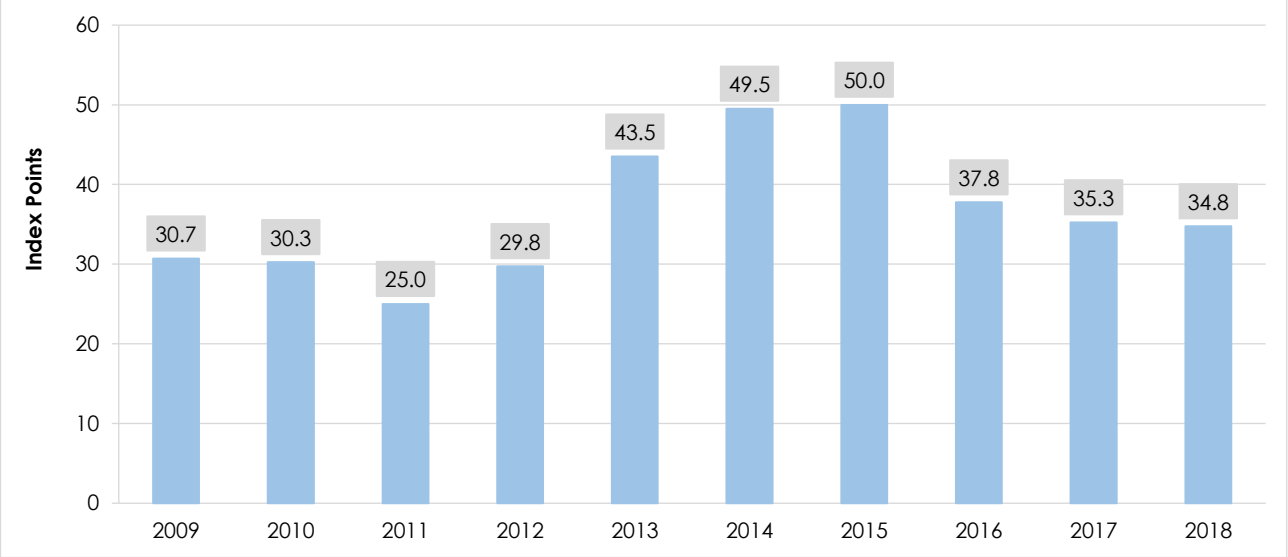


The consumer price index (CPI), inflation rate, and the producer price index (PPI) measure the price fluctuations of goods and services in the economy. Within the ten-year period observed above, the CPI and the PPI varied slightly around the reserve bank upper inflation target rate of 6%.

In figure 2 above, it can be observed that inflation (6,33%) exceeded the upper limit of the target in 2016. This upward trend could largely be explained by the price increases in housing rentals, recreation and cultural activities. In response to the increase in inflation in 2016, the Reserve Bank increased the repo rate to 7%. While the rate has been adjusted downward since 2016, in response to lower levels of inflation, the repo rate (and, by extension, the prime lending rate) has remained significantly higher than in the 2010 -2015 period. As a result, property buyers have found it costlier to take out mortgage bonds between 2016 and 2018 than in the five-year period preceding that. Together with low levels of consumer confidence, this has resulted in dampened activity in the property market.

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

Figure 60: Building Confidence Index (BCI), 2009 to 2018



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

Figure 3 shows the First National Bank (FNB)/BER composite building confidence index for the 10-year period from 2009 to 2018. The Building confidence index records the percentage of architects, quantity surveyors, and contractors and manufacturers of building material, who are either satisfied with or wary of the prevailing business conditions (BER, 2018).

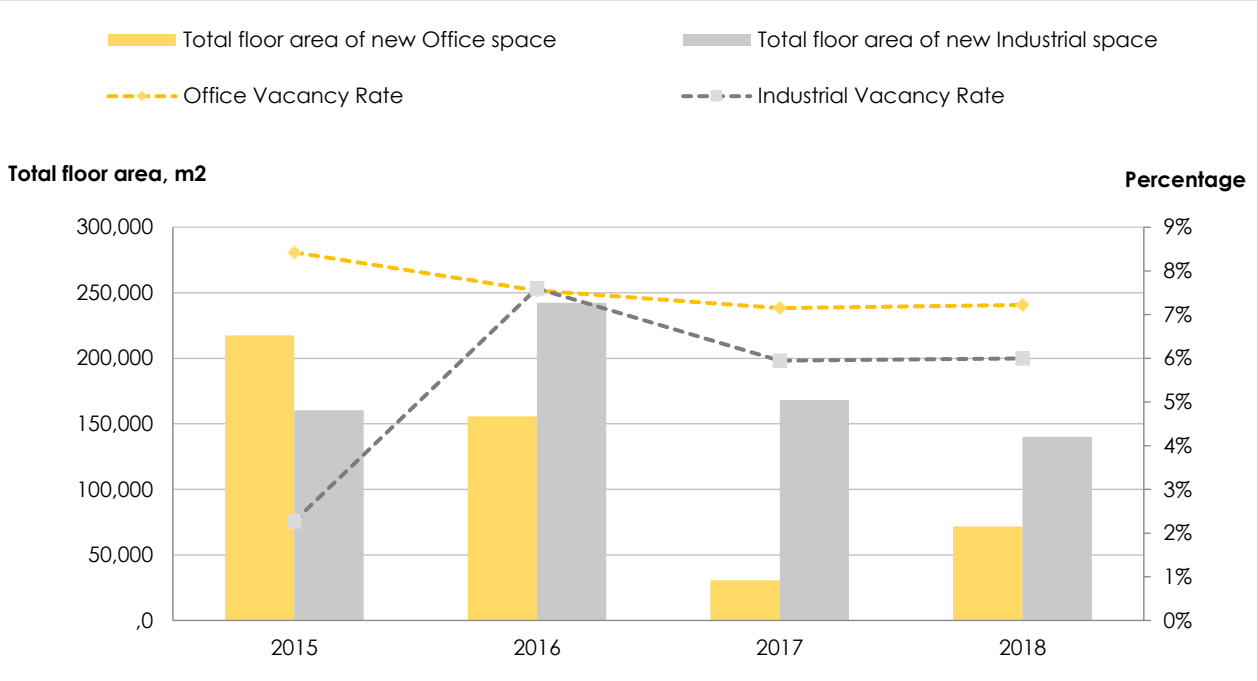
The First National Bank (FNB)/BER composite Building Confidence Index (BCI) declined by 15,3 points from 2015, where it peaked at 50,0 index points, to reach 34,8 index points in 2018. This decline in 2018 can be attributed to the weakened confidence of architects and quantity surveyors, as a result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

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

9.2 Property Market

Figure 4 above, 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 61: Cape Town's new building completions and vacancy rates for Office and Industrial space, 2009 to 2018



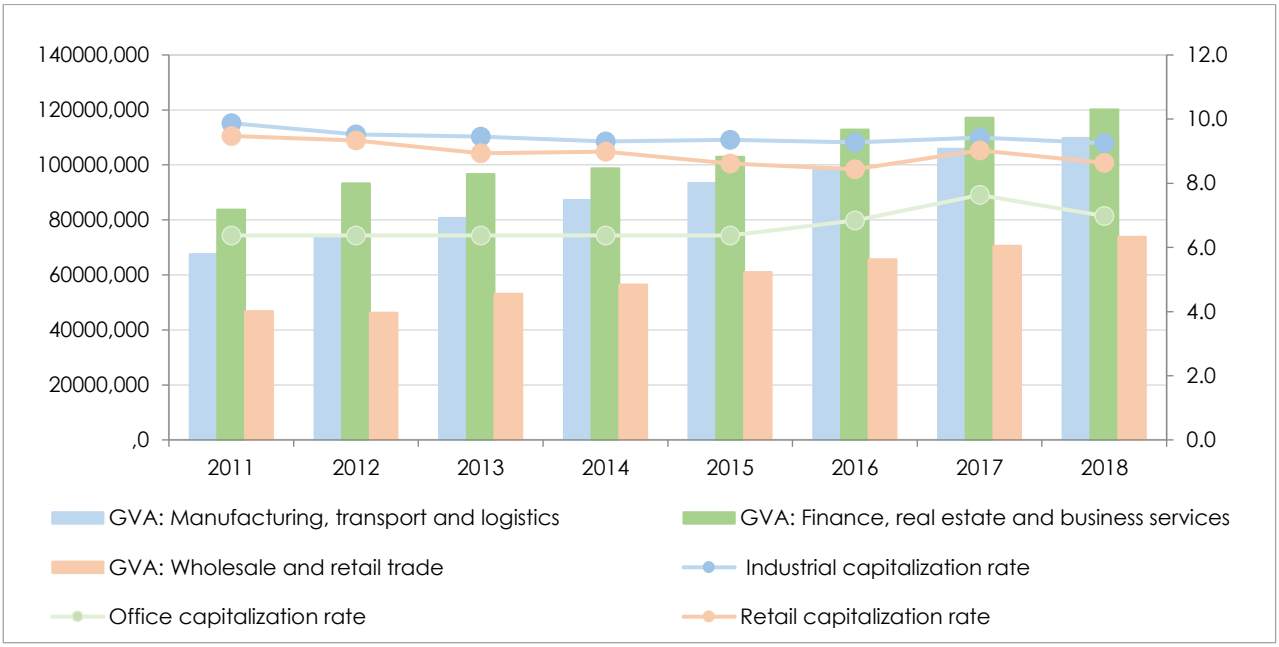
Source: Transport Business Support Department; South African Property Owners Association (SAPOA), 2019.

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

Cape Town's office vacancy rate remains the lowest among the five largest municipalities[18] (SAPOA, 2018), however the slowdown in the office-to-residential conversion, which has assisted in reducing office vacancies in Cape Town may reveal the weak demand for office space (JLL, 2018). The figure above shows that the vacancy rate begins to decline as new office building completions decreased (with 2018 as the exception). A significant drop in building completions (80%) was recorded for 2017; which may be largely attributed to the negative effects of the drought, as the water prices spiked making construction of buildings more expensive.

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

Figure 62: Cape Town's Gross Value Added (GVA) and Capitalisation rate , 2011 to 2018



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

Figure 5 shows the industrial, office and retail capitalization rates as well as the Gross Value Added (GVA) for the finance and business services sector; manufacturing, logistics and transport as well as whole sale and retail trade. The Gross Value Added (GVA) for industrial, office and retail space all followed a steady, though decelerating, upward trend from 2011 to 2018.

A cap rate is one type of measurement used in evaluating an investment, indicating **risk** and the **potential rate of return** for a prospective property. A low cap rates imply lower risk, higher value and a high cap rates imply higher risk, lower value. In figure 5 the capitalisation rates for office, industrial and retail property in Cape Town follow a similar trend between 2011-2015. From 2016 – 2017 the cap rates for all sub-segments increased despite a momentary upturn in 2017. The increase in 2017 may largely be explained by stagnating property prices, a consequence of Cape Town's water crises and the credit ratings downgrade.

9.3 District Analysis

9.3.1 Economic Characteristics

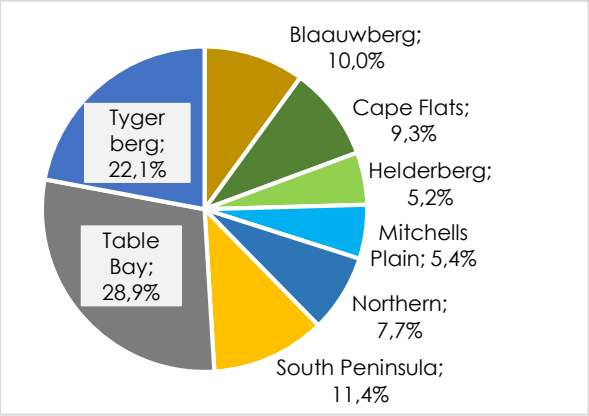


Figure 64: Gross geographic product (GGP) contributions at current prices, 2018 (IHS Markit, 2019).

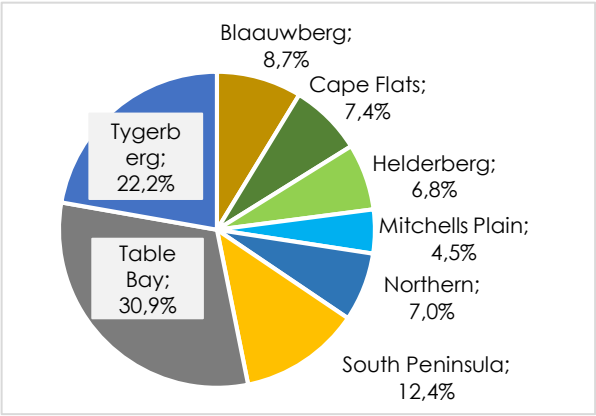


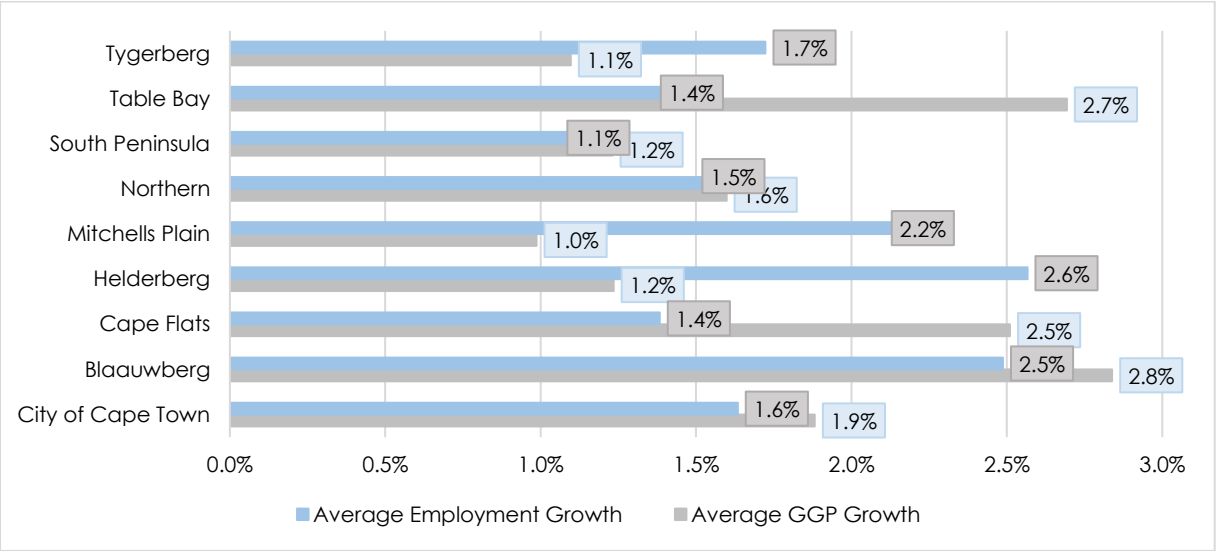
Figure 63: Employment contributions, 2018 (IHS Markit, 2019).

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

The top three districts in terms of employment are Table Bay (30,9%), Tygerberg (22,2%), followed by South Peninsula (12,4%). The Mitchells Plain – Khayelitsha District had the lowest employment share at 4,5% (71 800 jobs) in 2018. This higlights the lack of employment opportunities as a result of low economic activity occuring within the district, although there is a growing labour force living within this area.

9.3.1.1 Economic Performance

Figure 65: Average annual economic growth rates, 2009 to 2018 (source: IHS Markit, 2019).



Although the Southern District is the 3rd highest contributor to GGP, the rate of economic growth in this area between 2009 and 2018 was the slowest (1,1%). This can be attributed to, firstly, the relative maturity of this area in relation to all other areas (except the Table Bay district) and associated comparative lack of available land for large-scale commercial and industrial expansion. And secondly, its location in terms of access to key infrastructure such as port, distribution hubs, other important business nodes, and major road routes into and out of the city.

Figure 66: Performance comparison, 2018 (source: IHS Markit, 2019).

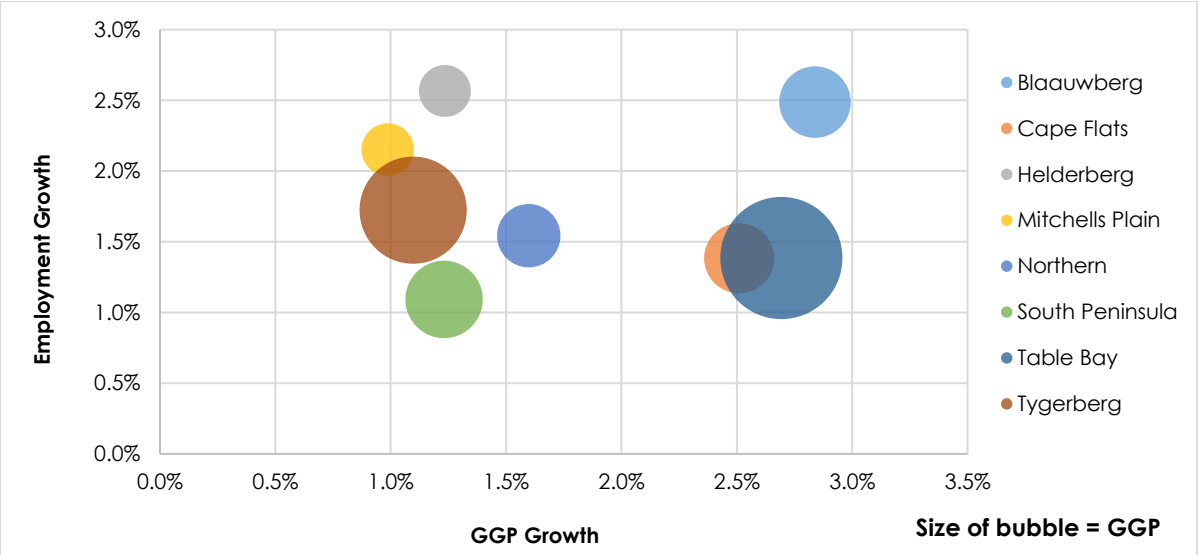


Figure 8 plots the average annual economic growth over 10 years on the horizontal axis and average employment growth on the vertical axis. The size of the bubble is the relative size of the economy as measured by gross geographic product in 2018.

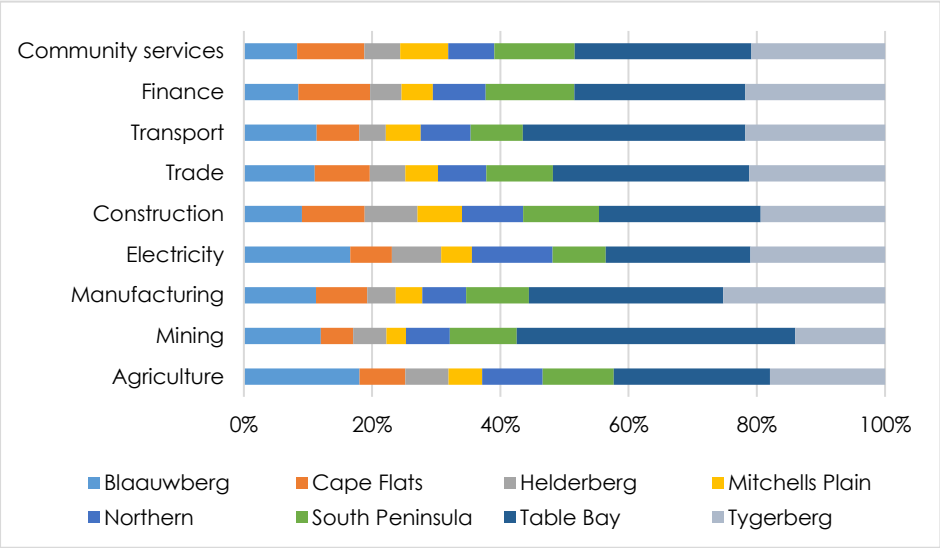


Figure 67: Gross Value Added (GVA) contribution by sector, 2018 (IHS Markit, 2019).

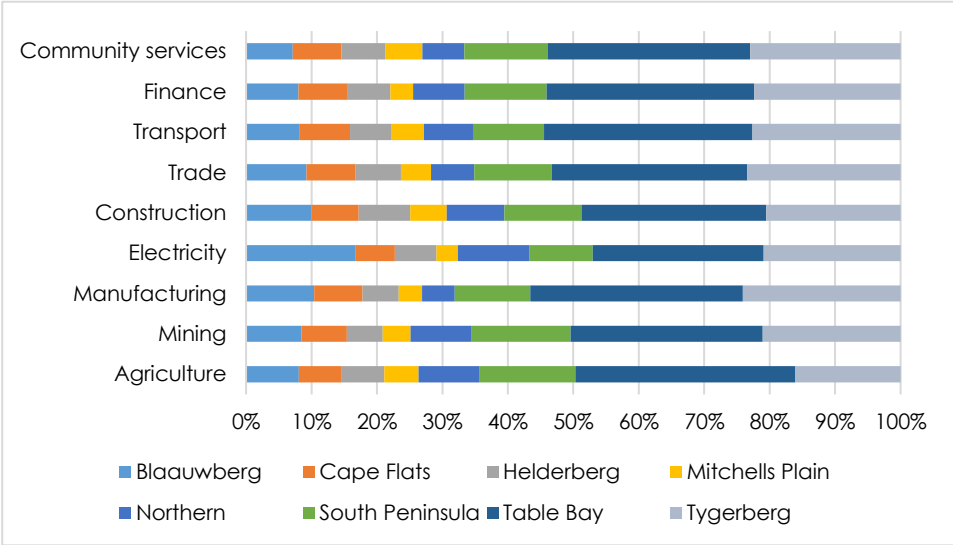


Figure 68: Employment contribution to Cape Town, 2018 (IHS Markit, 2019).

9.3.1.2 Sectoral Trends

From the figures above, it is clear that the Southern district is not one of the main contributors to the total gross value added (GVA) of most sectors in Cape Town. However, the results here appear in a number of instances to be misleading (probably eventuating from the assessment criteria and methodologies), and therefore require some questioning and need to be considered against observational and other evidence. A good example is that the contribution to GVA and employment from mining in the Southern District area seems to be comparable to (and possibly greater than) that of finance, trade or manufacturing.

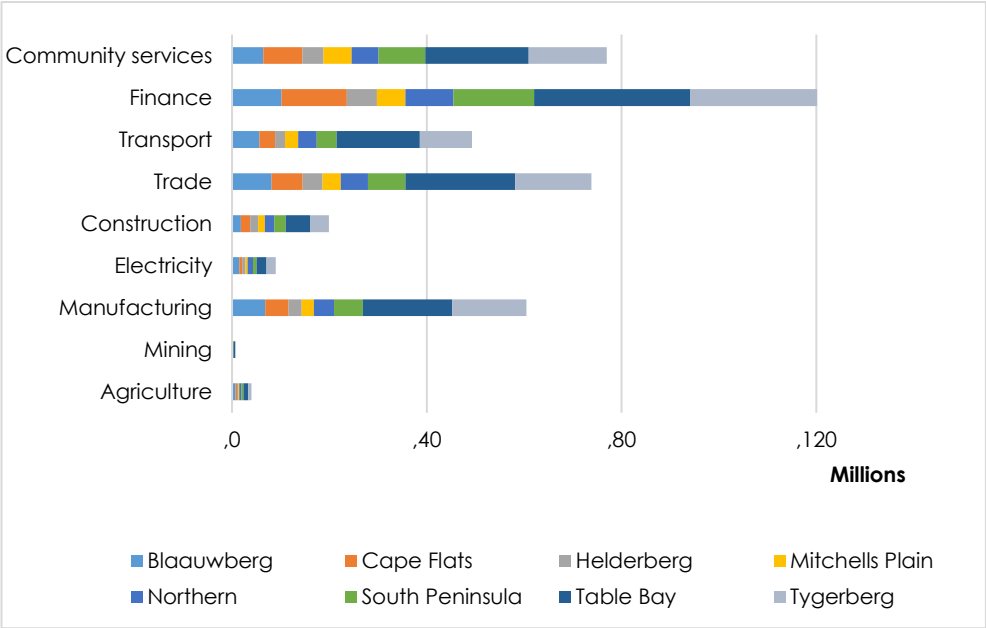


Figure 70: Gross Value Added (GVA) size by sector, 2018

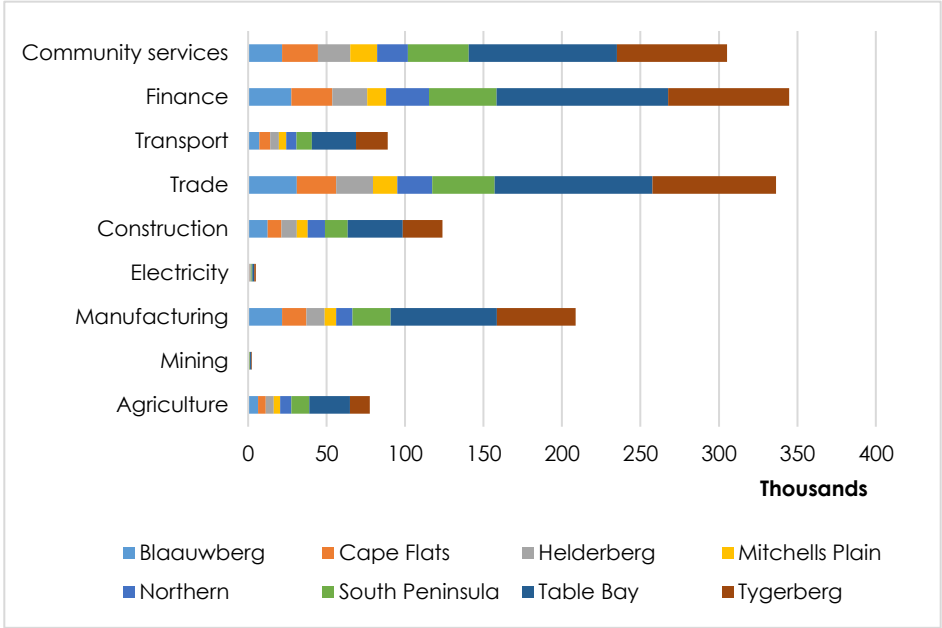
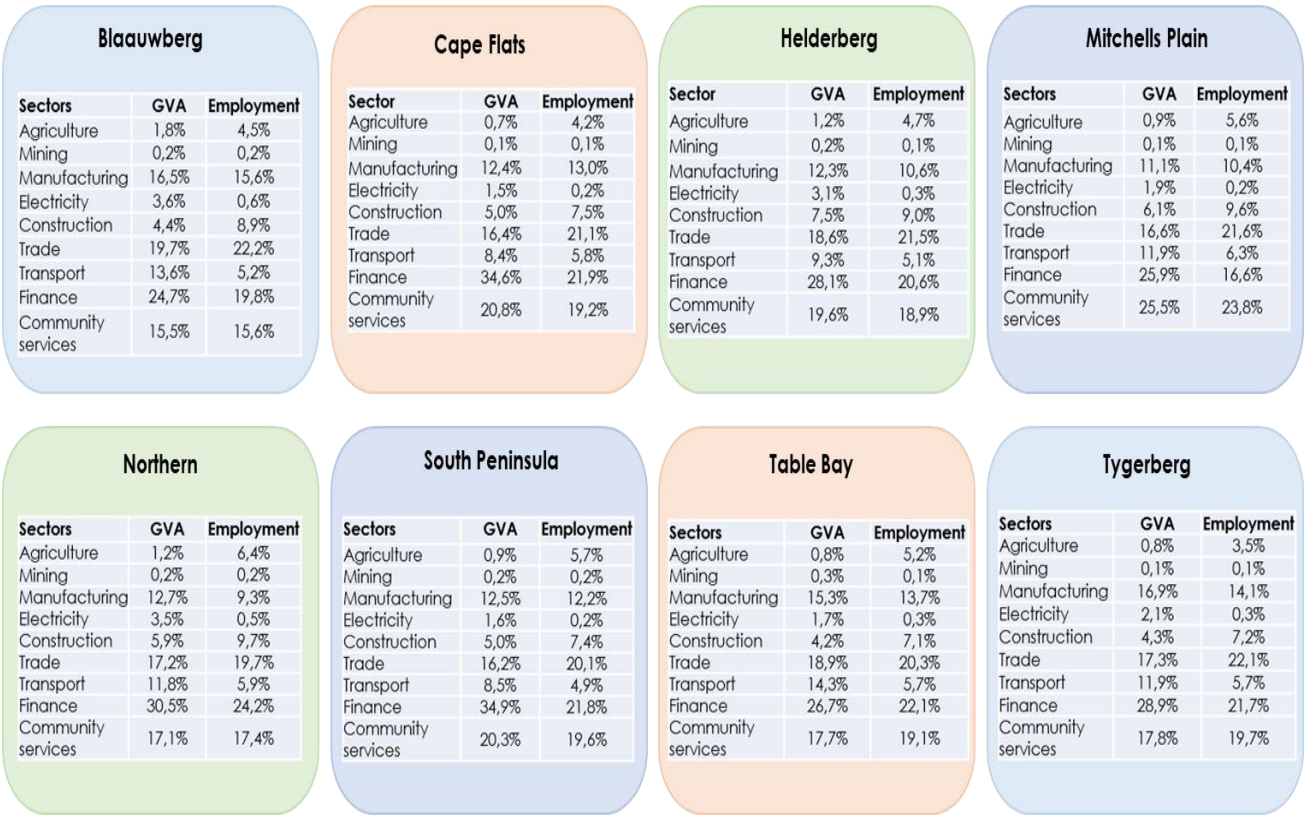


Figure 69: Total employment by sector, 2018

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

Figure 71: Gross Value Added (GVA) and Employment contributions, 2018



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%

Source: IHS Markit, 2019

Figure 71 illustrates the sectoral gross value added (GVA) and employment shares within each of the planning districts. It is apparent from the figures presented in Figure 14 that the smaller district economies (Cape Flats, Mitchell's Plain) tend to be less diversified than the larger district economies: with proportionally less contribution from the manufacturing sector and greater reliance on community services[19].

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

Table 1: Top Five sectors by location quotient in each district (detailed SIC)[20], 2018

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

Source: IHS Markit, 2019.

While analysis at a broad sectoral is useful, it is aggregated a level to adequately understand the nuances of a regional economy. As such, Table 2 undertakes a location quotient analysis utilizing the more detailed 2-digit Standard Industrial Classification (SIC) codes. By comparing the relative share constituted by an industry in the respective district economies to its share in the city-wide economy, location quotient analysis provides an indication of 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 location quotient. It is important to note that having the highest LQ does not

[20] 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.

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 location quotient in Mitchell's Plain and Cape Flats is more a reflection of the weak economy in those areas rather than an indicator of them having a comparative advantage in Education.

Three primary economic activity areas in the district, as reflected in employment attraction significance in particular but also associated activity generation, are the University of Cape Town, the Claremont CBD area, and the Simon's Town naval facilities. All three are uniquely different to the other two, being education focused, commerce focused, and military shipping (naval) focused. All three (with the possible exception of the naval facility hub), however, are having an increasing impact on supportive residential activity, and are supporting significant residential growth which is in turn supporting local retail opportunities. The UCT and Claremont economic 'nodes' coincide with a high excellence concentration of primary and secondary education institutions and also quality open space areas which in aggregate are creating a steady increase in demand for residential accommodation in close proximity (exacerbated currently by high traffic congestion and under-performing public transport). The naval facility is yet to see significant commensurate development but potential demand is building as the potential for re-purposing, bolt-on commercial activities etc. (e.g. ship-building & tourism) begins to be explored.

A further, less geographically defined, but nevertheless highly significant economic sector within, and indeed across, the district is the tourism sector. The district has at least 3 of the top 10 tourism destinations countrywide, being Cape Point, the Penguin colony, and Kirstenbosch botanical gardens. Numerous additional high visitorship, and largely unique destination areas exist, including Kalk Bay, Groot Constantia, Muizenberg, Simons Town, as well as the numerous other beach and winelands destinations. This is complemented by economic activities associated with the numerous scenic routes and scenic coastal and mountain residential areas offering accommodation and food & drink options. This contributes significantly to the local and wider city economy, and employs many business operators and employees, including from areas further afield than this district.

Finally, associated with all of the above, as well as the unique preponderance of non-urban area over urban area across the district (TMNP and nature area environs), interface with a lengthy and varied coastline offering many recreational opportunities, and increasing digitization of the workspace etc (and therefore ability to work from home etc), is the attraction of the area generally (across the district) as a lifestyle area of choice to many. This is reflected in the generally very high residential property prices and strong property market across the district.

9.3.2 Development Indicators

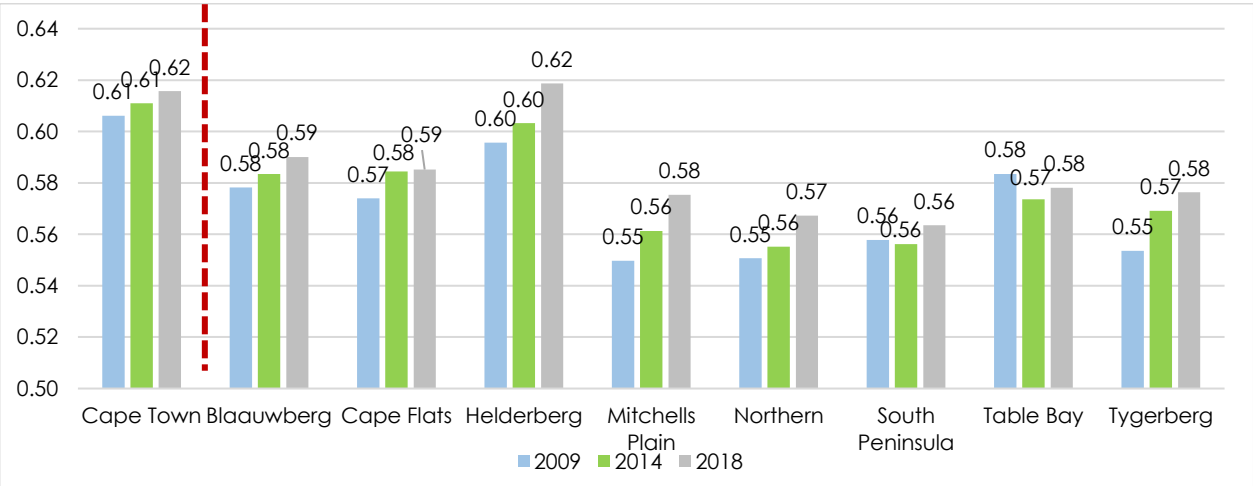
Table 36: Human Development Index (HDI) - 2009, 2014 and 2018

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

Source: IHS Markit, 2019.

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

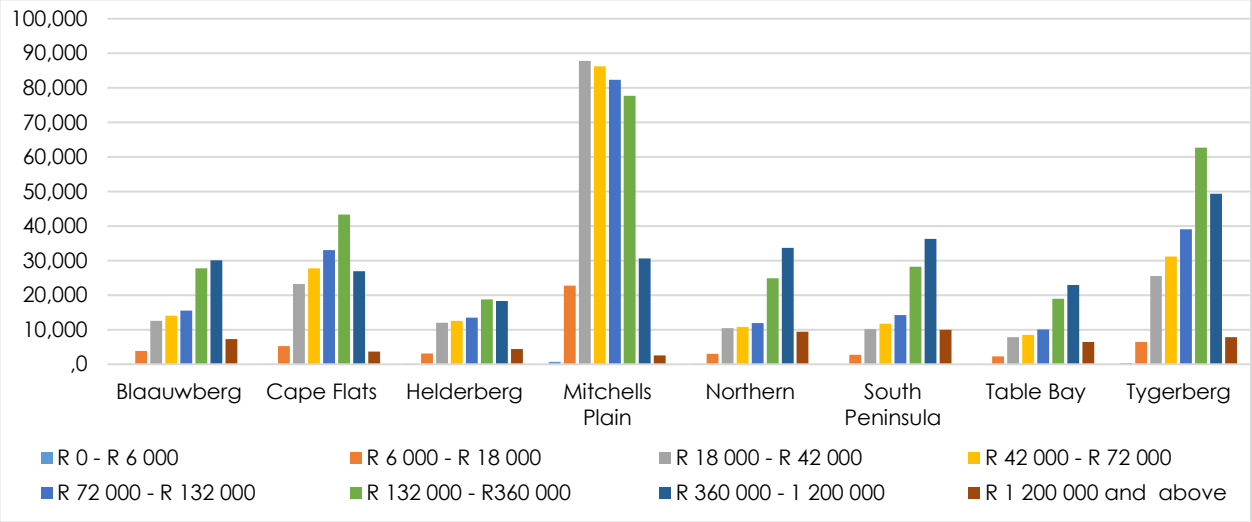
Table 37: Gini coefficient - 2009, 2014 and 2018



Source: IHS Markit, 2019.

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

Figure 72: Number of households by (annual) income category, 2018 (Source: IHS Markit, 2019.)



In total, there are 1 302 946 households in Cape Town and a majority of them are situated in Mitchells Plain - Khayelitsha (30,9%) followed by Tygerberg (17,6%). Mitchells Plain is predominantly a residential area; thus it is no surprise it has the highest number of households. A majority of the population in this district has an annual household income between R18 000 and R42 000 (22,5%), whilst other districts recorded the highest percentage of households in upper income percentiles (R132 000 and above). Tygerberg has the largest share of households (28,2%) with an annual income between R132 000 and R360 000, while Blaauwberg, Northern, Table Bay and South Peninsula districts all had their highest share of households in the R360 000 to R1 200 000 category.

9.4 The Informal Economy

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

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

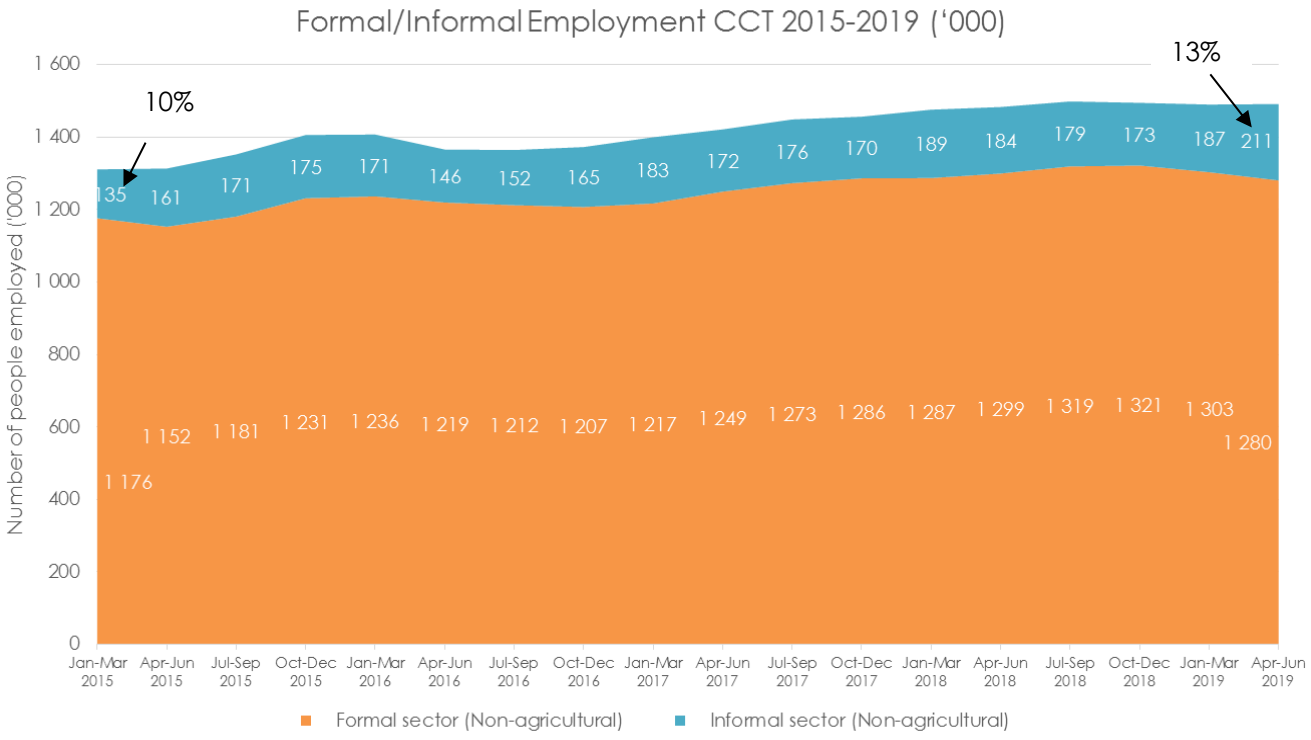
9.4.1 Size of Informal Economy

Statistics South Africa estimates that 220 000 people were employed in the informal sector in Cape Town in the second quarter of 2019. This constituted 13.3 % of Cape Town's workforce, a significant amount.[21] Importantly, the benefit of the sector is predominantly in low-income communities, and it accounts for an estimated 5 percentage point reduction in the poverty rate.[22] The graph shows that the number of jobs in the informal economy has grown from 2015 to 2019, as has the share of jobs which are informal.

9.4.2 Employment Distribution

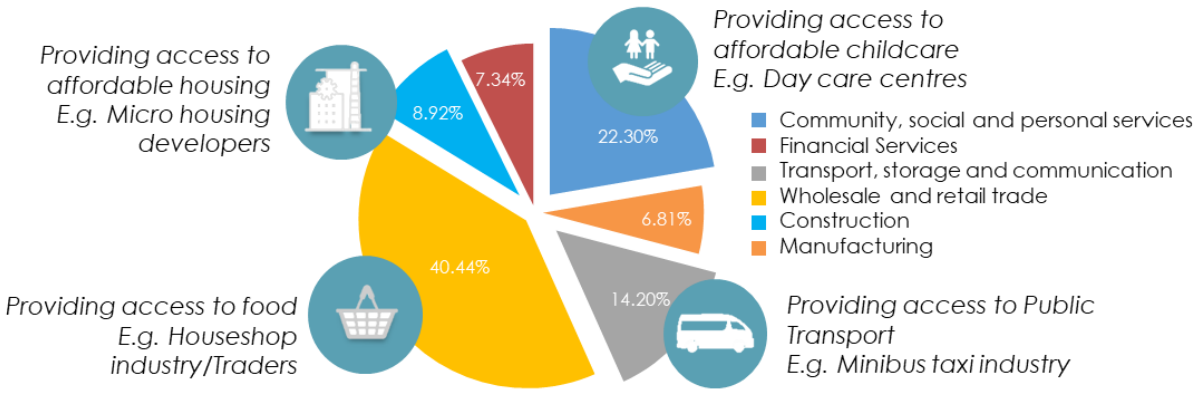
There is informal economic activity in almost all sectors, and particularly present in trade, transport services, community services, recycling, construction and manufacturing.

Figure 73: Formal and informal employment sectors



[21] StatsSA, 2019, Quarterly Labour Force Survey
[22] GHS 2013

Figure 74: Industry distribution of informal sector employees in Cape Town (Source: Stats SA, QLFS Q2, 2019)



9.4.3 Opportunities and Constraints

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

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

As with the formal sector, a *lack of skills*, particularly relating to the operating of a business, is a key constraint to the growth of informal sector enterprises. Most informal businesses *battle to access growth markets and the capital* required to diversify and scale up their activities, and as a result are left to compete fiercely for market share at the local level servicing lower-income consumers, leading to low and precarious profit margins[23]. There is an opportunity for business support to be improved.

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

A key challenge for the City in supporting informal sector development is the *scarcity of data* about the size, location and activities of the informal economy. Lack of information about the lived reality of those working informally and their priority needs is also a challenge. **For this reason, further studies are being undertaken to assist in the preparation of the District Spatial Development Framework**

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

10 PROPERTY MARKET

10.1 Market Performance

Figure 75 below depicts the average capitalization in the Southern District. 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. The capitalisation rate is 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 and Nourse, 1993:221*). A low cap rates implies lower risk, higher value and a high cap rate implies higher risk, lower value. The following endogenous and exogenous factors influence the cap rate:

- **Market Value:** "The estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in an arm's length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently and without compulsion" (Blackledge, 2009)
- **Gross rental income:** The total amount collected in rent and any related rental property income before any expenses are deducted; 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**
- **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, the lower the inventory, the higher the demand, which tends to lead to properties with lower cap rates
- **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**

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

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

Table 38: District Property Market (Mean) Indicators (City of Cape Town Non-Res Market Research: 2018)

Market Segment	Year	Average Cap Rate (%)	Average Operating costs (R/m²/month)	Average Gross market rental (R/m²/month)	Average Vacancy Rate (%)
Industrial	**2012**	9.7%	R6.59	R35.08	3.5%
	2015	8.9%	R7.99	R45.53	5.8%
	2018	9.2%	R11.05	R73.16	3.7%
Retail	**2012**	10.7%	R12.47	R69.92	3.5%
	2015	9.4%	R17.30	R86.07	5.0%
	2018	10.5%	R41.49	R272.14	4.9%
Office	**2012**	10.7%	R18.64	R71.32	5.0%
	2015	10.4%	R18.52	R78.81	8.7%
	2018	10.3%	R38.24	R239.09	5.6%

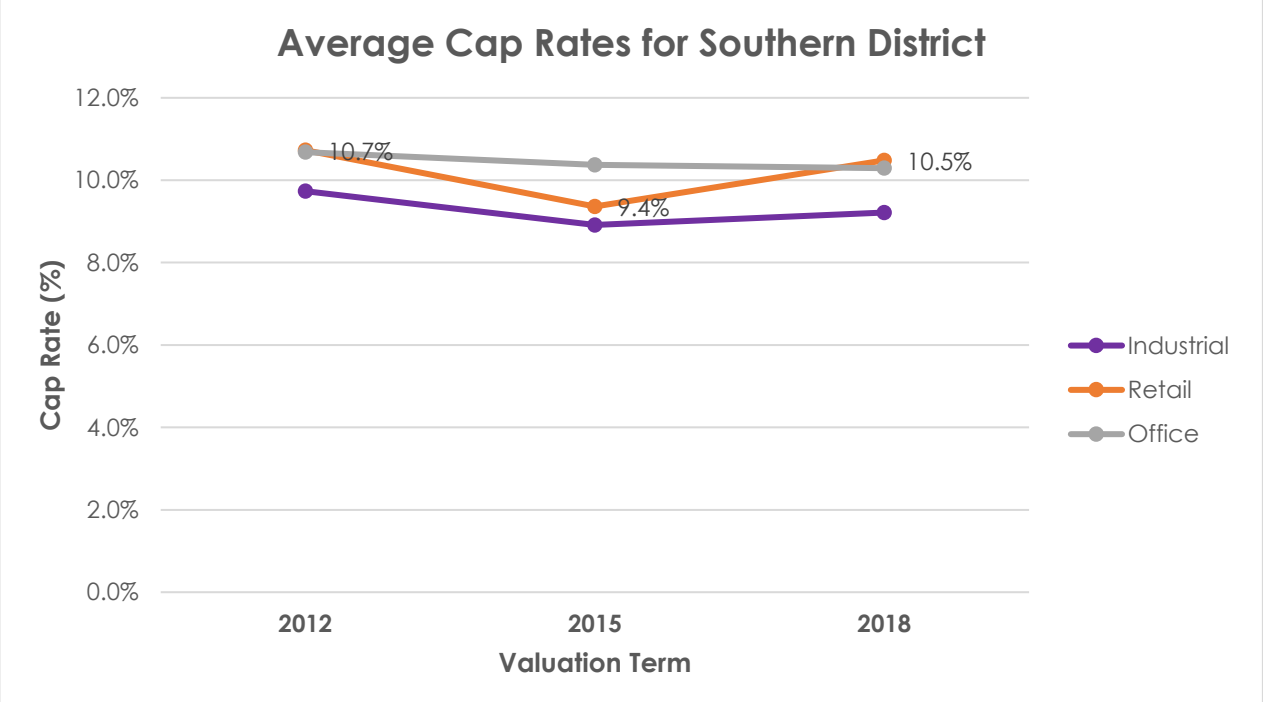


Figure 75: Average capitalisation rates per non-residential market segment (City of Cape Town Non-Res Market Research : 2018)

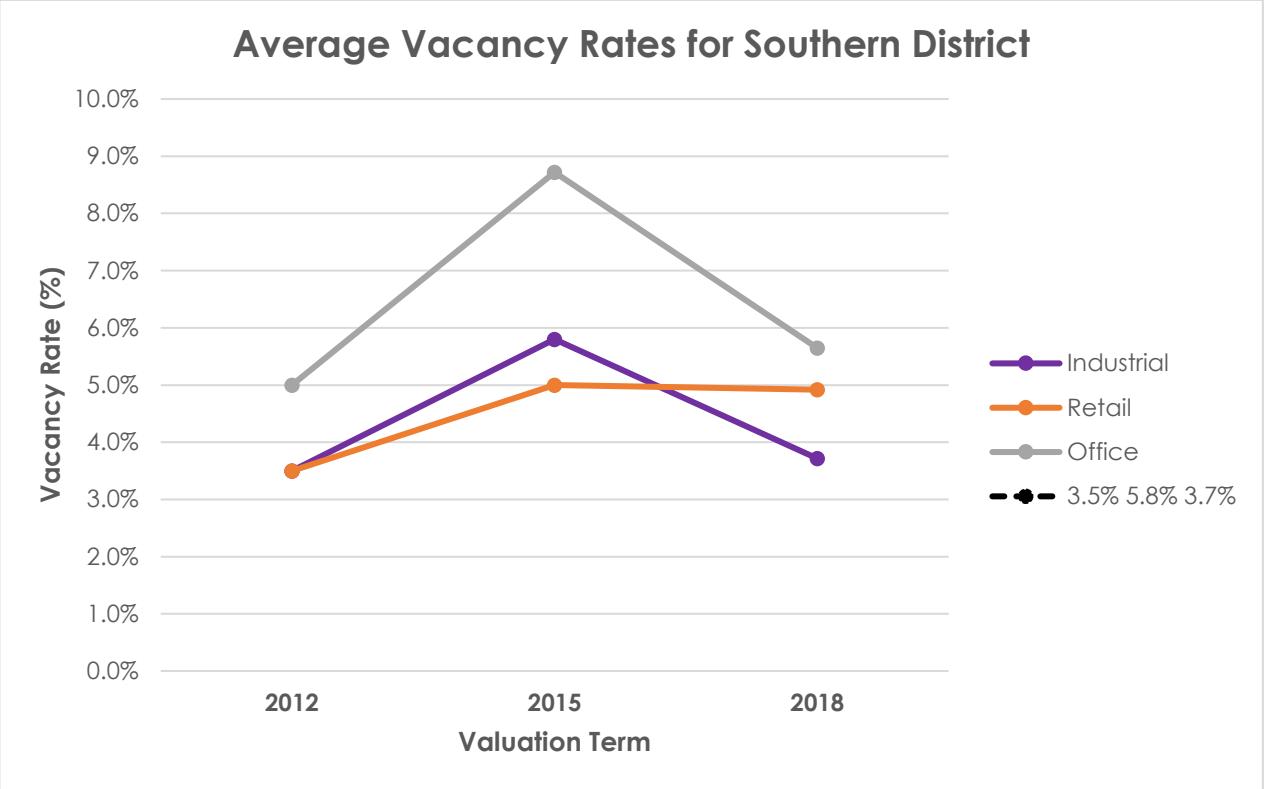


Figure 76: Average vacancy rates per non-residential market segment (City of Cape Town Non-Res Market Research : 2018)

10.1.1 Key Observations and Trends

1.1.1.1 Non-residential

a. Industrial

The industrial sector in the Southern district is currently performing better than other market segments. The average capitalisation rate for industrial properties has consistently remained the lowest amongst the three market segments and had the lowest vacancy rate in 2018, which indicates better market performance for industrial properties. This is reinforced by figure 4 which shows a high growth in property values for industrial areas in the Southern District, in particular Retreat and Westlake

In terms of local market performance, established industrials areas in Access Park, Westlake and Retreat currently have the lowest cap rates in the range of 8.9% to 9%. This is followed by Elfindale in the range of 9.2% to 9.5%, and lastly Diep River with the highest average cap rate in the district in the range of 9.3% to 11.3%).

b. Street Front Retail

In comparison to other market segments in the district, street-front retail is performing the weakest with a 10.5% cap rate recorded for 2018 (see figure 8 above), which is higher that the metro average of 8.64%. However, the trade sector, which is made up mainly of retail activity, contributed the second largest to employment and had the highest GVA in the district (refer to table). It should furthermore be noted that this section does not account for other larger scale retail typologies such as neighbourhood and regional shopping centres, which has a significant impact on the cumulative retail property market performance..

In the street-front retail market segment, Claremont, Kenilworth, Wynberg, Mowbray and Sunnydale (in the far south) are performing the best in the district (refer to figure 6 below).

c. Office

Similar to street-front retail, the office sector experienced weaker performance in the district since 2015, with higher average vacancies and cap rates recorded for 2018, although the cap rate was slightly lower than retail. This may be due to a change in business culture that embraces telecommuting and remote working (work from home). With fewer employees at the office on a given day, space requirements are shrinking. Depending on what percentage of the company's employees are opting to work remotely, commercial property experts suggest that this could result in a significant reduction in floor space. However, the office market segment still had the best gross rental return per square metre, which correlates to the stronger performance of the trade and finance sector.

Claremont (including some space in Newlands), which contains the highest concentration of gross lettable office space in the district, had cap rates between 9.3% to 10% in 2018. These cap are on par with some of the best performing space in Cape Town (i.e. Century City and the Cape Town CBD) in the city (see figure 7 below). In contrast, – the second-most significant area with office space in the district – had a weaker performance with cap rates in the range of 10.9% to 11.1%. Smaller office space, spread across the district (in areas like Fishoek, Muizenberg, Diep River and Retreat) have cap rates more have cap rates in the range if 11 - 11.7%.

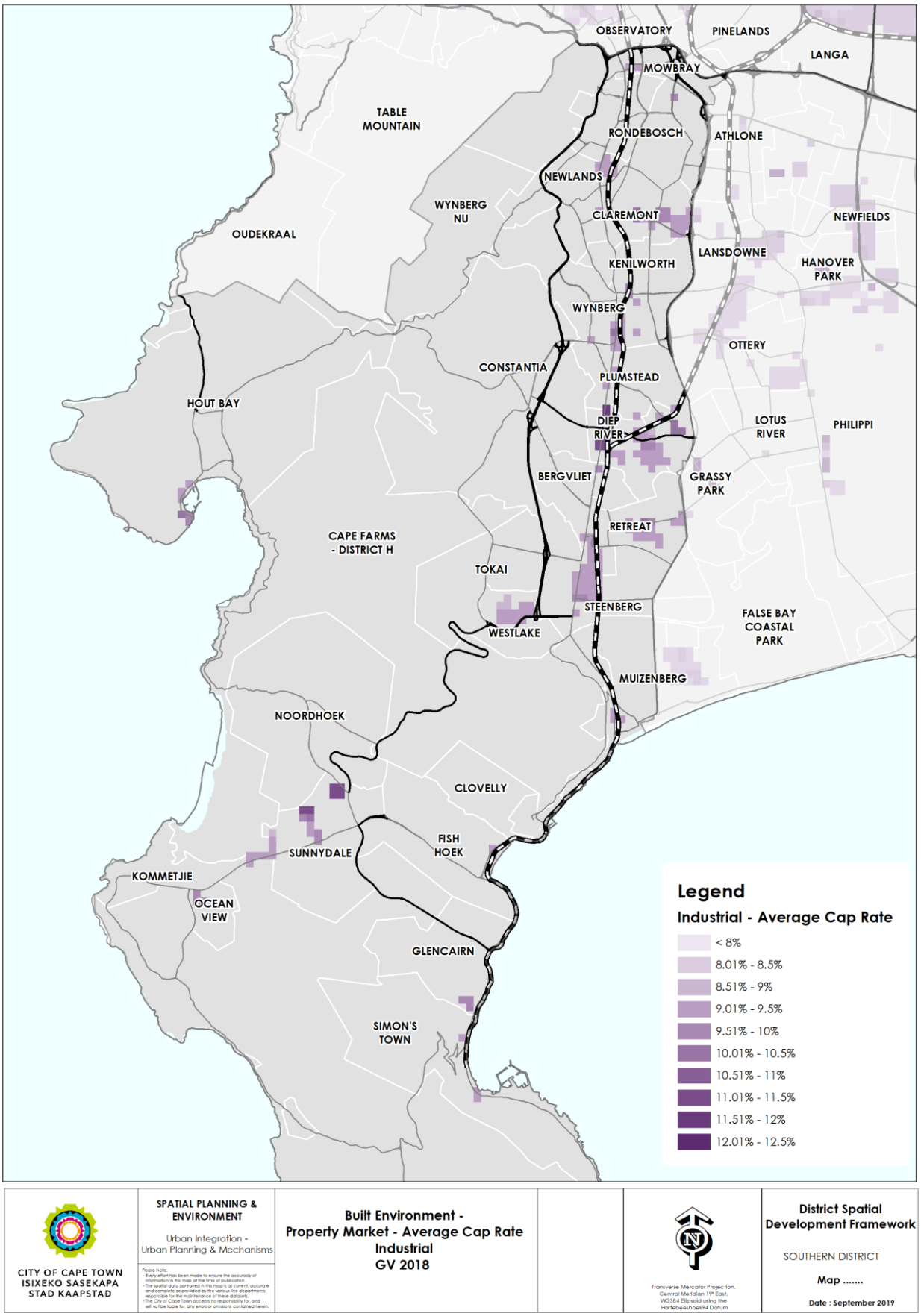


Figure 77: Average Cap Rates Per 4ha: Industrial Property Market

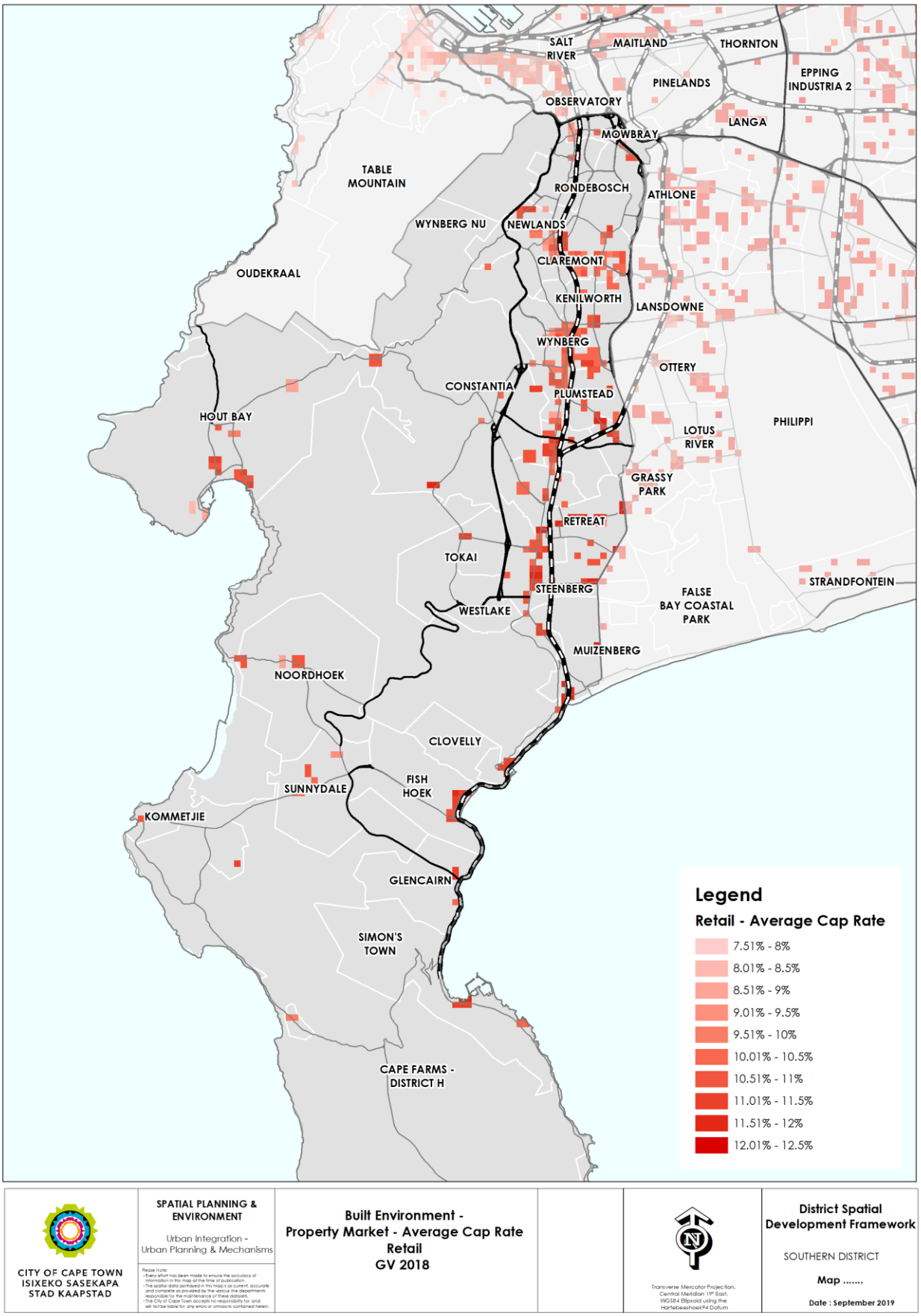


Figure 78: Average Cap Rates Per 4ha: Street Front Retail Property Market

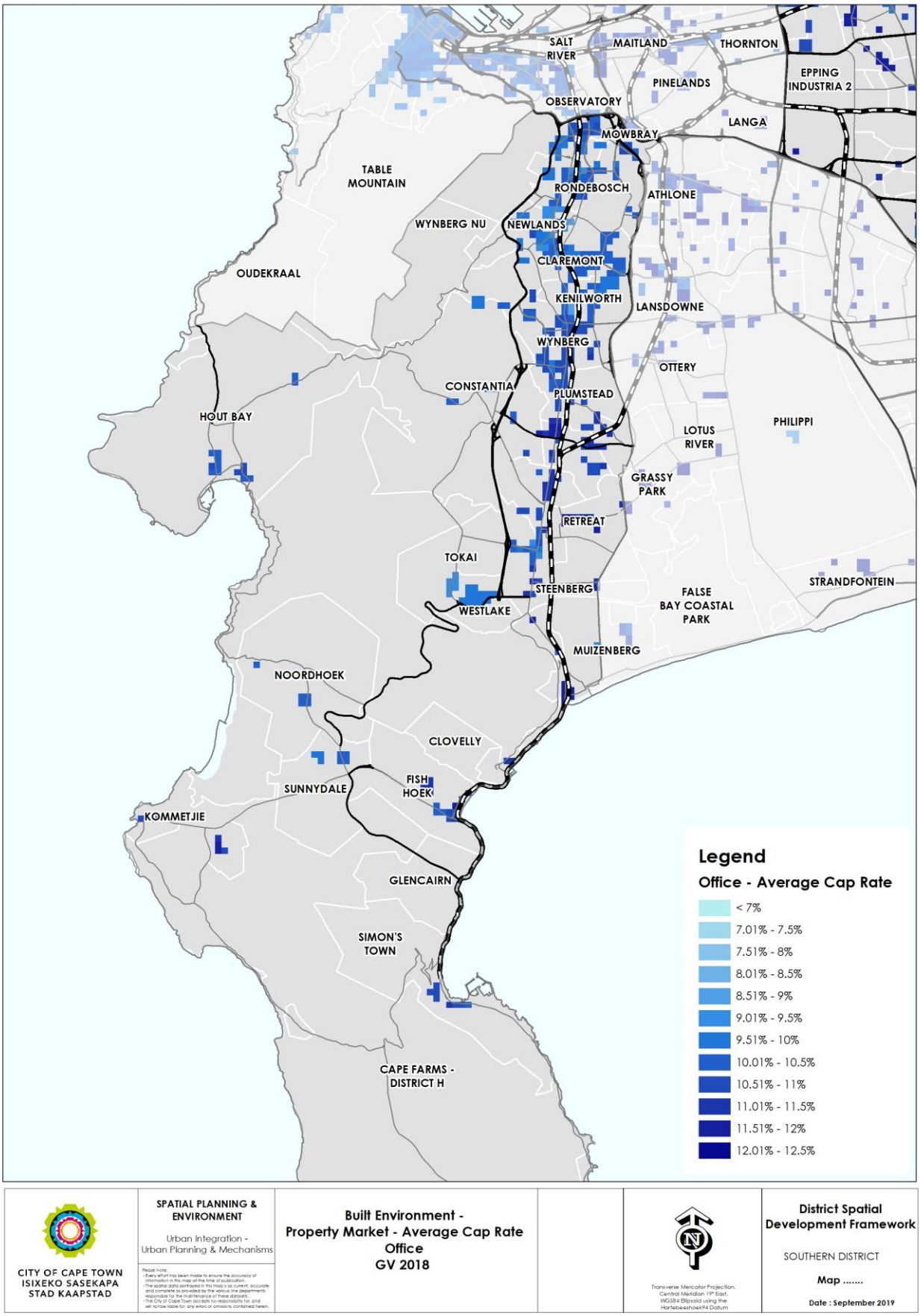


Figure 79: Average Cap Rates Per 4ha: Office Property Market

1.1.1.2 Residential

a. Sales

Figure 80 shows suburbs where the most property sales have occurred between 2012 and mid-2019. Claremont, Rondebosch, Kenilworth, Plumstead and Houtbay have the highest volume of residential sales with an average sale price of between R 2 500 000 - R 2 800 000 (Claremont, Rondebosch and Kenilworth), and between R1 300 000 and R1 400 000 (Wynberg and Plumstead) in 2018. In Hout Bay the average sale price of a residential property was around R3 500 000 and in Muizenberg around R1 200 000.

The data also reveals a lack of options in the formal 'affordable housing' residential market segment. The 'Affordable housing' segment refers to households earning a monthly income between R18,000 and R22,000. Table 39: Monthly income bands and the corresponding bond amount below depicts the total amount these household incomes are likely to obtain from end-user financing.

Table 39: Monthly income bands and the corresponding bond amount

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

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

Figure 81 depicts the average value per square meter of land in Cape Town. It is calculated by dividing the market value by the erf extent, and aggregating the result to 4ha grid cells. This map indicates the concentration of properties with the highest values in the Southern district. It shows that areas with highest volume of sales (referred to above) in addition to Constantia, Tokai, and Newlands currently contain properties with the highest value per m².

b. Growth in Value

Figure 82 and Figure 83 below depict the City's growth in value per 4ha grid area over time, by calculating the percentage difference in value between the three City of Cape Town's municipal valuation terms (per property). All values were adjusted/deflated to 2016 Rands using the CPI (consumer price index), to approximate real growth in value.

Residential areas that showed the highest growth in value are located along the Southern Rail corridor. These include Observatory, Mowbray, Claremont, Ronderbosch, Kenilworth and Steenberg. Residential properties in parts of these areas experience a growth from 90-100% and in some cases greater than 100% between 2012 – 2018.

In terms of non-residential properties, industrial use properties experienced the highest growth in value. More so in Westlake and Retreat, which is a reflection of the strong performance in the associated market segment – see section 10.1, a) above. Office and Retail use properties in Claremont also experienced a high increase in value, which is more a reflection of the area's accessible location and corresponding increase in residential development than the general market performance in the retail and office market segment in Cape Town.

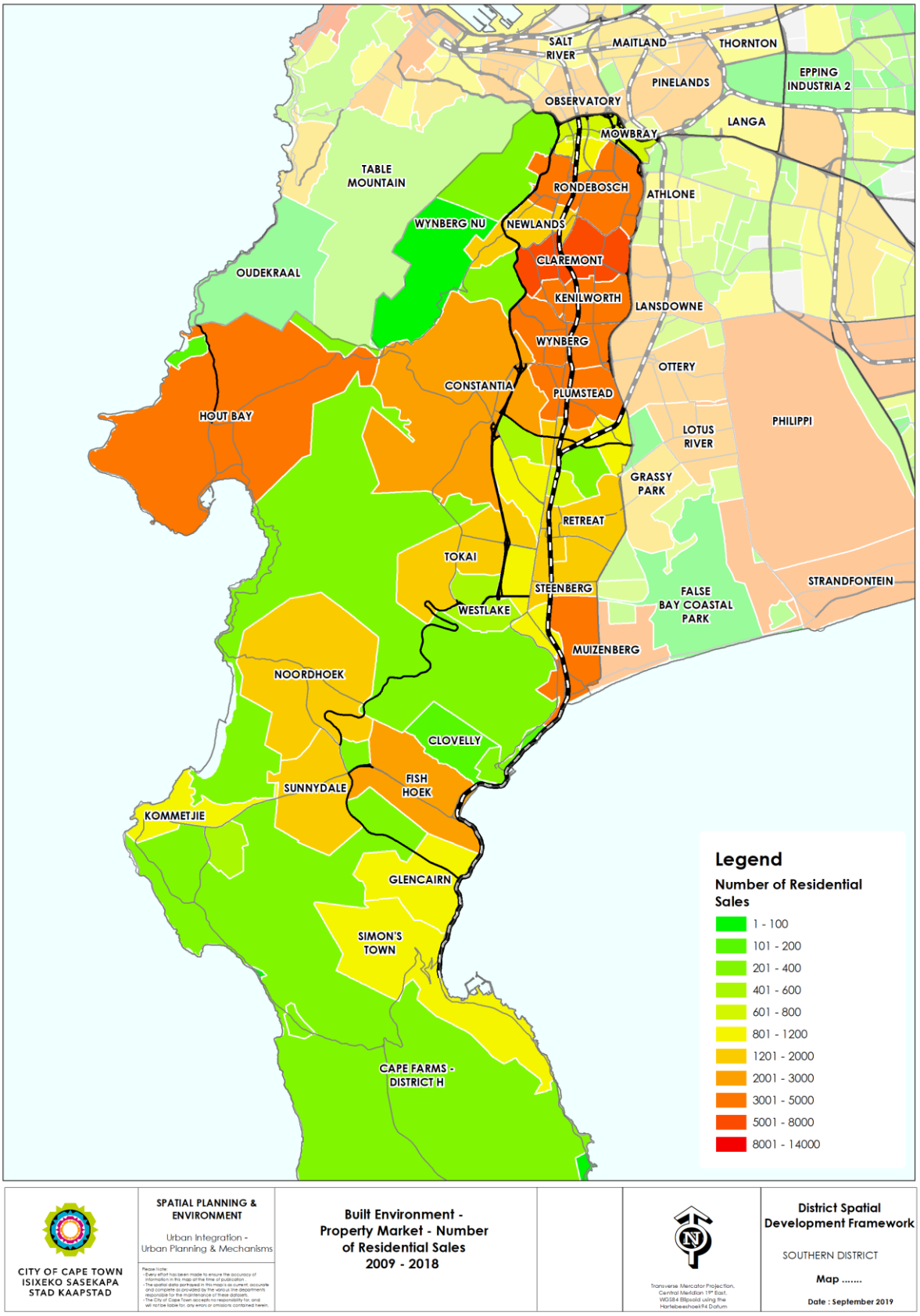


Figure 80: Number of Residential Sales 2009-2018

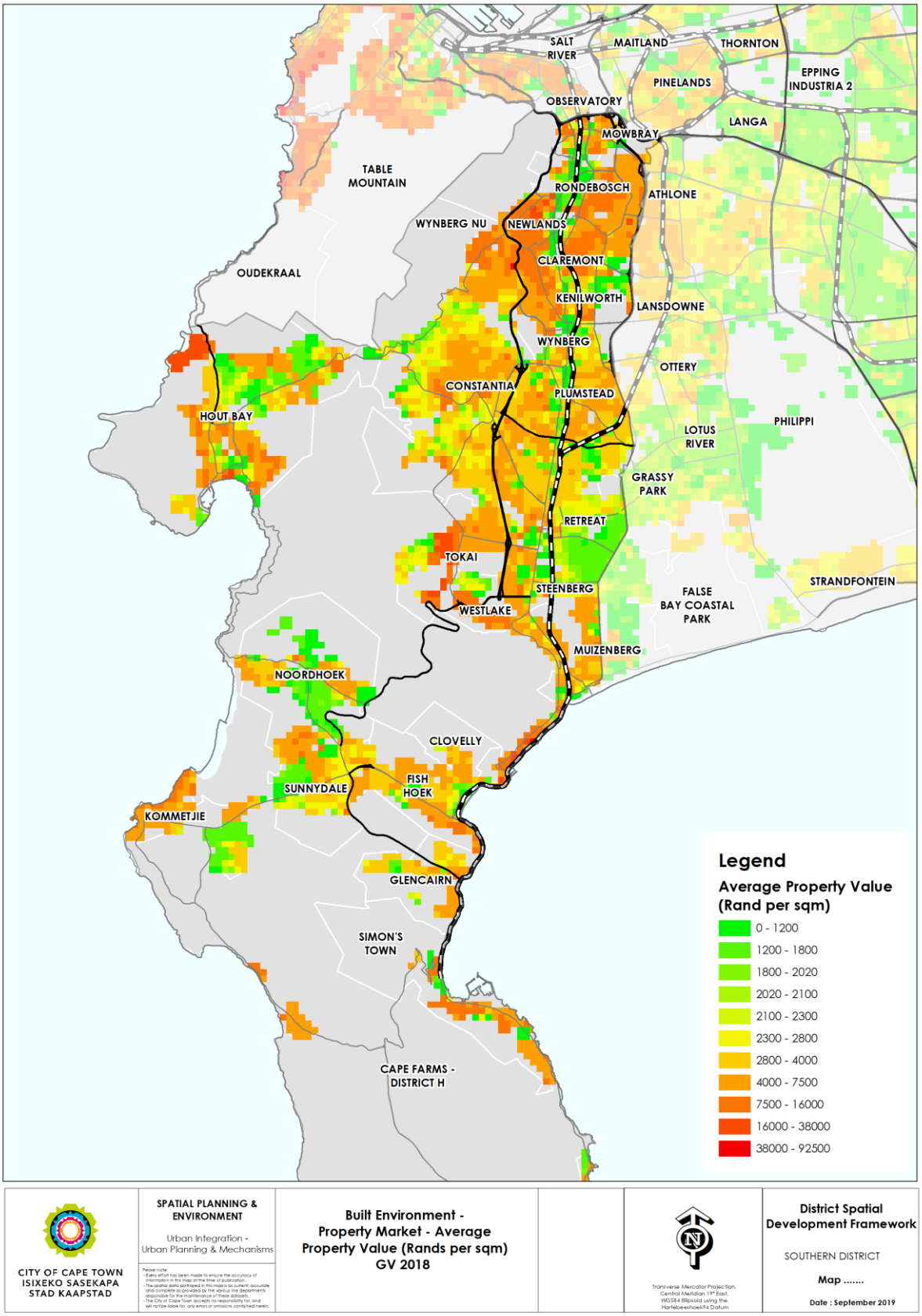


Figure 81: Value (R) per m²

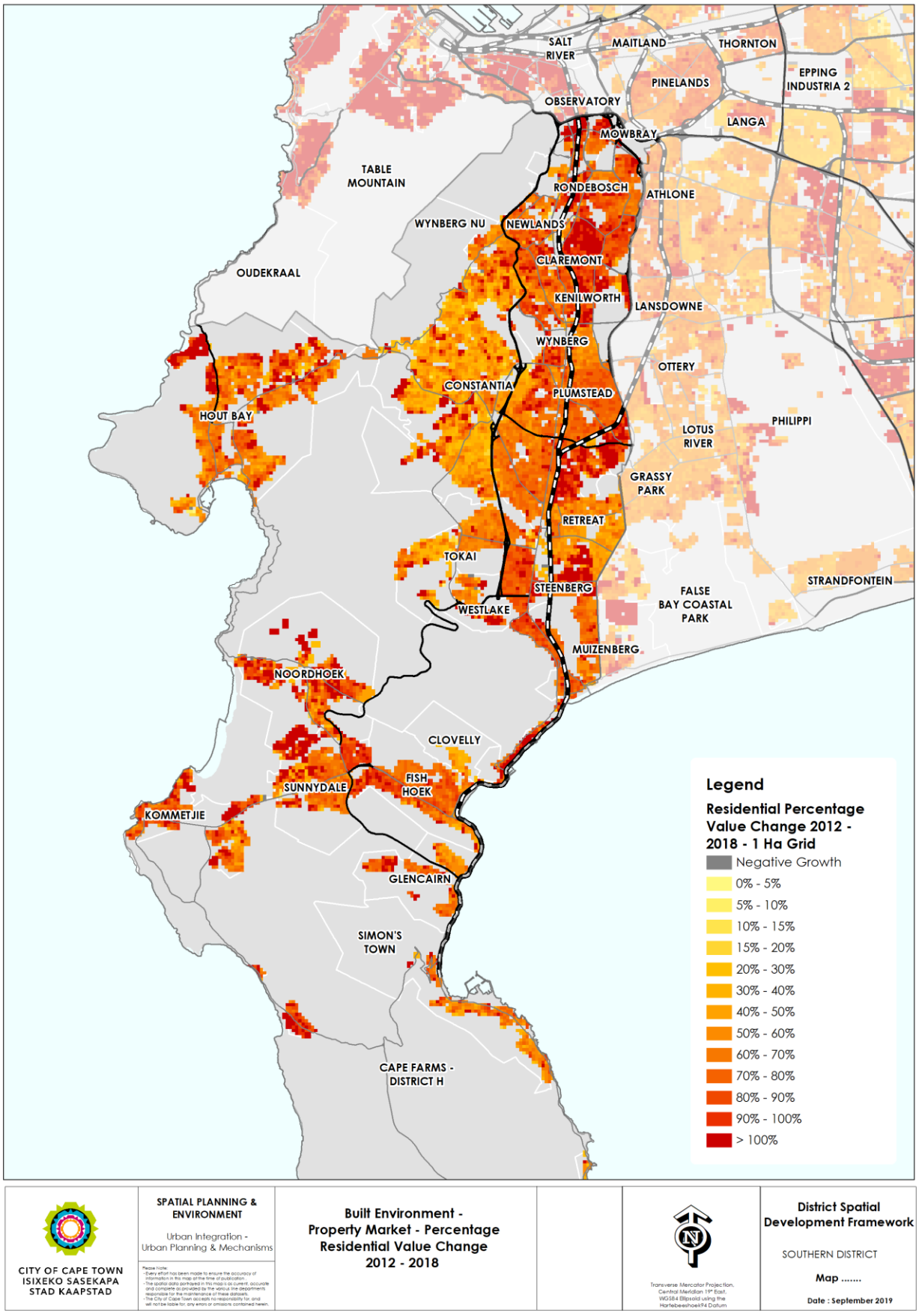


Figure 82: % Changes in Value 2012-2018 for Residential Properties

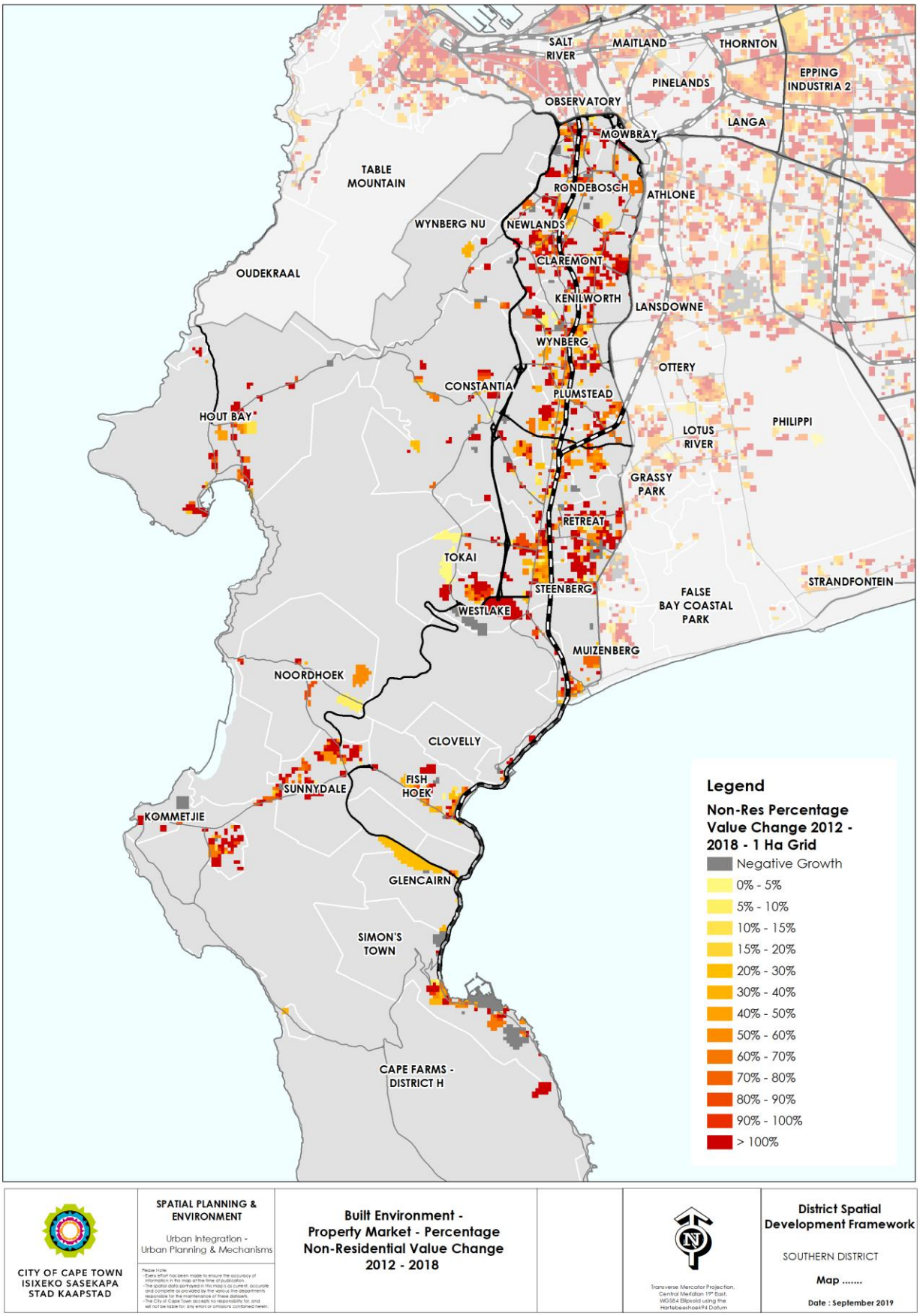


Figure 83: : % Changes in Value 2012-2018 for Non-Residential Properties

10.2 KEY OPPORTUNITIES AND CONSTRAINTS

10.2.1 Summary of issues and trends

10. Evaluation of the economy and, to a lesser extent the property market, by district is to date limited. The 8 districts are not generally clearly defined, or arguably even logical, with respect to economic metrics and indicators. These districts were defined as broadly equivalent municipal management areas based on area and population size. Thus, while comparatively detailed and defined economic data exists for the city (municipal area) as a whole this is, not unexpectedly, not the case with respect to districts. Hence, whilst the data by district that exists does provide a sense of comparison between different geographical areas of the city this is limited and in some cases even potentially misleading. Evaluation of economic activity and the property market needs also additional non-quantitative assessment (through observation, other localized data sources etc.).
11. 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.
12. The economic growth rate in the district is comparatively low (1.2% over the last 10 years), probably attributable to the relative overall maturity of the district (i.e. not a district with substantial new urban expansion such as Blaauwberg), but more so its lack of significant industrial areas and contained CBD areas.
13. The Southern District is not a high (4th highest of 8) contributor to gross value added (GVA) to the city. This is largely mirrored in employment contribution (comes in as 3rd highest).
14. The top 5 economic sectors by location quotient analysis (2018) in the Southern District are (in descending order) real estate, public administration and defence, education, other service activities, and fishing.
15. The HDI in the Southern District (at 0.81) is, together with that of Table Bay district (also 0.81), the highest across the 8 districts in the city
16. The Gini coefficient in the Southern District is among the lowest across the City's 8 district. This is, however, still inordinantly high.
17. Income inequality has not changed positively (i.e. reduced) in recent years and remains a major challenge
18. The distribution of households by income category confirms the concentration of poverty and need in the metro south-east (vis-à-vis Mitchells Plain – Khayelitsha district), which has implications for where comparative opportunity exists (of which the Southern District is one) and the need for movement to this.

10.2.2 Pressures and Constraints

10. Constrained access into and through district. Limited east-west access across railway. High congestion in peak periods northwards to CBD and northern suburbs, including for freight.
11. Comparatively small and limited extent of CBD areas due to development pattern from 50-100 years ago. This is most noticeable in Claremont since this is the CBD which has enjoyed steady and significant growth.
12. Very limited opportunities for low income households to gain access within the district, due to generally very high property prices across the district as well as paucity of potentially developable state-owned land. This is thus confined largely to existing low income areas of Imizamo Yethu and Masiphumelele and one or two others, all of which are extremely compromised in terms of expansion opportunities. These areas are as a result hugely overcrowded with massive attendant development challenges.
13. The high opportunity costs of developing available potentially developable vacant sites across the district. This relates to high property prices/land costs and the ability for state

funding for housing to be spent elsewhere on significantly more recipients than in the district. Thus, significant pressure for these sites to be sold and developed for market-related residential and/or commercial with the sale cost proceeds being deployed elsewhere in the city.

14. The sub-optimal rail public transport system in particular , but public transport system generally.

10.2.3 Opportunities

4. It appears, from the location quotient analysis across the city, that the Southern District has a comparative advantage over other districts with regards to real estate. This is not to say this is not a strong factor in other districts, or that other economic activities in the Southern District do not have high (perhaps even higher) economic importance (e.g. financial and insurance industry) but that the Southern Districts greatest competitive advantage is in real estate.
5. One of the few parts of the city where significant numbers of low income households reside in close proximity to high income areas, which provides the opportunity for leading edge integrated outcomes through increased high income area institutional support etc. (which could be precedent setting).
6. The potential for developing economic diversification and inter-linking support between the formal and informal sectors within the district through greater recognition and support for the informal economic sector.
7. The link between education, especially tertiary facilities, and economic activity. A clear link already exists re- consistent and rising demand for student accommodation and associated activities in proximity to UCT.

10.2.4 Implications for the spatial plan

5. Maximising economic opportunity by developing and leveraging the existing quality urban and natural environments in the Southern District. Critically, this is founded upon protecting and enhancing these unique and special assets. But, this does not preclude change towards appropriate development.
6. The growing significance of Cape Town's finance and business services sector has been is likely to result in increasing demand for office space. The Southern District is well positioned for this given access to lifestyle living along the south peninsula chain. IT developments, internationalisation of financial linkages, and increasing congestion from the southern suburbs into the city centre all contribute to demand for decentralisation of office space. Claremont's continued development as a financial hub is increasingly acting as a primary attractor, with trickle down effects for the area as a whole. Increasingly there is demand for high end office space within quality urban, and even natural, environments.
7. Increased attention required to supporting intervention to facilitate the integration of lower income areas and their communities into their surrounding urban areas, as well as facilitating such in other areas within the district.
8. Supporting greater densification and intensification in and around high accessibility areas such as CBDs, public transport interchange areas and along the Main Road corridor generally.

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[24] is lessened.

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

11.1 GUIDING POLICY ON RISK AND RISK MANAGEMENT:

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

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

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

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

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

The MSDF policy relating to risk is shown in the table below:

Table 40: MSDF risk related policy statements

Sub-Strategy Appropriately Protect the Citizens of Cape Town from Risk Areas	
Policy Statement	What this Means/Requires
Policy 20 **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,

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

	promote public transport, non-motorised transport and support the recycling of water and waste materials.
Policy 21 **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 22 **Discourage urban growth in areas at risk from natural hazards/coastal processes which are expected to be amplified by climate change impacts.**	Areas vulnerable to climate change and natural hazards and risks have broadly defined through specialist studies or will be determined by future specialist studies.

Extract from MSDF 2018

The Disaster Risk Management Plan for Cape Town evaluates known hazards in terms of the following[25]:

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

11.2 RISKS IN THE SOUTHERN DISTRICT

Taking the aforementioned guiding policy into the account the following section identifies the types of risk (see figure x below) and the level of exposure to risks at the district scale, **referencing those risks that impact on the permissible intensity and location of future urban development (see tables 1-7 below)**. The hazard evaluation above is referenced where possible. In addition, the relevant principles that apply when considering the allocation of development rights and possible exceptions are identified.

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

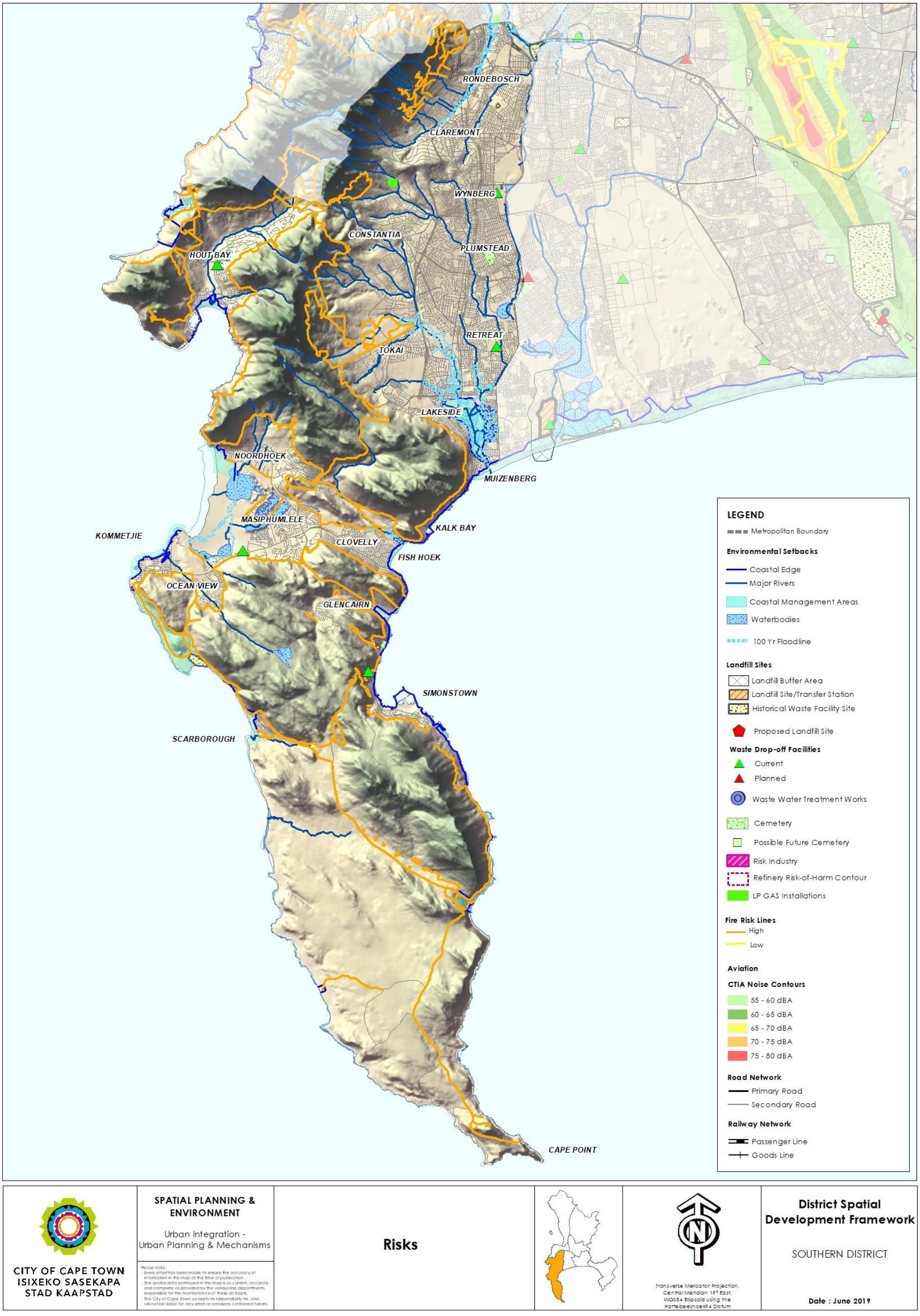


Figure 84: Integrated Bio-physical and Built Environment Risk Map

11.2.1 Natural Risks

11.2.1.1 Slope instability hazards, including rockfall, erosion, landslides,

The steeper slopes in the District pose a risk from falling rocks and unstable terrain. Rockfall can affect scenic drives in the peninsula. A key risk area is Chapman's Peak Drive, which is reasonably regularly closed as a result of rockfalls after big storms or fire events. This has a substantial knock-on effect if either of the remaining two access routes to the Far South area are compromised (e.g. a car accident which forces a road closure). Other mountain routes (e.g. Boyes Drive) are also prone to road closure from time to time as a result of particularly severe storms.

The other significant risk area is slope instability (slippage) in the Simon's Town mountain – urban interface area. This geo-tech instability has significant implications on development (& associated costs) in parts of this interface area.

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 Sand Dune Migration

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.

The railway line between Glencairn and Simonstown is subject to significant wind-blown sand and requires ongoing maintenance to avoid closure.

Hout Bay harbour and beach areas, including properties next to the beach are also significantly affected by windblown sand caused by disruption of the historical sand transport corridor between Hout Bay and Sandy Bay, due to urban development in Hout Bay. This has resulted in massive rehabilitation costs recently, and is a problem requiring on-going attention due to historically inappropriately located urban development.

Some houses were built in the dynamic dune system in Slangkop near Kommetjie and are affected by dune movements and storm surges.

A notable problem area in relation to sand dune migration is the old closed landfill site in the dunes behind Witsand Beach. This was clearly an inappropriately located site and now requires annual management to ensure it remains capped by sand which is regularly swept away by strong summer south-easter winds.

Other areas where windblown sand pose some (mainly inconvenience and low grade) problems are at Fish Hoek and Muizenberg beachfronts and Sunrise Circle and beachfront parking area.

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. Alternative service delivery mechanisms in risk areas should be investigated in order to reduce the impacts of known hazards.

11.2.1.3 Storm Surges

Historic urban areas of the coast, from Muizenberg to Simonstown are developed close to the sea and affected by storm surges. This is anticipated to become more severe over time due to sea level rise caused by climate change. Key infrastructure areas at Kalk Bay harbour and along the railway line are particularly vulnerable. Although not yet a significant issue the beachfronts areas at Muizenberg and especially Fish Hoek are at increasing threat of future storm surge events (when spring tides combine with large swell and strong onshore wind). The sand dune system along Fish Hoek beachfront is increasingly being undercut and eroded by wave action which is requiring addressing, and infrastructure behind this will be at threat in future. Any redevelopment of these areas needs to carefully consider this risk.

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

11.2.1.4 Coastal Erosion

The disruption of natural sand movements caused by historic development has led to exposure to risk from coastal erosion processes. This is anticipated to become more severe over time due to changes in coastal dynamics and sea level rise caused by climate change. In particular Sandy Bay beach and other beaches further along the coast are losing sand due to the disruption of the historical sand transport corridor between Hout Bay and Sandy Bay, due to urban development in Hout Bay.

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.

11.2.1.5 Heat and heat islands

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

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

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

11.2.1.6 Wild Fire

Fire lines indicate the interface between the wild lands vegetation and urban areas, high risk indicates where there are larger volumes of combustible vegetation. Most of the areas along the Peninsula mountain chain are at risk of veldfire wildfire events and these area a regular annual occurance. This risk is particularly extreme in the southern peninsula area where high winds and dry veld conditions are prevalent in summer. Fire risk is anticipated to increase over time due to increased temperatures, increased drying, and higher wind speeds caused by climate change. Apart from loss of property and threat to life are inconveniences to daily activities with road closures etc. Closely associated with the fire event destruction are subsequent winter storm mudslide events due to unstable burnt out slopes. However, fire events are closely linked to the fynbos veld and fire regime susceptibility, and indeed dependence on fire for regeneration.

Rating of Probability	**Rating of Maximum Impact**	**Vulnerability Rating**	**Coping Capacity**	**DRM Priority Rating**	**Development Principles and Exceptions**
Very Likely	Moderate (but arguably Extreme in Southern District)	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.

11.2.1.7 Flood Risk

The presence of waterbodies 1:100 year flood lines and indicative sea level rise modelling reveal the areas with higher probability for flood and coastal inundation occur.

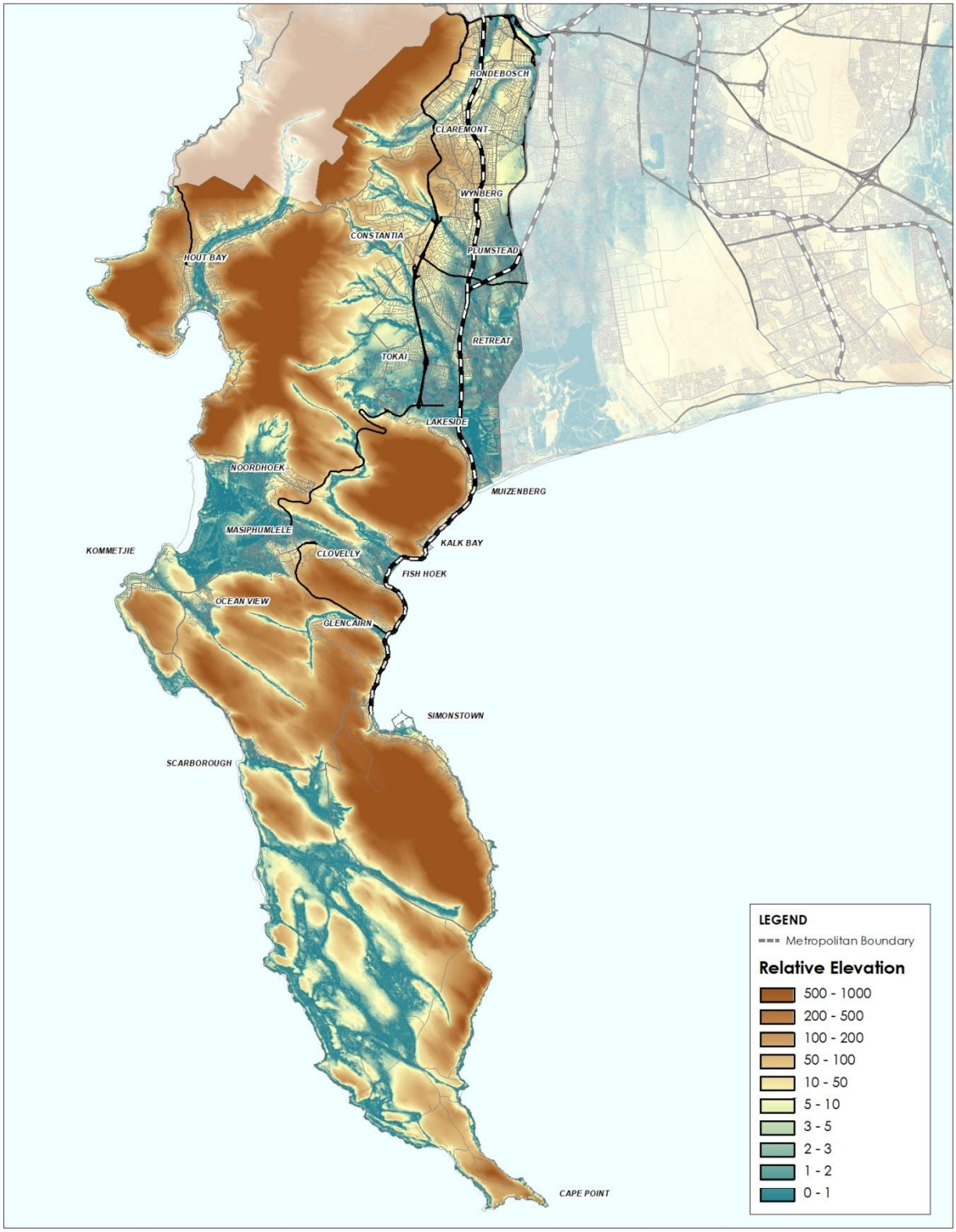
The relatively recent but continually expanding informal settlement (wetland) area of Masipumelele is particularly vulnerable to flooding. Areas close to waterbodies are at risk. Relative elevation reveals areas where water will speed up and collect, or where coastal areas are flatter and more likely to experience inundation during storm surge, the Relative Eevation map reveals a higher probability of risks in the brown areas. The key area in this respect in the Southern District is the river system complex running from Constantia through Tokai into Zandvlei, although significant attention in recent years to mitigation measures has largely addressed this.

Areas directly next to the coast and flatter areas of the coastline are vulnerable to flooding and coastal inundation during storm surges. Although not yet problematic this is likely to in future include Fish Hoek and Muizenberg beachfront areas.

Some coastal inundation modelling was done to determine the Coastal Management line, however it is important ot note that the Coastal Management line doesn't indicate all the properties that are exposed to coastal risks.

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.

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



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

SPATIAL PLANNING & ENVIRONMENT

Urban Integration - Urban Planning & Mechanisms

City of Cape Town

Green Infrastructure Network

1:180 000

Transverse Mercator Projection, Central Meridian 19° East, WGS84 Ellipsoid using the Hartebeesthoek94 Datum

District Spatial Development Framework

SOUTHERN DISTRICT

Date : October 2019

11.2.2 Built Environment Risks

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

Exclusion buffers exist around land fill and waste disposal sites to protect surrounding populations from hazards and nuisances. Historic sites also exclude certain types of development for a period of time determined in the waste management regulations. 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 neighborhoods needs to be considered.

The waste water treatment works at Wildevoelvlei near Kommetjie has in the past had significant negative impacts on the downstream Wildevoelvlei complex (blue green algae blooms in a highly sensitive natural wetland environment. This was as a result of first quantitative and then qualitative management problems at the facility as it responded to largescale urban expansion in the Far South area. Although this expansion rate has moderated since then the facility nevertheless has to plan and develop, and manage, according to continuing growth in the area and ensure the historical problems do not re-surface.

The old closed landfill sites at Witsand and at Noordhoek pose on-going low grade risk. The former requires active annual rehabilitation management as it is located within a mobile dunefield area. The latter remains a no-use area based on is history, but in a situation of continuing urban expansion and associated land development pressure this site increasingly needs to be considered for an appropriate future long term use.

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.

11.2.2.2 Infrastructure and Service Availability:

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

Aging and inadequate infrastructure is a risk throughout the District. See map "Slight and Severe Lack of Capacity."

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

11.2.2.3 Structural Fire Informal Settlements:

Informal settlements and backyard dwellings are often built at extremely high densities and are unable to meet building standards for fire risk reduction. The reasons for informal settlement

fires and methods for reducing risk are complex and site specific requiring an integrated response. From a spatial planning perspective, community planning initiatives such as reblocking and maintenance access routes for emergency services are interventions that may reduce risk.

Fire risk is extremely rapid and more severe in warm high wind situations (usually in summer). Historically at risk has been in Imizamo Yethu and Masiphumelele where settlements are large and particularly dense and thus difficult to combat fire spread. This is exacerbated by the inadequate provision of fire hydrants.

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 and fire hydrant points planned. Working with informal settlement communities to manage risks and adapt buildings.

11.2.2.4 Structural Fire Formal Settlements:

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

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

11.2.2.5 Unmanaged Land Occupation/Unregulated Development

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

Rating of Probability	Rating of Maximum Impact	Vulnerability Rating	Coping Capacity	DRM Priority Rating	Development Principles and Exceptions

n/a	n/a	n/a	n/a	n/a	Refer to human settlements policy and means to address affordable housing demand across the City. Aim for effective land use management and enforcement across the City.

11.2.3 Climate Change Hazard, Vulnerabilities, and Risks - Overview

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

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

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

11.2.3.1 Vulnerability and Impact

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

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

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

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

Figure 1 shows a consolidated map of all climate hazards (harms) for the mid-future period, including rainfall changes, temperature changes, heat islands, flood risk, coastal inundation risk, and wind speed change. In mountainous areas, and other naturally vegetated areas risk pertains largely to increased fire risk. Heat island effects are seen in dense urban areas while flood risks are seen in low lying areas around water bodies.

Figure 2 shows a composite score for resilience in the present day based on a weighted analysis of the social, economic, and environmental factors listed in the table below:

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

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

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

Figure 3 shows an assessment of risk relative to resilience, based on figures 1 and 2; in this figure areas with high exposure to harms and low resilience will have the highest risk rating while those with low exposure to harms and high resilience will have the lowest risk rating.

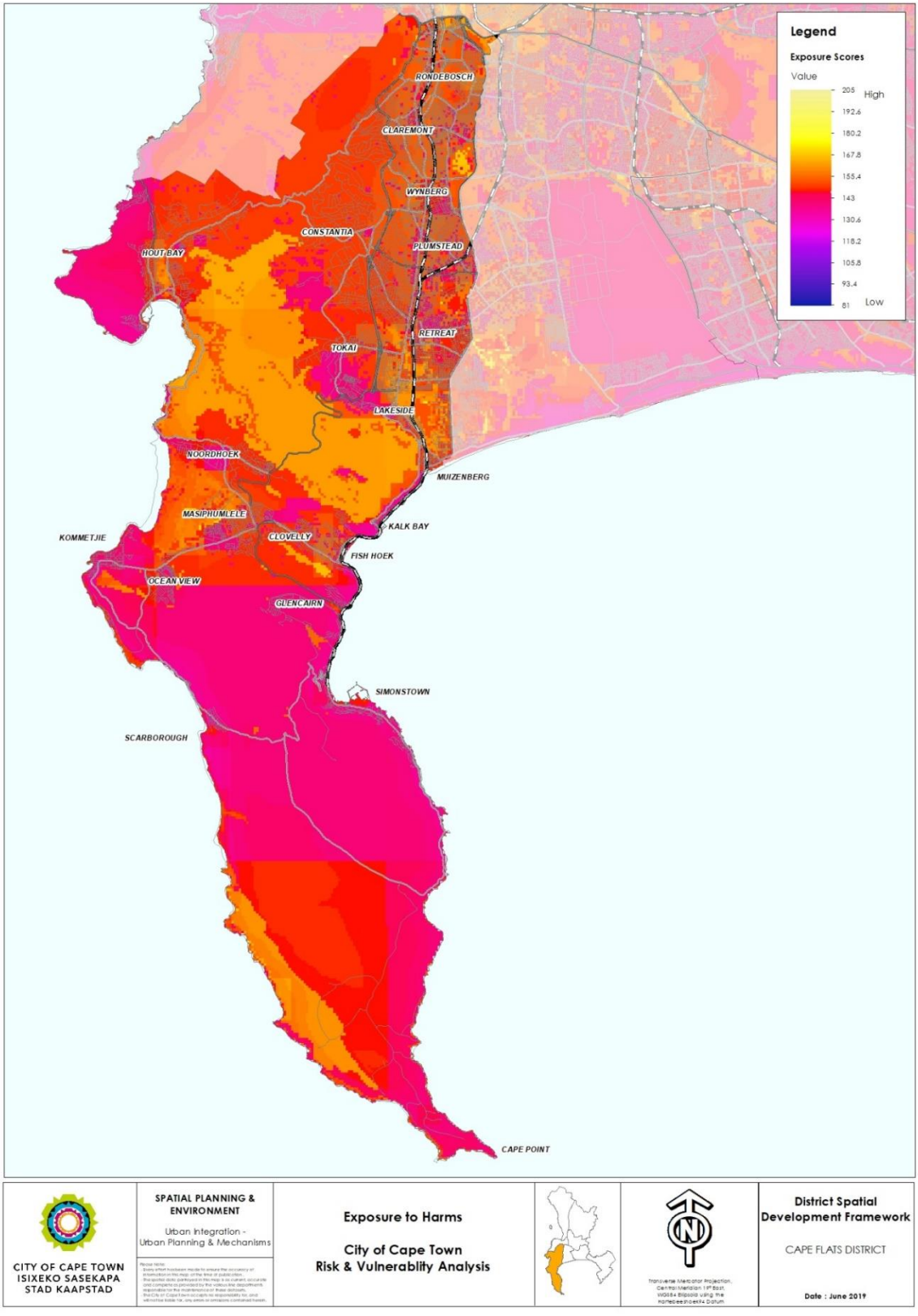


Figure 85: Exposure to harms

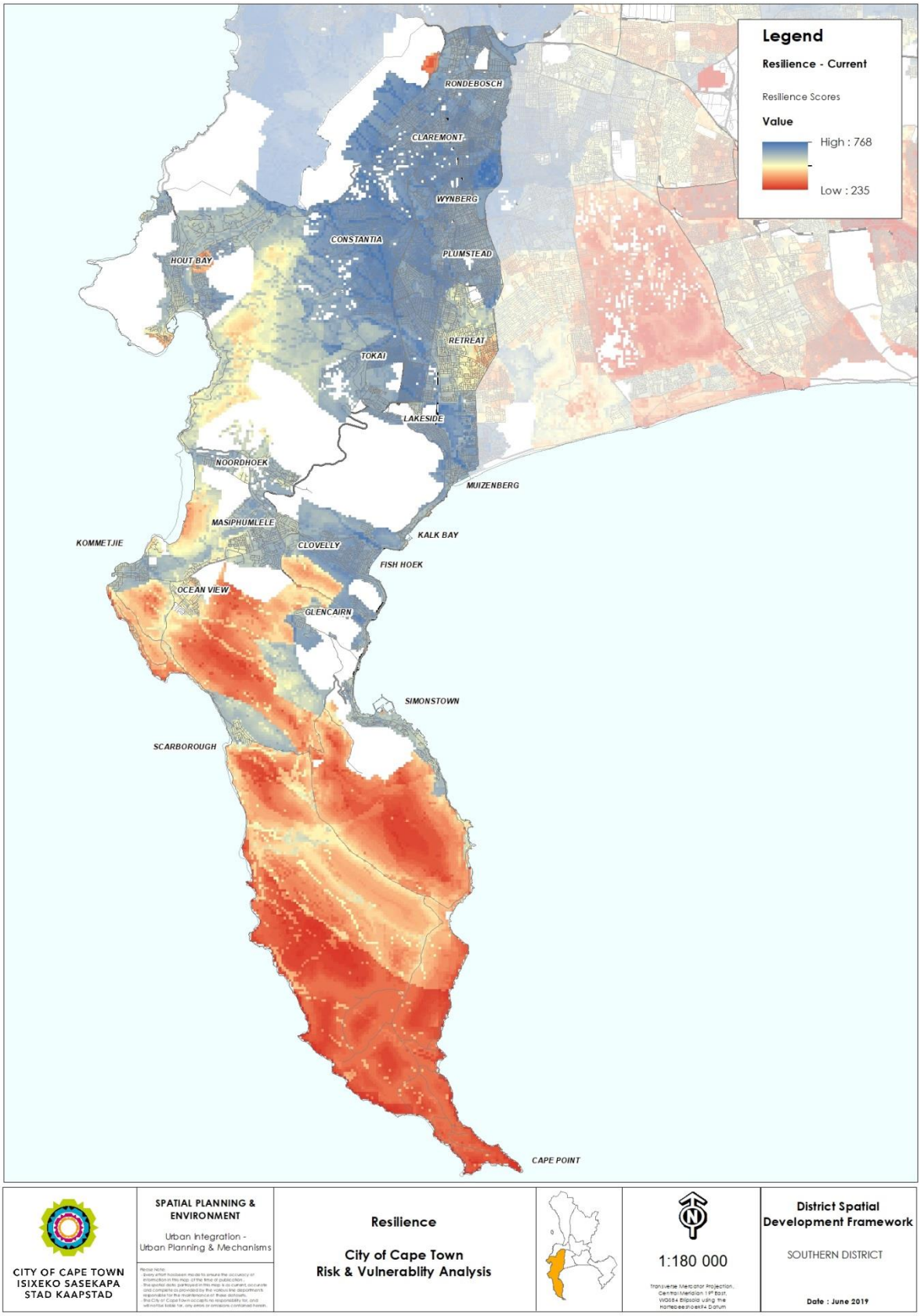


Figure 86: Resilience

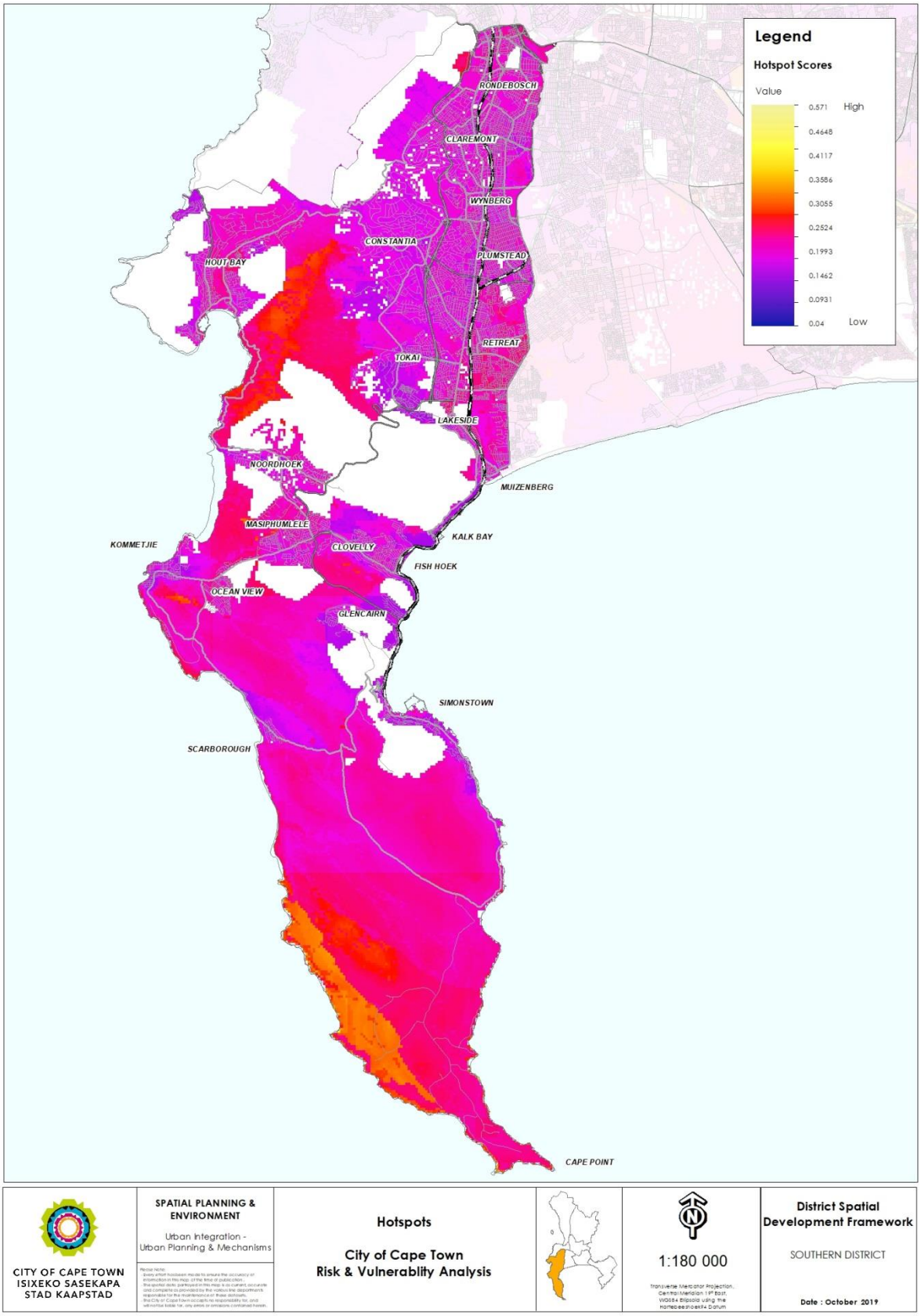


Figure 87: Hotspots

Vulnerable areas and risk hot spots indicate areas that will need to be prioritised for resilience building, public sector interventions and support. The hot spots map shows where settlements and infrastructure show a high degree of vulnerability, Masipumele, Imizamo Yethu and Ocean View are some areas with a higher degree of vulnerability.

11.3 KEY OPPORTUNITIES AND CONSTRAINTS

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

Risk	**DRM Priority Rating**	**Impact Radius**	**Discouraged Types of Development**	**Encouraged Types of Development**
Landfill and waste disposal sites	n/a	800m	Residential Development within buffer	Non-Residential development; Circular economy related industry and commerce
Cemetery	n/a			Open space uses
Rock fall, landslide	n/a	Informed by steep slopes	Development in rock fall paths or without adequate protection measures	Managed retreat and investments in slope stabilization
Flood Risk, Storm Surge exposure and Coastal Inundation Zones	High	Informed by 1:100 year flood lines coastal urban edge line[26] 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.
Structural Fire: Informal- Formal-	Very High	Built up areas, Informal Settlements particularly vulnerable	Development without adequate access to fire services or fire hydrants	Encourage use of fire retardant building materials and methods and adherence to building standards. Safe use of combustible fuels. Work with informal settlements.
Unmanaged Land Occupation/Unregulated Development	n/a for Disaster Risk Management however a priority for law enforcement	Vacant and underutilised land	Left over spaces and derelict land that encourages speculation.	Refer to human settlements policy and need to address affordable housing demand.

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

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.
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.
Wind-blown sand	Lower	Dynamic dune systems	All infrastrucuture and any intensification of urban development.	Rehabilitation of degraded dune systems. Managed retreat Green Infrastructure Defenses of crucial infrastructure
Coastal Erosion Zones		Along entire coast	All intensification of urban development	Coastal defences which are reversible, flexible, do not negatively impact on sense of place or aesthetics, and have other positive knock-on effects. Feasible development to support identified recreational nodes and the sustainability of harbours.

12 SUMMARY OF KEY ISSUES AND PRIORITIES

12.1 SUMMARY OF KEY ISSUES AND PRIORITIES

12.1.1 Summary of Opportunities

In terms of beginning to address a number of the issues facing the areas, there are a number of strategic spatial development opportunities within the district.

1. The unique bio-physical environment, including mountains and sea (warm & cold) and biodiversity.
2. The already developed, but also potential, urban character, informed in large part by the varied and changing topographical nature of the district. This includes declared urban conservation areas (Kalk Bay), those which could or should also be declared, as well as areas where great potential exists to develop urban areas of great character (eg. Sun Valley).
3. The well developed and complementary (hierarchical) transport system along the historical main road corridor (activity streets, rail, connecter roads, expressways), including significant spare rail transport capacity.
4. Economic potentials focussing on the nodes and associated interchange generators along the historical main road corridor. These points of high accessibility are areas wherein future investment should be prioritised to generate further economic activity. A number of these areas, and most particularly Wynberg and Tokai / Retreat, but also Mowbray, Claremont, Steenberg, Muizenberg, and Fish Hoek exhibit significant under-utilized potential which could be unlocked through urban renewal initiatives and the provision of essential infrastructure.
5. Linear open space systems. This includes the many riverine systems of highly variable nature (mountain streams, valley bottom and flats meanders, vleis and estuaries), the Peninsula Mountain Chain system, and certain associated facilities, including the sports stadia and sports facilities located down the historical main road corridor;
6. Underutilised areas of dormant opportunity: As a component of the District analysis, a vacant and underutilised land audit was undertaken. The land audit determined that there are a number of relatively small undeveloped potential infill sites. There are also a few land portions which have strategic, albeit generally medium to long term development potential. The sites identified include the Porter Estate, the Wynberg Military Camp, and the Pollsmoor Prison agricultural lands.
7. Latent potentials associated with natural and created amenity (including the TMNP, coastline, coastal nodes, viewpoints, internal open space systems).
8. Furthermore, it should be noted that there are several opportunities outside of the district that hold the potential to impact on the issues being faced in The Southern District including:
9. Land – the ability of the district to absorb further new development is limited, however new development opportunities do exist to the east of the district (eg. Youngsfield);
10. East-west transport opportunities linking into the district from the east, including Sheffield Road through to Ottery Road and Constantia Main Road, and the R300.

12.1.2 Summary of Challenges

Table 41: Summary of key challenges and strategic priorities

KEY ISSUE	PRIORITIES
1. Inconsistent attention to preserving and enhancing the natural and cultural environments.	• Adhere to urban edge • Enhance mountain to sea river linkages • Protect and enhance rural & urban cultural environments
2. Residential predominance within isolated urban enclaves, linked to carrying capacity constraints.	• Facilitate mixed use development where appropriate • Ensure service provision 'keeps up' • Introduce quality integrated public transport system & NMT • Focus any future densification primarily near public transport access
3. Inadequate and, in cases, almost impossible to manage/ control crisis areas – being informal settlements and areas with high numbers of backyard shacks resulting in encroachment into nature areas and /or degradation of urban and natural environments (incl. groundwater).	• Balanced and holistic situational appraisal • Heightened and prolonged communication /information sharing, consultation, and education and empowerment • Inclusive decision-making processes • Pragmatic and speedy outcomes • Local community buy-in and social contracts
4. More frequent and destructive sea storm events, as well as sea level rise, in association with existing development on the coastline	• Develop appropriate medium to long term development options, plans and frameworks for all coastal development areas. • This includes retreat, manage, or consolidate options, and frameworks for key destination areas.
5. Management of natural environment in balance with increased access to, and utilisation of, it.	• Alignment with TMNP planning & development processes where appropriate. • Increased investment in supporting infrastructure (e.g. formalised pathways) in identified high amenity focus areas.