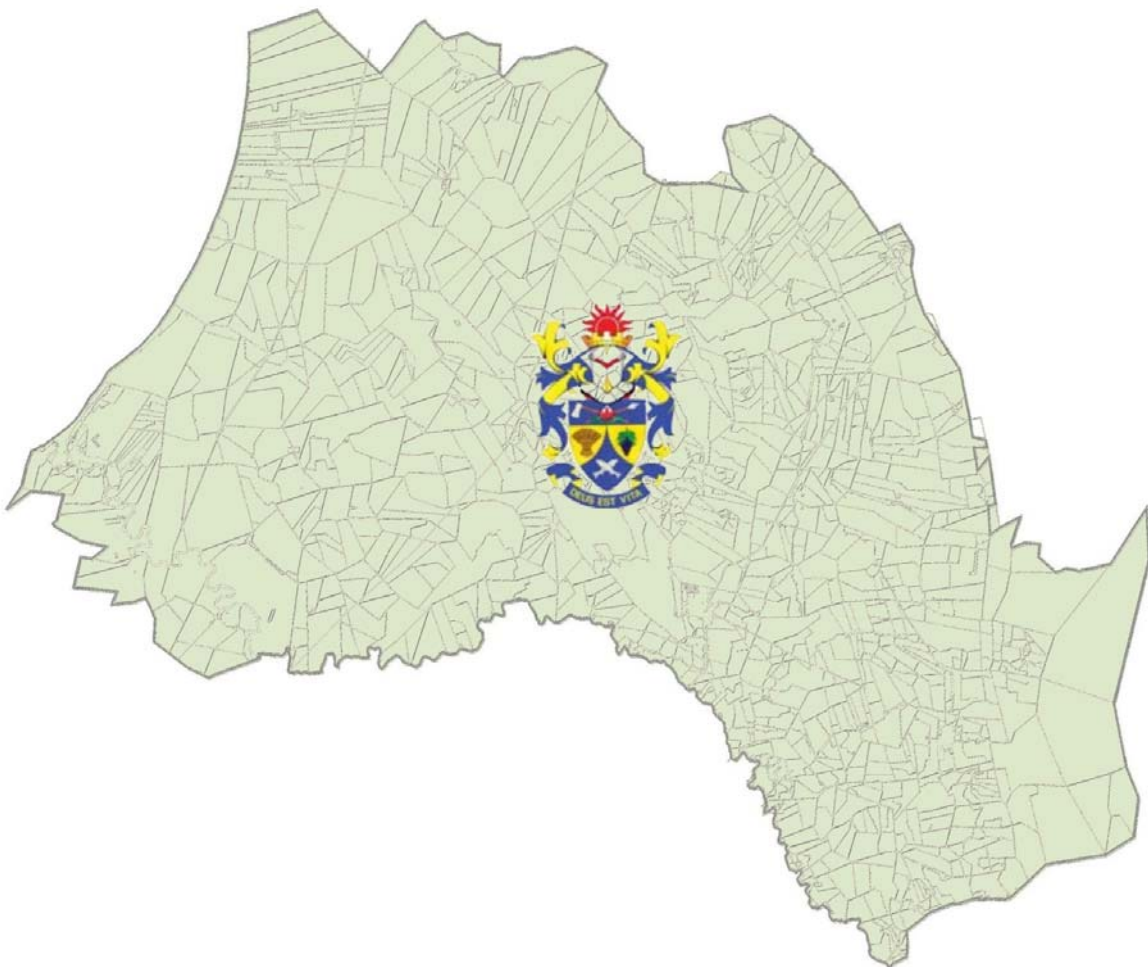


Bergrivier Spatial Development Framework

2012-2017

Spatial Perspective and Status Quo *Volume I*



By CK Rumboll & Partners

January 2013 & revised May 2013



Volume I

Spatial Perspective and Status Quo

Contents

	Page
Chapter 1: Purpose, Scope and Development Phases of Bergrivier Spatial Development Framework	1
1.1 Introduction	1
1.2 Purpose and Objectives	1
1.3 Scope of Work	1
1.4 Development Phases of Spatial Development Framework	3
1.4.1 Public Participation	4
1.5 Summary	5
 Chapter 2: Spatial Perspective: Bergrivier Spatial Development Framework	 6
2.1 Overview	6
2.2 Principles and Objectives	6
2.3. Status Quo Statement	8
2.3.1 Contextual informants	8
2.3.2 IDP and Stakeholder issues and priorities	9
2.3.2.1 Porterville (Wards 1 & 2)	11
2.3.2.2 Piketberg and Eendekuil (Wards 3 & 4)	15
2.3.2.3 Wittewater and Goedverwacht (Ward 5)	20
2.3.2.4 Aurora, Dwarskersbos and Redelinghuys (Ward 6)	23
2.3.2.5 Velddrif and Laaiplek (Ward 7)	27
2.3.3 Sector issues and informants	30
2.3.4 Intergovernmental department plans and consideration	31
2.4 Vision	33
2.4.1 The IDP needs analysis	34
2.4.2 Legislative requirement	34
2.4.3 Trends that need management	35
2.4.4 Assessment of inherent character, culture, qualities and roles of the area	36

2.5	Problems and issues statement	38
2.6	Spatial Concept and Direction	42
2.6.1	Areas to be protected	42
2.6.2	Urban areas to be restructured and protected	46
2.6.3	New development areas	49
2.7	Core land use management principles (high level policy direction)	55
2.7.1	The protection of biodiversity, agriculture or heritage assets	55
2.7.2	The form and nature of new development	55
2.7.2.1	Structural Principles	56
2.7.2.2	Spatial Principles	58
2.7.2.3	Types of land use changes promoted and locations supported	59
2.8	Spatial Tools and Strategies	59
Chapter 3:	Status Quo - Bio Physical Environment, Bergrivier Municipality	61
3.1	Geology and Soils	61
3.2	Building Materials and Mining	63
3.3	Climate	64
3.3.1	Climate change	67
3.4	Topography and slopes	69
3.5	Hydrology	72
3.6	Biodiversity	74
3.7	Vegetation and Fauna	77
3.8	Conservation and Heritage	83
3.9	Agriculture	85
Chapter 4:	Status Quo - Socio – Economic Environment, Bergrivier Municipality	101
4.1	Demographic Profile	101
4.2	Health	105
4.3	Education	105

4.4	Employment, Unemployment, Income and Expenditure	108
4.5	Land Reform	114
4.6	Cemeteries	115
4.7	Crime	115
4.8	Property Market patterns and growth pressures	116
4.9	Municipal Finances	117

Chapter 5: Status Quo - Built Environment 121

5.1	Hierarchy and role of settlements	121
5.2	Settlement Densities	122
5.3	Land Use Management Issues	123
5.4	Transportation	124
5.5	Water/ Infrastructure	126
5.6	Waste Water Treatment (Sanitation)	126
5.7	Solid Waste Management	127
5.8	Energy	129
5.9	Telecommunications	130
5.10	Human settlements	130
5.11	Land	131
5.12	Secondary Economic Sectors: Manufacturing, Construction, Transport	140
5.13	Tourism	143

Chapter 6: Status Quo: Wards 1 & 2: Porterville 146

Porterville

6.1	Historical Overview	146
6.2	Locality	146
6.3	Demography	146
6.4	Town Hierarchy	147
6.5	Economic Base	147
6.6	Spatial Structuring Elements	147

6.7	Urban Structure	148
(i)	Town Layout and uses	148
(ii)	Density	150
(iii)	Vacant Land	151
(iv)	Built form	151
(v)	Functionality	152
(vi)	Movement Network	152
6.8	Services and Infrastructure	152
(i)	Water	152
(ii)	Sewerage	152
(iii)	Electricity	152
(iv)	Refuse	152
(v)	Storm water	153
(vi)	Roads/Rail	153
(vii)	Traffic and Safety	153
Chapter 7: Status Quo: Wards 3 & 4: Eendekuil and Piketberg		154
7.1	Eendekuil	154
7.1.1	Historical Overview	154
7.1.2	Locality	154
7.1.3	Demography	154
7.1.4	Town Hierarchy	155
7.1.5	Economic Base	155
7.1.6	Spatial Structuring Elements	155
7.1.7	Urban Structure	156
(i)	Town Layout and uses	156
(ii)	Density	158
(iii)	Vacant Land	158
(iv)	Built form	159
(v)	Functionality	160
(vi)	Movement Network	160
7.1.8	Services and Infrastructure	160
(i)	Water	160
(ii)	Sewerage	160
(iii)	Electricity	160
(iv)	Refuse	161
(v)	Storm water	161
(vi)	Roads	161
(vii)	Traffic and Safety	161
7.2	Piketberg	162

7.2.1	Historical Overview	162
7.2.2	Locality	162
7.2.3	Demography	162
7.2.4	Town Hierarchy	162
7.2.5	Economic Base	163
7.2.6	Spatial Structuring Elements	163
7.2.7	Urban Structure	164
(i)	Town Layout and uses	164
(ii)	Density	166
(iii)	Vacant Land	167
(iv)	Built form	167
(v)	Functionality	167
(vi)	Movement Network	167
7.2.8	Services and Infrastructure	169
(i)	Water	169
(ii)	Sewerage	169
(iii)	Electricity	169
(iv)	Refuse	169
(v)	Storm water	169
(vi)	Roads/Railway	169
(vii)	Traffic and Safety	169
Chapter 8:	Status Quo: Ward 5: Goedverwacht and Wittewater	170
8.1	Goedverwacht	170
8.1.1	Historical Overview	170
8.1.2	Locality	170
8.1.3	Demography	171
8.1.4	Town Hierarchy	171
8.1.5	Economic Base	172
8.1.6	Spatial Structuring Elements	173
8.1.7	Urban Structure	173
(i)	Town Layout and uses	175
(ii)	Built form	175
(iii)	Functionality	175
(iv)	Movement Network	175

8.1.8	Services and Infrastructure	176
(i)	Water	176
(ii)	Sewerage	176
(iii)	Electricity	176
(iv)	Refuse	177
(v)	Storm water	177
(vi)	Roads	177
8.2	Wittewater	177
8.2.1	Historical Overview	177
8.2.2	Locality	177
8.2.3	Demography	178
8.2.4	Town Hierarchy	178
8.2.5	Economic Base	178
8.2.6	Spatial Structuring Elements	179
8.2.7	Urban Structure	179
(i)	Town Layout and uses	179
(ii)	Built form	181
(iii)	Functionality	181
(iv)	Movement Network	181
8.2.8	Services and Infrastructure	182
(i)	Water	182
(ii)	Sewerage	182
(iii)	Electricity	182
(iv)	Refuse	182
(v)	Storm water	183
(vi)	Roads	183
Chapter 9: Status Quo: Ward 6: Aurora, Dwarskersbos and Redelinghuys		184
9.1	Aurora	184
9.1.1	Historical Overview	184
9.1.2	Locality	184
9.1.3	Demography	184
9.1.4	Town Hierarchy	185
9.1.5	Economic Base	185

9.1.6	Spatial Structuring Elements	185
9.1.7	Urban Structure	186
(i)	Town Layout and uses	186
(ii)	Density	189
(iii)	Vacant Land	190
(iv)	Built form	190
(v)	Functionality	191
(vi)	Movement Network	192
9.1.8	Services and Infrastructure	192
(i)	Water	192
(ii)	Sewerage	192
(iii)	Electricity	192
(iv)	Refuse	192
(v)	Storm water	192
(vi)	Roads	193
(vii)	Traffic and Safety	193
9.2	Dwarskersbos	194
9.2.1	Historical Overview	194
9.2.2	Locality	194
9.2.3	Demography	194
9.2.4	Town Hierarchy	195
9.2.5	Economic Base	195
9.2.6	Spatial Structuring Elements	195
9.2.7	Urban Structure	196
(i)	Town Layout and uses	196
(ii)	Density	199
(iii)	Vacant Land	200
(iv)	Built form	200
(v)	Functionality	201
(vi)	Movement Network	201
9.2.8	Services and Infrastructure	201
(i)	Water	202
(ii)	Sewerage	202
(iii)	Electricity	202
(iv)	Refuse	202
(v)	Storm water	202
(vi)	Roads	202
(vii)	Traffic and Safety	203

9.3	Redelinghuys	204
9.3.1	Historical Overview	204
9.3.2	Locality	204
9.3.3	Demography	204
9.3.4	Town Hierarchy	204
9.3.5	Economic Base	205
9.3.6	Spatial Structuring Elements	205
9.3.7	Urban Structure	206
(i)	Town Layout and uses	206
(ii)	Density	207
(iii)	Vacant Land	208
(iv)	Built form	208
(v)	Functionality	208
(vi)	Movement Network	209
9.3.8	Services and Infrastructure	210
(i)	Water	210
(ii)	Sewerage	210
(iii)	Electricity	210
(iv)	Refuse	210
(v)	Storm water	210
(vi)	Roads	210
(vii)	Traffic and Safety	210
Chapter 10: Status Quo: Ward 7: Velddrif/Laaiplek		211
Velddrif/Laaiplek		211
10.1	Historical Overview	211
10.2	Locality	211
10.3	Demography	211
10.4	Town Hierarchy	211
10.5	Economic Base	212
10.6	Spatial Structuring Elements	213
10.7	Urban Structure	213
(i)	Town Layout and uses	213
(ii)	Density	216
(iii)	Vacant Land	216
(iv)	Built form	217

(v)	Functionality	217
(vi)	Movement Network	217
10.8	Services and Infrastructure	219
(i)	Water	219
(ii)	Sewerage	219
(iii)	Electricity	219
(iv)	Refuse	219
(v)	Storm water	219
(vi)	Roads	219
(vii)	Traffic and Safety	219
Addendum A: Mines (Operational and those not in working condition) in the Bergrivier Area		219
Addendum B: CBA categories		220
Bibliography		225

Figures

Figure 4.4 (a): Employment Status per Town, Bergrivier Municipality	109
Figure 4.4 (b): Income from Grants, Bergrivier Municipality, 2012	109
Figure 4.4 (c): Household grants per Town, Bergrivier Municipality	110

Graphs

Graph 4.1 (a): Population Pyramid (Statistics South Africa, Community Survey 2007)	103
Graph 4.3(a): Educational Attainment, Bergrivier Municipal Area (Statistics South Africa, 2011).	106
Graph 4.4 (a): Annual Household Income Categories, 2001(green) & 2009 (purple) (Western Cape Department of Economic Development: Global Insight Data (2010) and Monthly Household Income 2011 (Census 2011)	111
Graph 4.4 (b): Percentage Breakdown of Total Grant Recipients, 2007 (Statistic South Africa, community survey)	114
Graph 5.6 (a): Household Sanitation Facilities, 2001, 2007 and 2011.	126
Graph 5.7 (a): Solid waste removal, Bergrivier Municipality (Statistics SA, Census 2001, Community Survey, 2007 & Census 2011)	128
Graph 5.10 (a): Dwelling type occupied by Household, 2001 and 2007 (Statistics SA, Census 2001, Community Survey, 2007 & Census 2011)	124
Graph 5.12 (a): Growth in GVA-R, 2001 to 2009 (Constant 2005 prices)	140

Graph 5.12 (b): Employment by Sector, 2007, Statistics SA, Community Survey, 2007	142
Graph 5.12 (c): Skills Level of Employed, 2007, Bergrivier Municipality (Statistics SA, Community Survey 2007)	142

Tables

Table 2.2 (a): Comparison of IDP Objective and normative SDF Objectives, Bergrivier Municipality	7
Table 2.3 (a): Municipal Key Performance Indicators per Key Performance Area, Bergrivier Municipality 2012 -2017	10
Table 2.3 (b): Ward 1 & 2 Municipal Funded Needs, Bergrivier Municipality, 2012	11
Table 2.3 (c): Ward 1 & 2 Provincial and National Funded Needs, Bergrivier Municipality, 2012	12
Table 2.3 (d): Ward 3 & 4, Municipal Funded Needs, Bergrivier Municipality, 2012	15
Table 2.3 (e): Ward 3 & 4, Provincial and National Funded Needs, Bergrivier Municipality, 2012	16
Table 2.3 (f): Ward 5 Municipal Funded Needs, Bergrivier Municipality, 2012	20
Table 2.3 (g): Ward 5, Provincial and National Funded Needs, Bergrivier Municipality, 2012	20
Table 2.3 (h): Ward 6, Municipal Funded Needs, Bergrivier Municipality, 2012	23
Table 2.3 (i): Ward 6, Provincial and National Funded Needs, Bergrivier Municipality, 2012	23
Table 2.3 (k): Ward 7, Municipal Funded Needs, Bergrivier Municipality, 2012	27
Table 2.3 (l): Ward 7, Provincial and National Funded Needs, Bergrivier Municipality, 2012	27
Table 2.4 (a): Trends Needed Management, Bergrivier Municipality	35
Table 2.5 (a): Threats and weaknesses, Bergrivier Municipality	38
Table 2.6 (a): Spatial Principles	59
Table 3.1 (a): Geology and resource utilization	63
Table 3.8 (a): Formal and Informal Conservation Areas	83
Table 4.1(a): Population Figures, 2011 per Town by Gender and Race Group.	101
Table 4.1 (b): Population Figures per Town & Sub-area (Bergrivier IWMP, p6)	102
Table 4.1(c): Number of people per age cohort, Bergrivier Municipal Area, Census 2011	103
Table 4.1 (d): Special needs and disabilities in Bergrivier Municipal Area	103
Table 4.4 (a): Percentage people employed per Economic Sector (Statistics SA, 2001)	108

Table 4.4 (b): Employment Status, Bergrivier HSP Annexure B & Census 2011	109
Table 4.4 (c): Characteristics of Total Working Age Population and Labour Force, 2001 & 2007 (Bergrivier HSP, Statistics SA 2001 & Community Survey 2007 & Census 2011)	110
Table 4.4 (d): Unemployment by Gender, Population Group & Age, 2007	110
Table 4.4(e): Annual Household Income, Bergrivier Municipal Area, Census 2001 & 2011	112
Table 4.7 (a): Crime in Bergrivier Local Municipality: April to March 2003/2004 to 2009/2020, Western Cape Department of Community Safety, 2010	116
Table 4.9 (a): Municipal Budget Figures – 2008/2009 Outcomes, 2009/2010 Estimated Outcomes & 2010-2011 Budget	117
Table 4.9 (b): National Transfers to Bergrivier Municipality, Western Cape Provincial Treasury calculations based on Division of Revenue Act 2010/2011	118
Table 4.9 (c): Provincial Transfers to Bergrivier Municipality (Provincial Expenditure Estimates 2010, Western Cape Provincial Treasury).	119
Table 4.9 (d): Provincial Transfers to Bergrivier Municipality (Provincial Expenditure Estimates 2010, Western Cape Provincial Treasury).	120
Table 5.1(a): Hierarchy of towns in the West Coast District (Growth potential of towns in the Western Cape 2004)	121
Table 5.1 (b): Urban hierarchy of towns in the Bergrivier Municipality (West Coast Urbanization Strategy, 2002 & Census 2011)	121
Table 5.1 (c): Population density per Bergrivier Municipal Town (Bergrivier SDF, 2008 & Census 2001)	122
Table 5.1 (d): Residential density as per residential node with average erf size	123
Table 5.1 (e): Gross and Nett densities per hectare, Bergrivier Municipality	124
Table 5.1 (f): Coverage of land-use categories (as per land-use maps, not zoning maps (Bergrivier SDF)	124
Table 5.4 (a): Bergrivier Municipality Roads by Type of Road, Western Cape Department of Transport, 2010	125
Table 5.6 (a): Waste Water Treatment Infrastructure Costs, 2011	127
Table 5.10 (a): Number of persons on the housing waiting list, 2010	130
Table 5.11 (a): Vacant Erven, Velddrif, Bergrivier Municipality	131
Table 5.11 (b): Vacant Erven, Piketberg, Bergrivier Municipality	131
Table 5.11 (c): Vacant Erven, Porterville, Bergrivier Municipality	134
Table 5.11 (d): Vacant Erven, Eendekuil, Bergrivier Municipality	134
Table 5.11 (e): Vacant Erven, Aurora, Bergrivier Municipality	137

Table 5.11 (f): Vacant Erven, Redelinghuys, Bergrivier Municipality	137
Table 5.13 (a): Examples of Tourism Based Activities (Bergrivier LED, p11-12)	145
Table 6.3.a: Projected population growth for Porterville	146
Table 6.4.a: Spatial classification of Porterville	147
Table 6.7.a: Existing land uses in Porterville	148
Table 6.7.b: Vacant land in Porterville	151
Table 7.1.3.a: Projected population growth for Eendekuil	154
Table 7.1.4.a: Spatial classification of Eendekuil	155
Table 7.1.7.a: Existing land uses in Eendekuil	156
Table 7.1.7.b: Vacant land in Eendekuil	158
Table 7.2.3.a: Projected population growth for Piketberg	162
Table 7.2.4.a: Spatial classification of Piketberg	163
Table 7.2.7.a: Existing land uses in Piketberg	164
Table 7.2.7.b: Vacant land in Piketberg	167
Table 8.1.3.a: Projected population growth for Goedverwacht	171
Table 8.1.4.a: Spatial classification of Goedverwacht	172
Table 8.1.7.a: Existing land uses in Goedverwacht	175
Table 8.2.4.a: Spatial classification of Wittewater	178
Table 8.2.7.a: Existing land use in Wittewater	181
Table 9.1.3.a: Projected population growth for Aurora	184
Table 9.1.4.a: Spatial classification of Aurora	185
Table 9.1.7.a: Existing land uses in Aurora	187
Table 9.1.7.b: Vacant land in Aurora	190
Table 9.2.3.a: Projected population growth for Dwarskersbos	194
Table 9.2.4.a: Spatial classification of Dwarskersbos	195
Table 9.2.7.a: Existing land uses in Dwarskersbos	197
Table 9.2.7.b: Vacant land in Dwarskersbos	200
Table 9.3.3.a: Projected population growth for Redelinghuys	204
Table 9.3.4.a: Spatial classification of Redelinghuys	205

Table 9.3.7.a: Existing land uses in Redelinghuys	206
Table 9.3.7.b: Vacant land in Redelinghuys	208
Table 10.3.a: Projected population growth for Velddrif/Laaipek	211
Table 10.4.a: Spatial classification of Velddrif/Laaipek	212
Table 10.7.a: Existing land uses in Velddrif/Laaipek	214
Table 10.7.b: Vacant land in Velddrif/Laaipek	216

Maps

Map 1.2: Towns and Settlements, Bergrivier Municipality, 2012	2
Map 2.3 (a): Development Needs and Projects, Porterville, 2011	13
Map 2.3 (b): Development Needs and Projects, Porterville Central, 2011	14
Map 2.3 (c): Development Needs and Projects, Piketberg, 2011	17
Map 2.3 (d): Development Needs and Projects, Piketberg Central, 2011	18
Map 2.3 (e): Development Needs and Projects, Eendekuil, 2011	19
Map 2.3 (f): Development Needs and Projects, Goedverwacht, 2011	21
Map 2.3 (g): Development Needs and Projects, Wittewater, 2011	22
Map 2.3 (h): Development Needs and Projects, Aurora, 2011	24
Map 2.3 (i): Development Needs and Projects, Dwarskersbos, 2011	25
Map 2.3 (j): Development Needs and Projects, Redelinghuys, 2011	26
Map 2.3 (k): Development Needs and Projects, Velddrif, 2011	28
Map 2.3 (l): Development Needs and Projects, Velddrif Central, 2011	29
Map 2.4 (a): Critical Biodiversity Area and Ecosystem Support Areas, Bergrivier Municipality	37
Map 2.6 (a): Areas to Protect, Restructure and Develop, Bergrivier Municipality	45
Map 2.6 (b): Urban Areas to Protect and Restructure- Eendekuil, Bergrivier Municipality	47
Map 2.6 (c): Urban Areas to Protect and Restructure- Redelinghuys, Bergrivier Municipality	48
Map 2.6 (d): Areas to Develop, Dwarskersbos, Bergrivier Municipality	50
Map 2.6 (e): Areas to Develop, Piketberg, Bergrivier Municipality	51
Map 2.6 (f): Areas to Develop, Porterville, Bergrivier Municipality	53
Map 2.6 (g): Areas to Develop, Velddrif, Bergrivier Municipality	54

Map 3.1 (a): Geology, Minerals and Mines, Bergrivier Municipality	62
Map 3.5(a): Topography, Bergrivier Municipality	71
Map 3.5 (b): Rivers and aquatic areas, Bergrivier Municipality	73
Map 3.6(a): Biodiversity Areas, Bergrivier Municipality	76
Map 3.7 (a): Generalized natural vegetation types, Bergrivier Municipality	80
Map 3.7 (b): Greater Cederberg Biodiversity Corridor, Bergrivier Biodiversity	84
Map 3.9(a): Farming Areas, Bergrivier Municipality	87
Map 3.9(b): Soil potential Annual Crops, Bergrivier Municipality	89
Map 3.9(c): Soil potential Perennial Crops, Bergrivier Municipality	90
Map 3.9(d): Fine Scale Land Use, Bergrivier Municipality	94
Map 4.2 (a): Health facilities, Bergrivier Municipality, 2012	104
Map 4.3 (a): Education facilities, Bergrivier Municipality, 2012	107
Map 5.11(a): Vacant erven, Velddrif, Bergrivier Municipality	132
Map 5.11(b): Vacant erven, Piketberg, Bergrivier Municipality	133
Map 5.11(c): Vacant erven, Porterville Bergrivier Municipality	135
Map 5.11(d): Vacant erven, Eendekuil, Bergrivier Municipality	136
Map 5.11(e): Vacant erven, Aurora, Bergrivier Municipality	138
Map 5.11(f): Vacant erven, Redelinghuys, Bergrivier Municipality	139
Map 5.13(a): Tourism routes and attractions, Bergrivier Municipality	144
Map 6.7 (a): Land uses, Porterville, Bergrivier Municipality	149
Map 6.7 (b): Structuring Elements, Porterville, Bergrivier Municipality	151
Map 7.1.7 (a): Land uses, Eendekuil, Bergrivier Municipality	157
Map 7.1.7(b): Structuring Elements, Eendekuil, Bergrivier Municipality.	158
Map 7.2.7 (a): Land uses, Piketberg, Bergrivier Municipality	165
Map 7.2.7 (b): Structuring Elements, Piketberg, Bergrivier Municipality	168
Map 9.1.7 (a): Land uses, Aurora, Bergrivier Municipality	188
Map 9.1.7 (b): Structuring Elements, Aurora, Bergrivier Municipality	191
Map 9.2.7 (a): Land uses, Dwarskersbos, Bergrivier Municipality	198
Map 9.2.7 (b): Structuring Elements, Dwarskerbos, Bergrivier Municipality	201

Map 9.3.7(a): Land uses, Redelinghuys, Bergrivier Municipality	206
Map 9.3.7(b): Structuring Elements, Redelinghuys, Bergrivier Municipality	209
Map 10.7 (a): Land uses, Velddrif/Laaiplek, Bergrivier Municipality	215
Map 10.7(b): Structuring Elements, Velddrif/ Laaiplek, Bergrivier Municipality	218

Chapter 1: Purpose, Scope and Development Phases of Bergrivier Spatial Development Framework

1.1 Introduction

The Department of Rural Development and Land Reform together with the Bergrivier Municipality have commissioned the development of a Spatial Development Framework, to enable the Bergrivier Municipality to facilitate, fast track and monitor urban and rural development within its boundaries in order to ensure that:

- the IDP is implemented, and
 - the capacity of Bergrivier municipality is enhanced
- to:
- meet the 2014 Millennium Goals and
 - spatial and economic fragmentation are coming to an end.

1.2 Purpose and Objectives

The purpose and objectives of the project are as follows:

To develop a rural SDF for the Bergrivier Municipal Area including all towns (Piketberg, Redelinghuys, Porterville, Velddrif/Laaipek, Dwarskersbos, Aurora, and Eendekuil & Goedverwacht - see Map 1.2) that:

- addresses spatial, environmental and economic (triple bottom-line) issues confronting the Bergrivier;
- facilitates the implementation of the IDP and all government programmes to fight poverty and to facilitate rural development;
- complies with the MSA and the Municipal Planning and Performance Management Regulations, 2001 and the White Paper on Spatial Planning and Land Use Management, 2001;
- complies with the requirements of Chapter 1 of the Land Use Planning Ordinance, 1985 (Ordinance 15 of 1985) and other relevant legislation or general excepted standards/norms as determined by Bergrivier Municipality.

1.3 Scope of Work

The scope of work required a Spatial Development Framework to be developed for Bergrivier Municipality, focusing on the rural areas under the jurisdiction of the Bergrivier, within ten months.

Furthermore the scope of work required that the Bergrivier Spatial Development Framework:

- give effect to the principles contained in chapter 1 of the Development Facilitation Act 1995 (Act no. of 67 1995);
- comply with the following provisions of the MSA and the Municipal Planning and Performance Management Regulations, 2001 as provided for in the SDF guidelines:
 - develop a Spatial vision and objectives for the whole municipality giving effect to the IDP;
 - develop a conceptual scenario for envisaged spatial form;
 - develop a Micro-spatial Plan for the core areas;

- set out objectives that reflect desired spatial form of the rural municipality;
- contain strategies, policies and plans which must:
 - (i) analyse the opportunities and constraints within the municipality concerning the heritage, economy, agriculture, environment, infrastructure, tourism and social development;
 - (ii) delineate the agricultural land that has high potential;
 - (iii) indicate desired patterns of land use within the municipality;
 - (iv) identify existing and future land reform projects;
 - (v) address the spatial reconstruction of the location and nature of development within the municipality; and
 - (vi) provide strategic guidance in respect of the location and nature of development within the municipality;
- set out basic guidelines for a land use management system in the municipality;
- set out a capital investment framework for the municipality's development programs;
- address sustainable bioregional planning;
- analyse and clarify how sector departments will implement the rural SDF;
- identify programs and projects for the development of land within the municipality;
- contain a strategic assessment of the environmental impact of the rural SDF;
- identify programs and projects for the development of land within the municipality;
- be aligned with the rural SDF's reflected in the integrated development plans (IDP's) of neighbouring municipalities; and
- provide a visual representation of the desired spatial form of the municipality, which representation:
 - (i) must indicate where public and private land development and infrastructure investment should take place;
 - (ii) must indicate all cross boarder issues, challenges and alignment of programmes shared with neighbouring municipalities, provinces and countries;
 - (iii) must indicate desired or undesired utilisation of space in a particular area;
 - (iv) must delineate the urban edge;
 - (v) must identify areas where strategic intervention is required;
 - (vi) must indicate areas where priority spending is required;
 - (vii) Identify existing and proposed nodal areas for the development of infrastructure and social services.

1.4 Development Phases of Spatial Development Framework

The Bergrivier Spatial Development Framework will be developed in four broad phases which will include the following:

Phase I: Develop a Spatial Perspective and Vision

This phase will conceptually direct what will be protected, restructured and newly developed at the hand of issues and problems that were identified.

The compilation and development of the Spatial Perspective were monitored by a project management committee constituted by representatives from the Departments of Rural Development and Land Reform, Environmental Affairs and Development Planning, West Coast District- and Bergrivier Municipalities.

A project steering committee representing the various provincial and national departments will evaluate the document for finalization.

Both project management and steering committees will monitor the subsequent phases.

Phase II: Develop a Status Quo Report

This phase will analyze the trends in the bio-physical, socio-economic and built environments. It will inform the spatial directives.

The development of the Status Quo has been monitored by the project management committee.

The project steering committee representing the various provincial and national departments will evaluate the document for finalization.

Phase III: Develop a Draft SDF

This phase will develop goals, objectives and strategies as well as sector and theme statements to enable the spatial directives and ensure prioritization and implementation. Guidelines for land use planning and development management will also be elicited from the development objectives and theme statements.

The development of the Spatial Perspective has been monitored by the project management committee.

The project steering committee representing the various provincial and national departments will evaluate the document for finalization.

Extensive public participation will be conducted and issues and concerns will be addressed.

Phase IV: Finalize the SDF

In this phase the spatial development framework will be finalized and approval will be obtained from the Municipality in terms of The Municipal Systems Act (32 of 2000).

1.4.1 Public Participation

The Department of Rural Development and Land Reform required that the following government departments engage in the development of the Spatial Development Framework.

- Department of Human Settlements
- Department of Environmental Affairs and Development Planning
- Provincial Growth and Development Strategy office
- Department of Mineral Resources
- Department of Agriculture

- Department of Cooperative Governance and Traditional Affairs
- Cape Nature
- South African Heritage Resources Association
- Department of Water Affairs,
- Department of Trade and Industry
- Department of Transport and Public Works.

Other authorities involved at a district and local level are:

- West Coast District Municipality
- Cederberg Municipality
- Saldanha Municipality
- Swartland Municipality
- Witzenberg Municipality
- Drakenstein Municipality

In addition to the involved authorities, community stakeholders, interest groups, individual residents and/or property owners, community organizations and NGOs have to be involved too.

The engagement will provide, an opportunity to make comment or air proposals. This will be taken into consideration, and adjustments will be made to the draft documentation, when there will be another opportunity to make comment on the amended documentation.

1.5 Summary

The Spatial Development Framework for Bergrivier Municipality will consist of:

- A spatial perspective;
- A status quo report, and
- A spatial development framework for the next five years (2012 – 2017).

The spatial development framework will be informed by various sector plans, relevant documents and contributions by the relevant departments and the public.

2.1 Overview

The spatial perspective of the Bergrivier Municipal Spatial Development Framework focuses broadly on:

- The Spatial vision;
- The Spatial concept;
- An assessment of trends in the area that can be harnessed or should be managed.

The long term spatial vision for the Bergrivier municipal area and the strategic policies required to deliver the vision are based on the following:

2.2 Principles and Objectives

Principles

The following normative principles form the foundation of the Bergrivier SDF proposals to protect, restructure and manage development in Bergrivier:

- a) Work harmoniously with nature, reduce the municipality's ecological footprint and change unsustainable patterns of resource use (all development or land use changes should be sustainable, including management and use of resources in the natural and built environment, and in particular management and use that may lead to threats of degraded biodiversity, pollution and amalgamating into a greater threat of climate change adaptation);
- b) Improve urban efficiency;
- c) Maximise public access to the municipality's resources, opportunities and amenities;
- d) Celebrate diversity in living environments, cultures and lifestyles (separate and diverse elements involved in development planning and land use should be combined and coordinated (integrated) to achieve a harmonious entity);
- e) Readdress spatial and social imbalances;
- f) Create high quality living environments across the municipality;
- g) Ensure horizontal and vertical alignment with both provincial plans and policies as well as neighbouring municipalities;
- h) The public good should prevail over the private good in the process of planning for the upgrading of, or for the creation of new land use rights;
- i) Everyone affected by spatial planning, land use management and land development actions or decisions should enjoy equal protection and benefits;

- j) The desired result of land use must be efficiently produced with the minimum expenditure of resources;
- k) Fair and good governance, requiring that spatial planning, land use management, and land development must be democratic, legitimate and participatory.

Some normative principles of the Bergrivier Spatial Development Framework support the objectives of the Integrated Development Plan:

IDP Objectives	SDF Objectives
Create an efficient, effective and accountable administration	j) & k)
Meet services needs and address backlogs	a) & e)
Promoting sport and recreation in towns	c), f) & d)
Promoting the safety of citizens	b)
Climate protection and pollution minimization	a)
Develop, manage and regulate the built and natural environment	c), f) , h) & i)
Strategic and sustainable budgeting - grow and diversify our revenue and value for money expenditure	g)
Ensure accessibility and promote governance	b), c), e) & k)

Table 2.2(a): Comparison of IDP Objective and normative SDF Objectives, Bergrivier Municipality.

Proposed Objectives

The objectives proposed for the Bergrivier Spatial Development Framework are as follows:

Bio-physical:

- To determine conservation and development borders, overlay zones for natural areas (coast, valleys and Piketberg and Skurweberg), agriculture, watercatchments, water sources and heritage areas.

Socio-economic:

- To create tourism, rural, and commercial corridors (i.e. rural development and climate change corridors¹) to enhance regional exports (thus stimulating the economy and creating meaningful employment opportunities and reducing poverty);
- To promote the provision of housing and acquisition of ownership and thus encourage socio-economic growth.

Built:

- To provide sufficient bulk infrastructure, in particular in Piketberg and Porterville, to service the expanding housing and industrial demand;
- To enhance transport networks and access to education and information (i.e. electronic media) in all rural areas, towns and villages;

¹Natural areas linked to other natural resources i.e. catchment areas serving as migration corridors are referred to as climate change corridors as such areas increase species resiliency and particularly so to climate change.

- To protect the integrity and diversity of rural villages and towns in Bergrivier municipal area;
- To support alternative energy generation methods and the use thereof;
- Promote open space networks within urban areas.

2.3 Status Quo Statement

2.3.1 Contextual informants

The Bergrivier municipal area is situated in the jurisdiction area of the West Coast District Municipality. The municipal area is bordered in the west by the Atlantic Ocean, in the east by the Groot Winterhoek Mountains with the Berg River defining the southern boundary of the municipality. Verlorenvlei and the northern section of the Groot Winterhoek mountains define the northern boundary.

The municipal area is approximately 4407.04 km² in size with nine settlements of which three can be classified within the context of Bergrivier as major towns, namely Piketberg, Porterville and Velddrif. Piketberg serves as the administrative centre of the Bergrivier Municipality. These towns are between 100 and 140 kilometers respectively from Cape Town, with Velddrif situated on the coast and in close proximity to Saldanha Bay and the proposed Industrial Development Zone. The four other towns that reflect more or less similar population size albeit different functions are Dwarskersbos, Redelinghuys, Aurora and Eendekuil. The two remaining settlements namely Wittewater and Goedverwacht are Moravian settlements and administered by the Moravian Church, as is Genadenberg. A further concentration of dwellings is found on the premises of the Pretoria Portland Cement factory (PPC) a few kilometers south of Piketberg and at the Voorberg Prison situated to the south of Porterville. Together these urban areas resemble a scattered settlement pattern.

The place identities of the nine towns (See Map1.2) are as follows:

- Velddrif, Laaiplek and Dwarskersbos are coastal towns with unique development opportunities and an economic landscape that recently changed from a centre for services and processing of fish and agricultural products to a more service-based tourism town;
- Porterville and Piketberg are considered central and established towns with long histories, well connected with road (and rail) links, a solid base in the agricultural sector and distinct administrative functions, and
- Eendekuil, Aurora and Redelinghuys as isolated villages presenting opportunities for creative and trendy living;
- Goedverwacht and Wittewater as mission stations and Piket-bo-Berg and Porterville Farming Area (Ward 5) as intensive farm areas to whom the municipality only renders a support service regarding core municipal functions such as refuse removal, the drilling of boreholes to address water issues and maintenance of sanitation systems.

2.3.2 IDP and Stakeholder issues and priorities

During the compilation of the third generation IDP for the Bergrivier Municipal area, ten Municipal Key Performance Indicators were determined based on goals, strategic objectives and development priorities.

Key performance indicators to be noted are KPI1 (economic growth), KPI 3 (provision of bulk services), KPI 7 (well regulated built environment and responsive development opportunities), KPI 8 (preserve natural environment), KPI 9 (community safety) and KPI 10 (social well being).

The issues identified per ward are also outlined and attention is given to each settlement within the ward.

Goal	Strategic Objective	Development Priorities	Municipal Key Performance Indicator
Financially viable and sustainable Municipality that provides an enabling environment for the development of the Bergrivier economy	To budget strategically, grow and diversify our revenue and ensure value for money services	<ul style="list-style-type: none"> - Localized LED - SMME support and development - Establishment of strategic LED partnership - Job creation through optimal use of EPWP programme - Facilitate the establishment of skills development opportunities - Tourism development 	KPI 1: The Municipality will focus on laying the foundation for high level economic development through strategic partnerships and targeted interventions to stimulate and grow the first and second economy
		<ul style="list-style-type: none"> - Enhancement of the financial viability and sustainability of the municipality - General and supplementary valuations - Develop fully fledged SCM Unit - Improving financial systems 	KPI2: The Municipality will steadily improve its financial viability through enhancement of its revenue sources, improvement of its systems and procedures and implementation of its financial policies
A suitable living environment for all residents that is conducive to development and investment	To provide and maintain bulk and service infrastructure that will address backlogs and provide for future development	<ul style="list-style-type: none"> - Reduction of bulk and service infrastructure capacity backlogs(water and sanitation) - Maintenance and development of service infrastructure and networks to maintain a good standard of service delivery. - Improvement of blue and green drop standards - Master plan development and revision - Integrated transport policy 	KPI 3: The Municipality will steadily improve its bulk and services infrastructure networks to enable it to render quality services to its customers and create an environment that will attract development opportunities that will impact positively on the local economy
An effectively managed institution that renders effective and efficient service delivery	To promote good governance and access to services	<ul style="list-style-type: none"> - Ward committee development - Communication enhancement - Stakeholder management - Inter-government Relations (IGR) - International relations - Improving the oversight role of our communities - Compliance 	KPI 4: The municipality will provide improved standards of democratic and accountable governance by developing the capacity of its structures, improving stakeholder management, relationship building and improved systems

		<ul style="list-style-type: none"> - Improving performance management and reporting - Improving strategic alignment of municipal planning process - Risk management - Clean audit 	and processes
	Development and capacitating of the Municipality's human resources	<ul style="list-style-type: none"> - Improved Human Capital Management - Employment equity - Skills development 	KPI 5: The municipality will create an enabling environment for the growth and development of its human resources capacity
	To create an efficient, effective, productive and accountable administration	<ul style="list-style-type: none"> - Provide an adequate and appropriately equipped administration - Information Technology Communication systems - Development of a fleet strategy and policy - Customer service 	KPI 6: The municipality will become institutionally capable of rendering a high level of services through improvement of its administration processes, technology, facilities, fleet and equipment
A well managed built environment that is in harmony with the natural environment	<ul style="list-style-type: none"> - To develop, manage and regulate the built and natural environment 	<ul style="list-style-type: none"> - Regulate the built environment - Revise the Spatial Development Framework - Develop a uniform zoning scheme (after promulgation of Planning Act) - Provide serviced land for human Settlement and other development priorities 	KPI 7: The municipality will strive to improve its spatial planning and in so doing ensure a well regulated environment that is capable of meeting the needs of its community and be responsive to development opportunities
	<ul style="list-style-type: none"> - To conserve and manage the natural environment and mitigate the impacts of climate change 	<ul style="list-style-type: none"> - Rehabilitation of solid waste disposal sites and implementation of recycling - Implementation of the LBSAP - "Most Green Town" competition - Climate change mitigation and adaptation 	KPI 8: The municipality will contribute to the preservation of the natural environment for future generations together with its stakeholders
A safe, healthy and secure environment	To promote the safety and security of our citizens	<ul style="list-style-type: none"> - Expand on existing fire services to ensure the safety of the community - Establish functional law enforcement units in Velldrif, Piketberg and Porterville 	KPI 9: The Municipality will enhance the safety of its community and contribute to the creation of a safe environment in partnership with its stakeholders
An environment that is conducive to the wellbeing and development of our community	To promote the wellbeing and social development of our citizens	<p>Ensure that all municipal facilities are well maintained at all times</p> <p>Sport Facilities Master Plan</p> <p>Facilitate the implementation of social programmes</p>	KPI 10: The Municipality will improve the social wellbeing of community together with its stakeholders, especially the most vulnerable groups in society by creating opportunities for their development

Table 2.3(a): Municipal Key Performance Indicators per Key Performance Area, Bergvriër Municipality 2012 -2017.

2.3.2.1 Porterville (Wards 1 & 2)

The issues raised during the IDP consultation process are spatially mapped per ward and per town in the Bergrivier Municipal area:

In Porterville, whilst housing (subsidized and other), sanitation and storm water systems are prioritized to receive attention, urgent attention is required to address the lack of water and to rehabilitate the solid waste site. In Ward 1 and 2, with Porterville as the only town, the following challenges were identified:

	Porterville Ward 1	Porterville Ward 2
Water	Water shortage(Moratorium)	Water shortage(Moratorium)
Electricity	Upgrade network	Upgrade network
Streetlights		Long Street
Roads & Streets	Improve roads	Upgrade roads (Long & Krans Streets)
Pavements	Improve condition & provide curb stones	Pavements throughout need to be upgraded
Storm water		Storm water management throughout ward
Solid Waste Management	Close & rehabilitate solid waste disposal site	
Sport & Recreation	Upgrade dam as a recreation area & provide ablution facilities Lack of recreation facilities Upgrade Porterville tennis courts	Improve sport facilities, especially soccer & cricket
Parks	Green initiatives	Upgrade play parks
Community Halls		Upgrade community Hall –building & facilities
Fire Service	Provide fire service	
Law Enforcement	By-law enforcement Regulation of businesses	
Housing Infrastructure	Land needed for housing	Land needed for housing
Trading facilities	Provide under cover area for trading at informal stalls	
Town Planning		Uniform pro development zoning scheme
Commonage		Make land available for commonage
Traffic & Parking		Relocate taxi rank to a more suitable position
Accounts & related matters		Replace current parking forms with prepaid meters. More indigent grants (number & extent)
Multi-purpose/ Thusong	Skills training centre	Skills training centre Multi purpose / Thusong centre (accessible services)

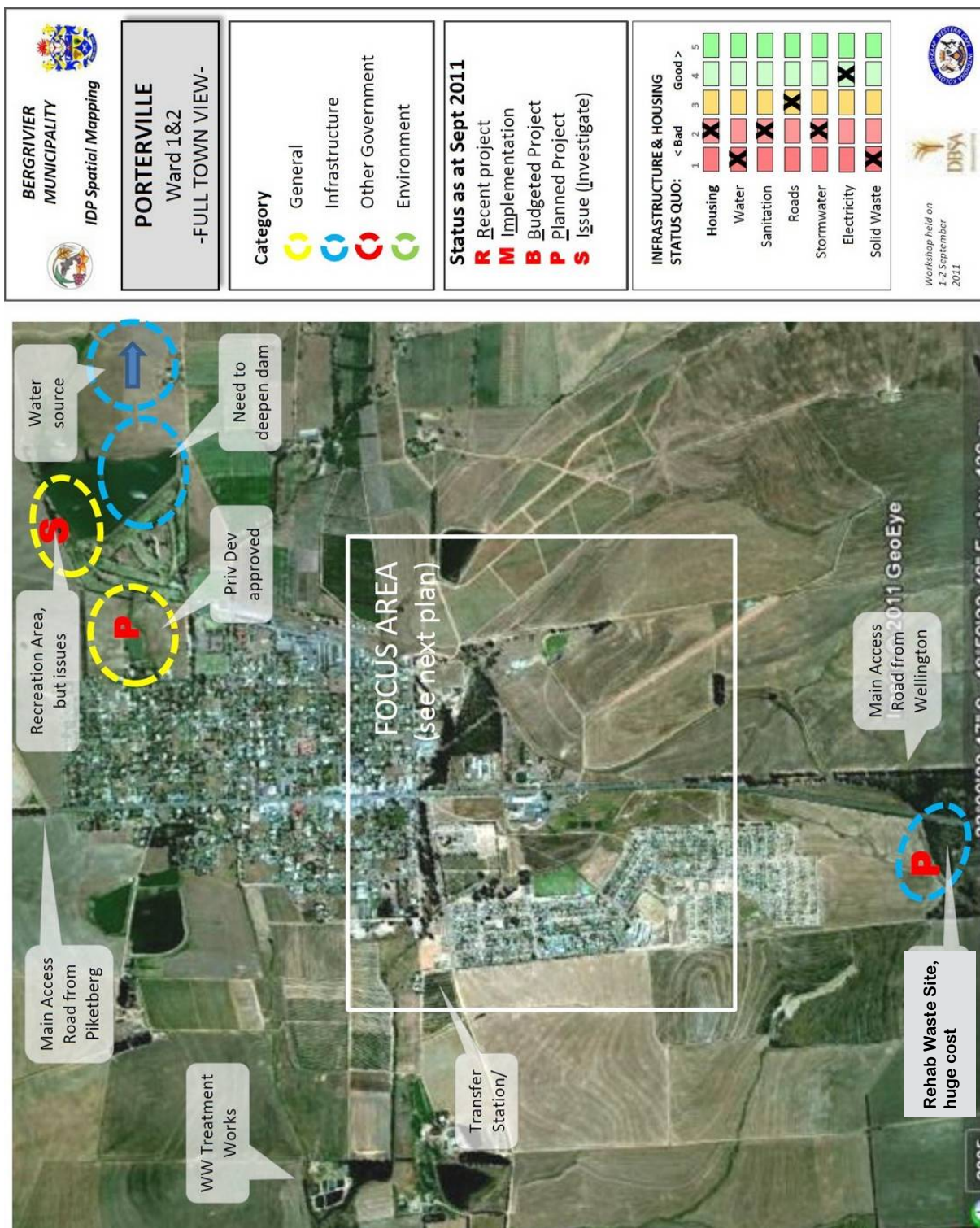
Table 2.3(b): Wards 1 & 2 Municipal Funded Needs, Bergrivier Municipality, 2012.

Other needs identified in Ward 1 and 2, and in particular in Porterville, to be funded by specific provincial and national departments are:

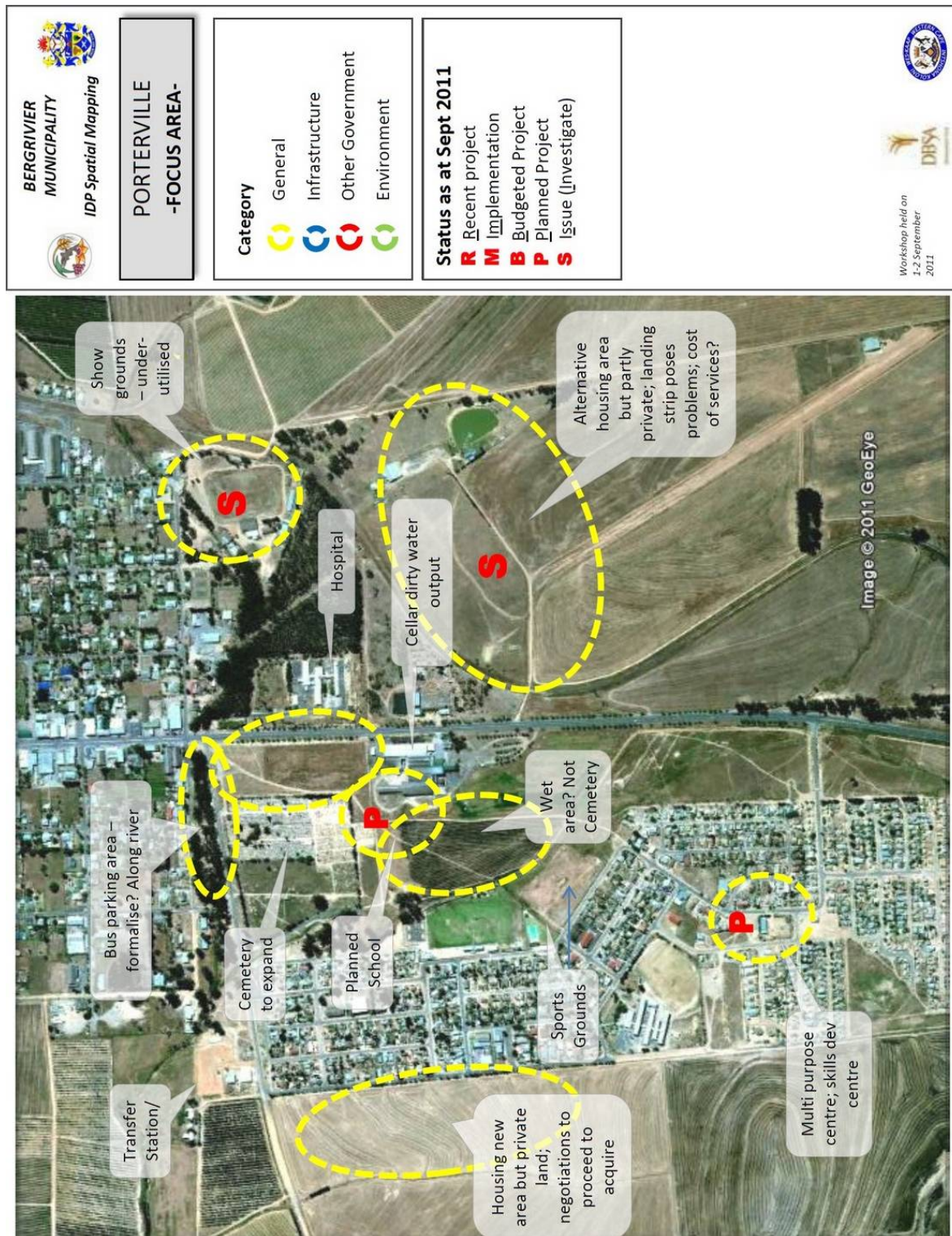
Area	Ward	Need	Department
Whole town	1&2	Internet facilities in town & Montebhertha Library	DCAS
Rural Area	1	Mobile library services needed in rural areas	DCAS
Whole town	1&2	Old age home, especially for retired farm workers	DSD
Whole town	1&2	Social programme & projects to address substance abuse, teenage pregnancies, HIV/ AIDS etc	DSD/ DOH
Whole town	1&2	Safe house – available to victims of domestic violence	DSD
Whole town	1	Drug rehabilitation centre	DSD

Whole town	1	Upgrade Porterville/ Piketberg Road	DTPW
Dasklip Farms	1	Preschool (Gr R and aftercare facilities)	DSD/ DOE
Dasklip Farms	1	Multi-purpose centre	DLG
Dasklip Farms	1	Sport facilities with lighting	DCAS
Dasklip Farms	1	Scholar transport to Montebertha	DOE
Rural Area	1	Scholar safety – learners to be issued with luminous jackets	DOE
Dasklip Pass	1	Upgrading and maintenance of Dasklip Pass	DT&PW
Rural Area	1	Public transport from farms to Porterville	DT&PW
	1&2	Youth study bursaries	All
	1&2	Training centre	DOE/ DOL
	1&2	Subsidized housing	DHS
Rural Area	1&2	Remove alien invasive plants that are growing in waterways and catchments	DWA/ WFW / DEADP
Montebertha	2	Control excess stray animals – sterilisation campaign	DOA
Montebertha	2	Law enforcement to curb illegal sale of alcohol	SAPS
Montebertha	2	Expand availability of government services, SASSA, Labour, Home Affairs – Thusong Centre/ Programme	DLG/ SASSA/ DSD/ DHA& DOL
Montebertha	2	Environmental awareness campaigns	DEADP
Rural Area	2	Expansion of mobile clinic services – services do not reach all farms and people have difficulty accessing their chronic medication.	DOH
Montebertha	2	Poverty and hunger alleviation programmes	DOA/DOE

Table 2.3(c): Wards 1&2 Provincial and National Funded Needs, Bergrivier Municipality, 2012.



Map 2.3 (a): Development Needs and Projects, Porterville, 2011



Map 2.3 (b): Development Needs and Projects, Porterville Central, 2011

2.3.2.2 Piketberg and Eendekuil (Wards 3 & 4)

In Piketberg water quality services and sanitation management need attention, whilst in Eendekuil water quality, provision of sanitation facilities, roads surface quality and waste management need attention.

In Ward 3 and 4, having Piketberg and Eendekuil as towns, the following challenges were identified:

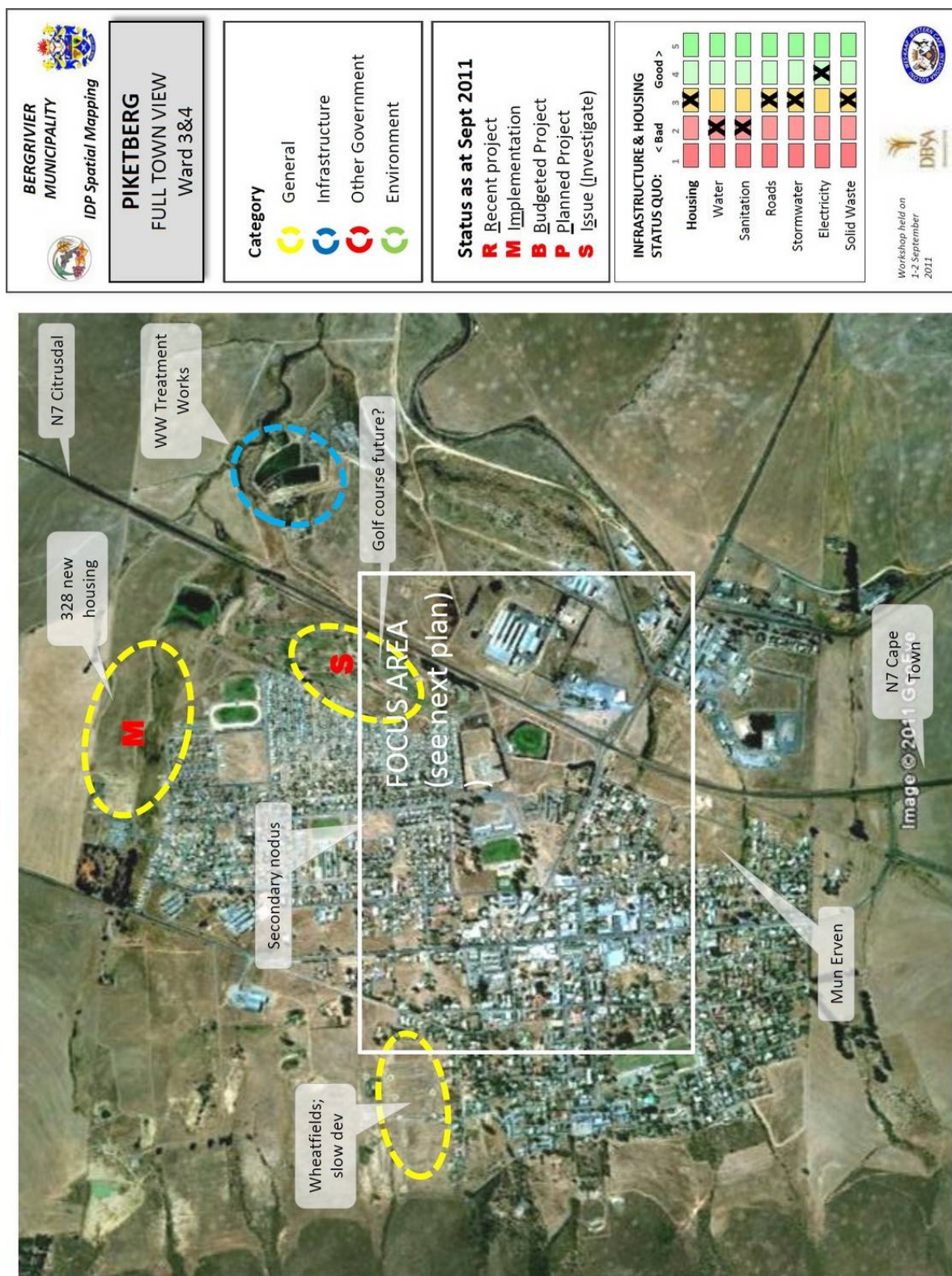
	Piketberg Ward 3	Piketberg Ward 4	Eendekuil Ward 3
Water	Water Quality		Water Quality
Sanitation		WWTW odour Indoor toilets	Vaalblok toilets do not work
Electricity			Electrical substation unsafe (walls)
Streetlights		Solar street lights	
Roads & Streets			Tar roads
Storm water		Storm water management a problem throughout (ASLA, Petunia & Marina street –runoff from Golf Course)	
Solid Waste Management		Close & rehabilitate solid waste disposal sites	
Sport & Recreation		More provision for recreation Indoor sports centre Watsonia Sport grounds: Drainage Soccer facilities Safeguard pavilion Clubhouse Ablution facilities Lights	Seating at sport fields i.e. a pavilion, lights & barrier
Parks		Beautify open space & town entrance. Improve maintenance of play parks	
Community Halls			Upgrade community halls
Law Enforcement		Regulation of businesses Traffic Noise	Traffic
Housing Infrastructure	Land needed for housing (Subsidized & Gap housing)	Land needed for housing (Subsidized)	Community gardens
Trading facilities		Provide facilities for local traders	Trading stalls (formalise trading)
Public Toilets			Public toilets
Town Planning	Uniform pro development zoning scheme; Land for churches		Land for churches
Commonage		Land required for small farmers	Land required for community gardens
Accounts & related matters	Extent times of pay points		Prepaid electricity not always available - look at alternatives
Multi-purpose/ Thusong	Thusong Centre (with community facilities)	Thusong centre	

Table 2.3(d): Wards 3 & 4, Municipal Funded Needs, Bergrivier Municipality, 2012.


Other needs identified in Ward 3 and 4 to be funded by specific provincial and national departments are:

Town	Ward	Need	Department
Piketberg	3&4	Housing	DHS
Piketberg & Eendekuil	3	Public transport	DTPW
Piketberg	3&4	Youth development programmes and projects	DSD/NYDT
Piketberg	3	English medium school	DOE
Piketberg & Eendekuil	3&4	Clinics – more staff required to service people	DOH
Eendekuil	3	Make borehole that was sunk on Transnet property available for use of community for gardens etc.	Transnet/ DT & PW
Eendekuil	3	Premises & facility needed for preschool. School also needs more qualified personnel	DSD/ DOE
Eendekuil	3	Upgrading and widening of main road and ensuring that is safe for pedestrians, especially scholars	DTPW
Eendekuil	3	Community centre (Old school will suffice)	DOE/ DTPW
Piketberg/ Eendekuil	4	School feeding schemes must be expanded to include secondary school children	DSD/ DOE
Piketberg	4	No link between residential and industrial areas. Pedestrian bridge over N7	SANRAL
Piketberg	4	Expansion of Steynville Primary/ new primary school	DOE
Piketberg	4	Training Centre	DOE/ DOL
Piketberg< Rural Area	4	Street children (begging)	DSD
Piketberg	5	Farm evictions – need for accommodation and housing	DRD& LA/ DOA

Table2.3 (e): Wards 3 & 4, Provincial and National Funded Needs, Bergrivier Municipality, 2012.




Map 2.3 (c): Development Needs and Projects, Piketberg, 2011




**BERGRIVIER
MUNICIPALITY**
IDP Spatial Mapping

PIKETBERG
FOCUS AREA
Ward 3&4

Category

 General

 Infrastructure

 Other Government

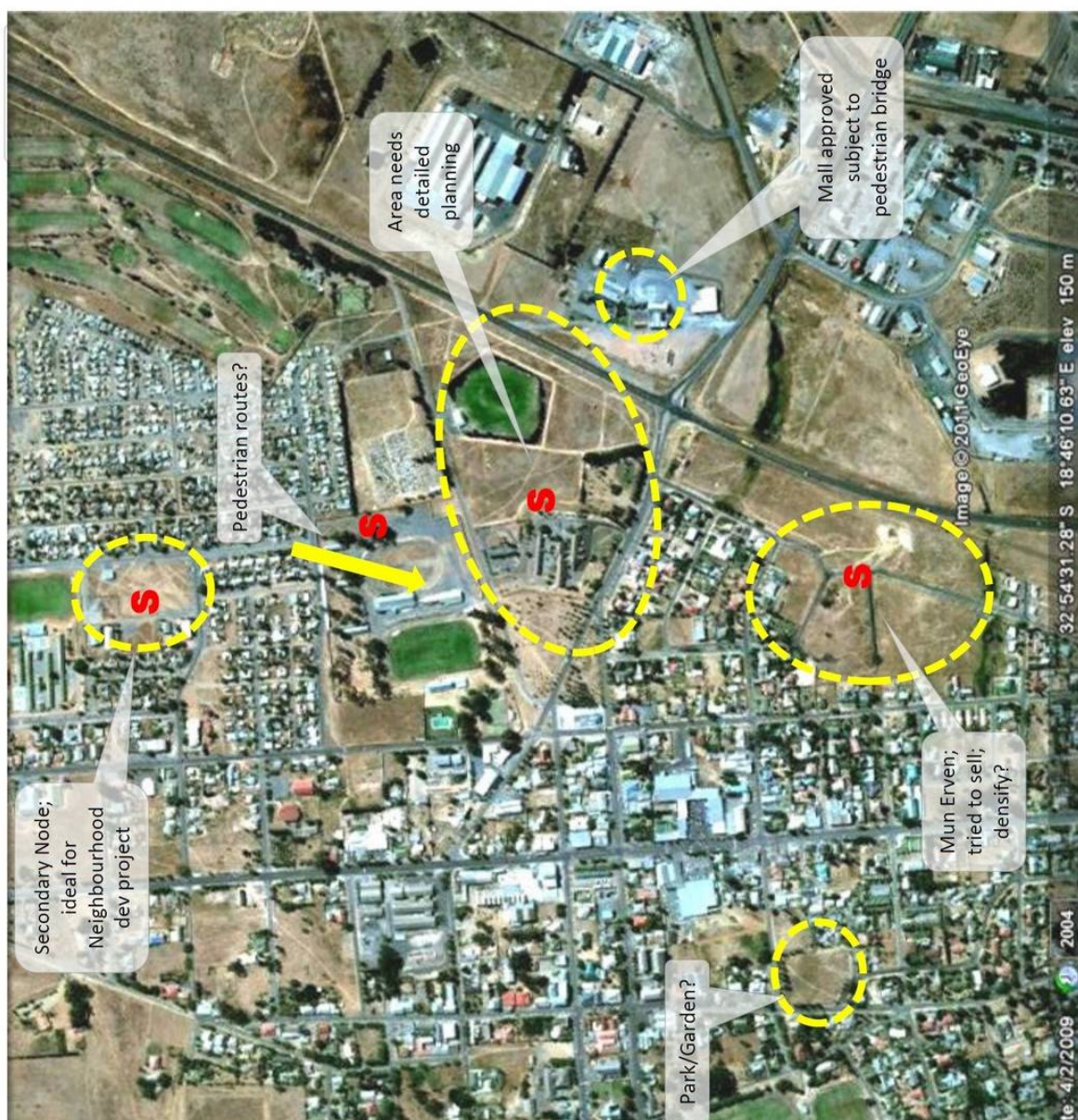
 Environment

Status as at Sept 2011

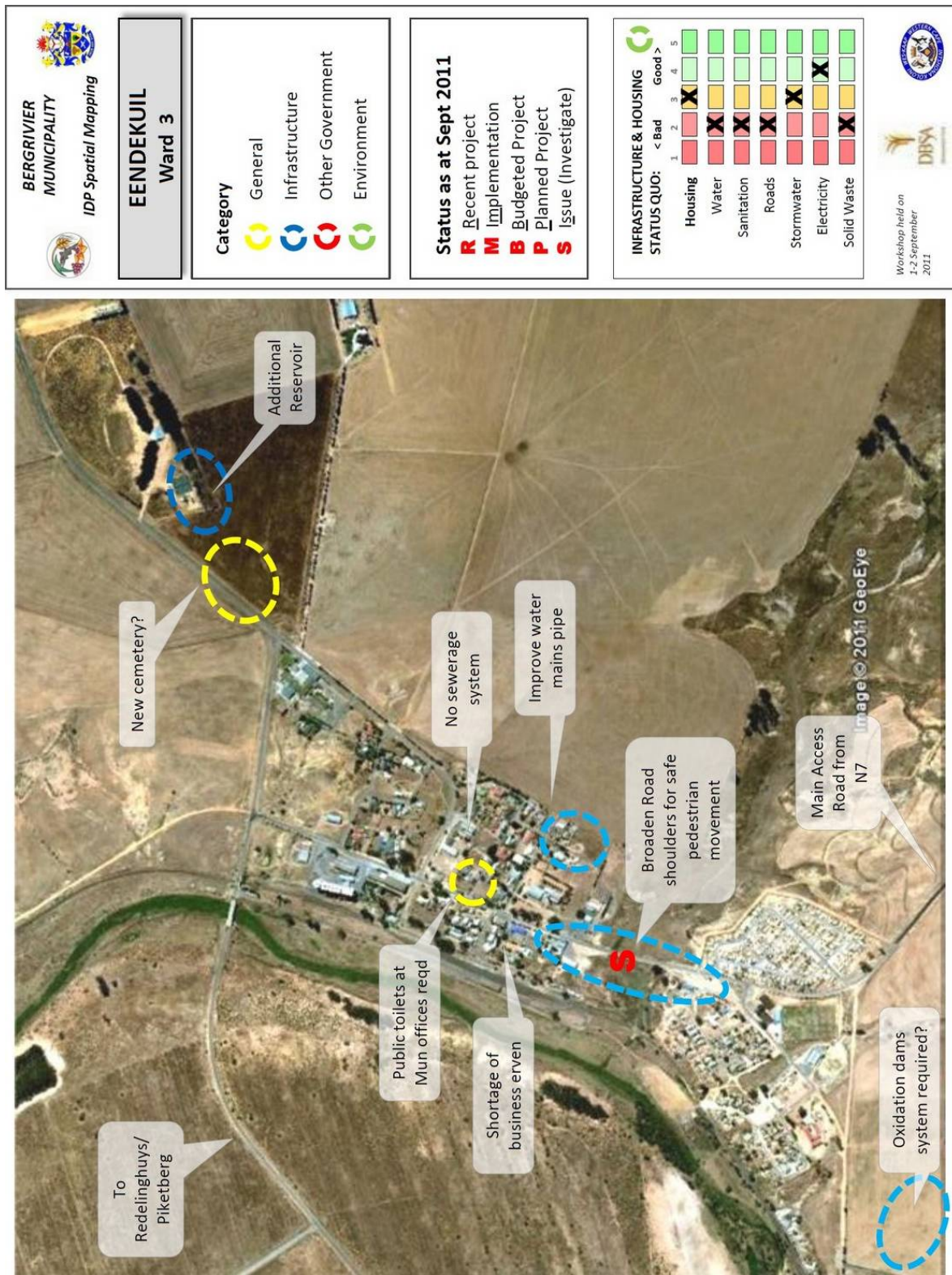
R Recent project
M Implemented
B Budgeted Project
P Planned Project
S Issue (Investigate)



Workshop held on
1-2 September
2011



Map 2.3 (d): Development Needs and Projects, Piketberg Central, 2011



Map 2.3 (e): Development Needs and Projects, Eendekuil, 2011

2.3.2.3 Wittewater and Goedverwacht (Ward 5)

In the villages of Wittewater and Goedverwacht, constituting Ward 5, there is a need to improve the water quality in both settlements and to provide indoor sanitation facilities and close and rehabilitate the solid waste site in Goedverwacht.

Other service aspects needing attention In Ward 5 are:

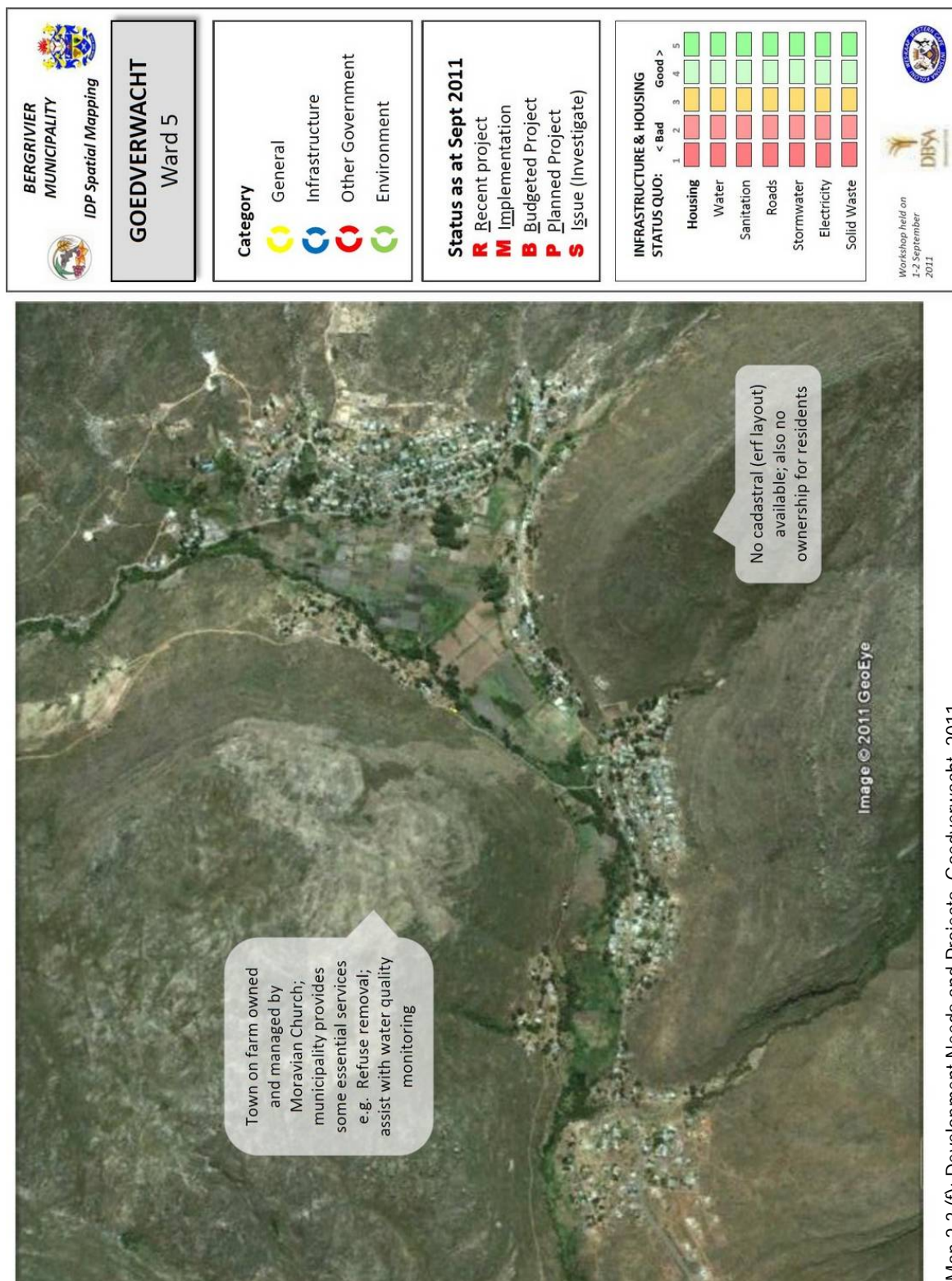
	Wittewater Ward 5	Goedverwacht Ward 5
Water	Water Quality & supply	Water Quality & supply
Sanitation		Indoor toilets
Electricity	Upgrade network	Some houses do not have electricity
Roads & Streets		Roads in poor condition
Pavements		Upgrade pavements
Solid Waste Management		Close & rehabilitate waste disposal site. Fence in interim
Sport & Recreation	Rugby field Multi-purpose sport facility	
Multi-purpose/ Thusong		Multi-purpose centre

Table 2.3(f): Ward 5 Municipal Funded Needs, Bergrivier Municipality, 2012.

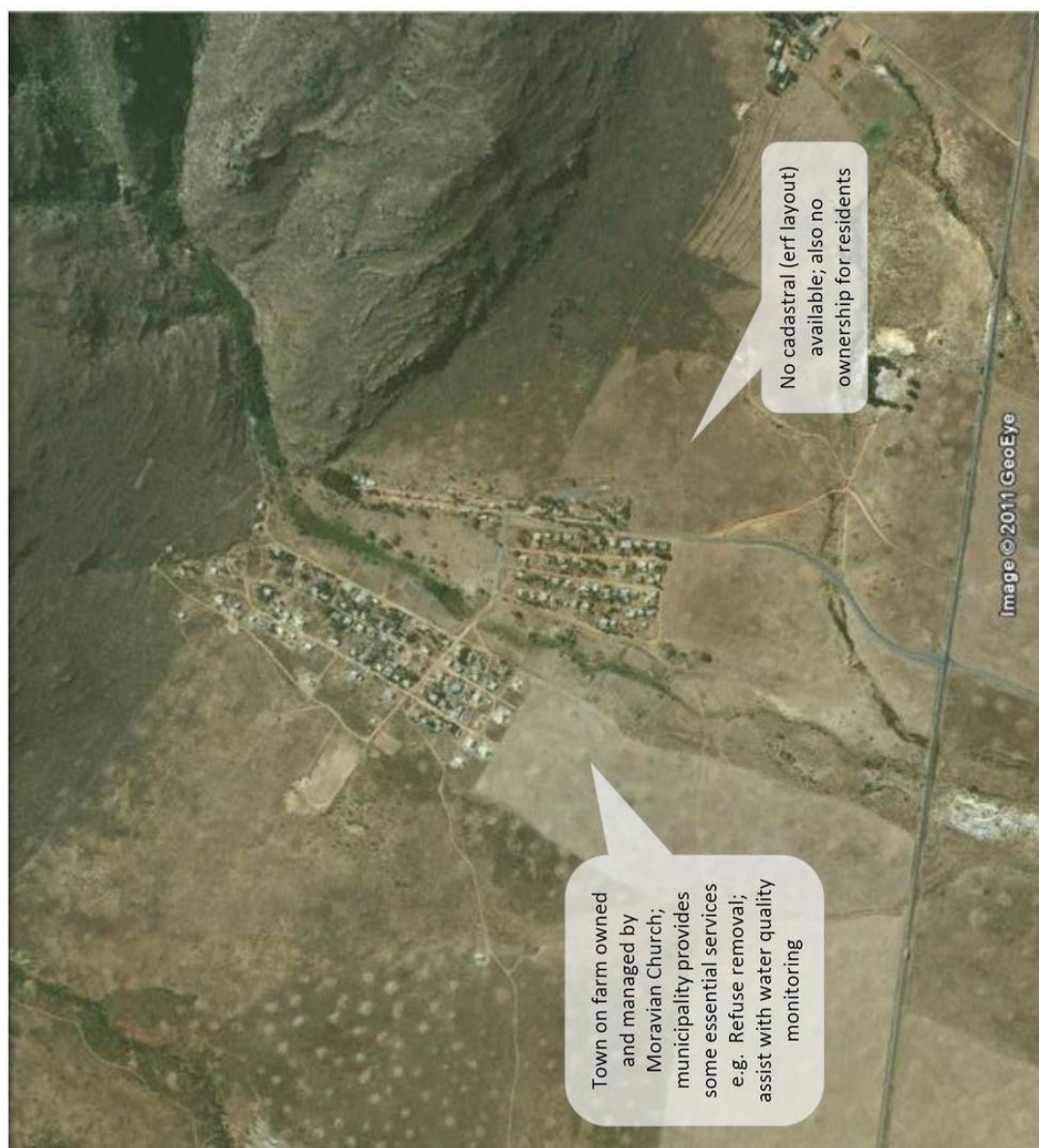
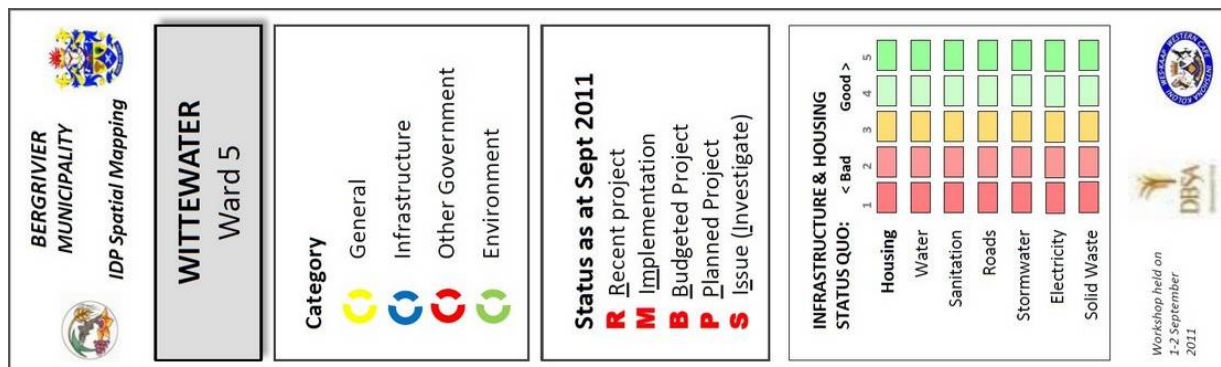
Other needs identified in Ward 5 to be funded by specific provincial and national departments are:

Town	Ward	Need	Department
Wittewater (Private – Moravian church owned)	5	Water provision	DWA
Wittewater	5	Agricultural development	DOA
Wittewater	5	Multi-purpose sport facility	DCAS
Wittewater	5	Upgrading electrical network	ESKOM
Goedverwacht (Private – Moravian)	5	Upgrading of water network to improve water quality	DWA
Goedverwacht	5	Upgrade Roads	DT&PW
Goedverwacht	5	Upgrade of electrical network	ESKOM
Goedverwacht	5	Multi-purpose centre	DLG/ DSD
Goedverwacht	5	Preschool facility – can be accommodated in multi purpose centre	DSD/ DLG
Goedverwacht	5	Improved policing	SAPS
Goedverwacht	5	Removal of alien vegetation – Rietrivier	DWA/ WFW/ DEADP
Goedverwacht	5	Water borne sewerage at some houses	DWA
Moutons Hoek	5	Improved law-enforcement – Versveld Pass	DCAS

Table 2.3(g): Ward 5, Provincial and National Funded Needs, Bergrivier Municipality, 2012.



Map 2.3 (f): Development Needs and Projects, Goedverwacht, 2011



Map 2.3 (g): Development Needs and Projects, Wittewater, 2011

2.3.2.4 Aurora, Dwarskersbos and Redelinghuys (Ward 6)

In Aurora and Dwarskersbos there is a need for storm water management, whilst sanitation systems and solid waste management need specific attention in Aurora and Redelinghuys. Moreover there is a lack of water in Redelinghuys.

In Ward 6, the following additional challenges were identified in Aurora and Redelinghuys:

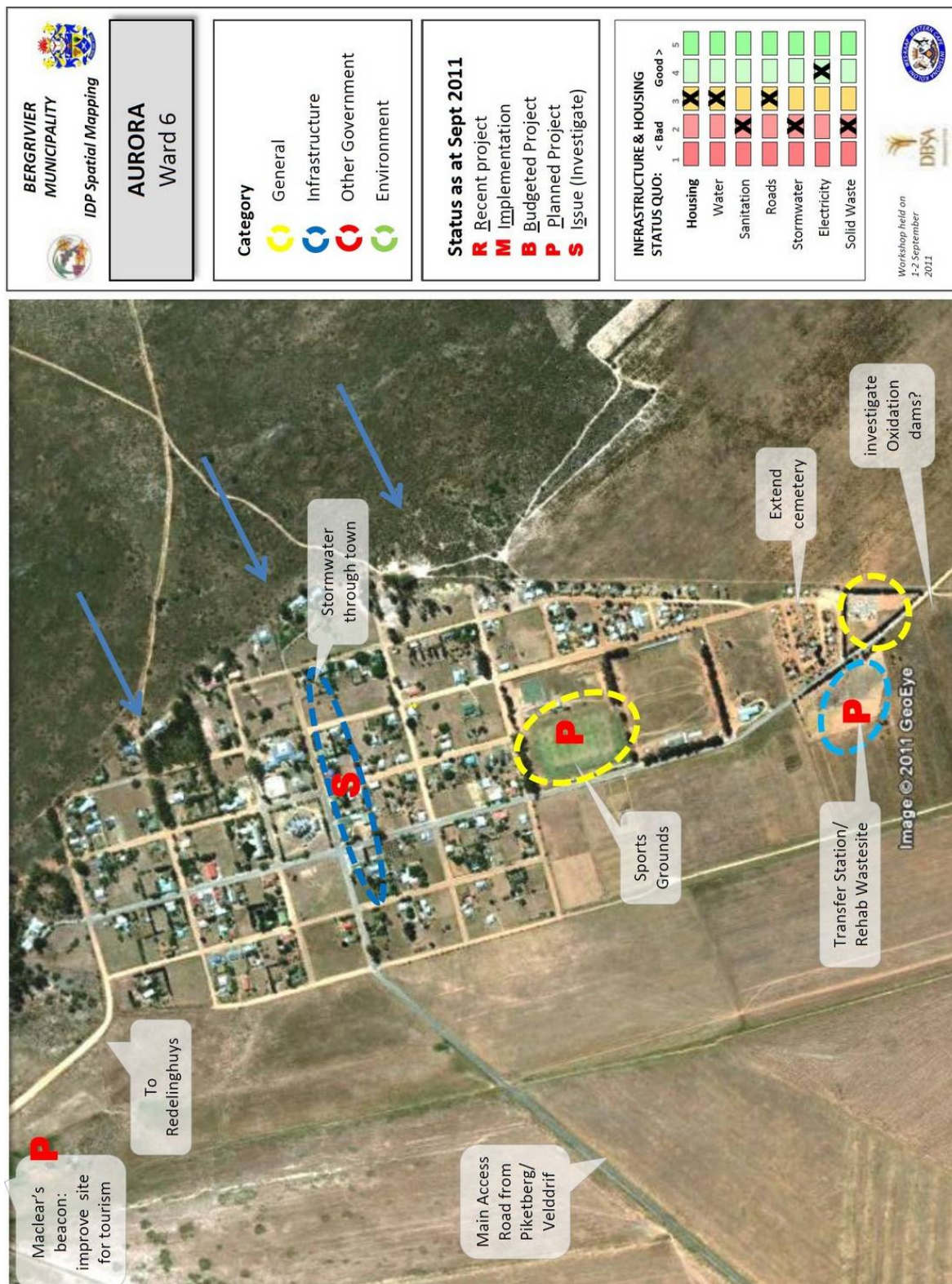
	Aurora Ward 6	Redelinghuys Ward 6
Water	Water Quality & supply	Water Quality & supply
Sanitation	Oxidation dams; Water born Sewer system	Improve sanitation system
Streetlights	Main Road	
Roads & Streets	Hof street in poor condition Street names	Roads in poor condition- maintenance (Smit Street)
Pavements		
Storm water	Improve storm water management	Storm water management is problem throughout ward
Solid Waste Management	Close & rehabilitate solid waste disposal site – implement recycling	Fence solid waste disposal site
Sport & Recreation	Upgrade kiosk at Aurora Sport grounds	Lighting; Upgrade facilities; Fencing
Parks	Market Plain (Community project: make town attractive)	
Fire Service	Provide fire service	
Law Enforcement	Traffic	Traffic; Keeping Animals & movement of, Erecting structures & buildings
Housing Infrastructure		Land for housing (Subsidized & self built)
Public Toilets	Public toilets	Public toilets; Also DKB
Accounts/ related matters		Prepaid electricity not always available, find alternatives

Table 2.3(h): Ward 6, Municipal Funded Needs, Bergrivier Municipality, 2012.

Other needs identified in Ward 6 to be funded by specific provincial and national departments are:

Town	Ward	Need	Department
Aurora	6	Main Street – needs to be made safe for pedestrians – signage	DTPW
Aurora & Redelinghuys	6	Public transport	DTPW
Aurora	6	Solar geysers needed for low cost houses	ESKOM
Aurora & Redelinghuys	6	Youth sport facilities and programmes	DCAS
Aurora & Redelinghuys	6	Improve law enforcement on Provincial roads – especially Aurora/ Redelinghuys Road	DCS
Aurora	6	Clinic grounds are being misused	DOH
Aurora	6	Pre-school needs subsidies	DOE/DSD
Aurora/ Redelinghuys	6	Provincial roads in poor condition – upgrade Piketberg/ Velddrif, Aurora, Redelinghuys, Redelinghuys/ Eland bay Roads	
Aurora	6	Rain water harvesting tanks (subsidies)	DWA
Aurora	6	De La Caille (Mc Clear Baken) Need funding to improve and market	DDCAS
Sandveld Farms	6	Cancellation of line fees	ESKOM
Aurora/ Redelinghuys	6	SMME Development	DDEDP
Redelinghuys	6	Housing (low cost and self-build schemes)	DHS
Redelinghuys	6	Upgrade Oelofberg street, pavement & safeguard pedestrian crossing	DTPW
Redelinghuys	6	Control excess stray animals – sterilization campaign	DOA

Table 2.3(i): Ward 6, Provincial and National Funded Needs, Bergrivier Municipality, 2012.
Bergrivier Spatial Development Framework: 2012 – 2017, Volume I





Map 2.3 (j): Development Needs and Projects, Dwarskersbos, 2011



**BERGRIVIER
MUNICIPALITY**
IDP Spatial Mapping

**REDELINGHUYS
Ward 6**

Category

 General

 Infrastructure

 Other Government

 Environment

Status as at Sept 2011

R Recent project **M** Implementation **B** Budgeted Project **P** Planned Project **S** Issue (Investigate)

INFRASTRUCTURE & HOUSING

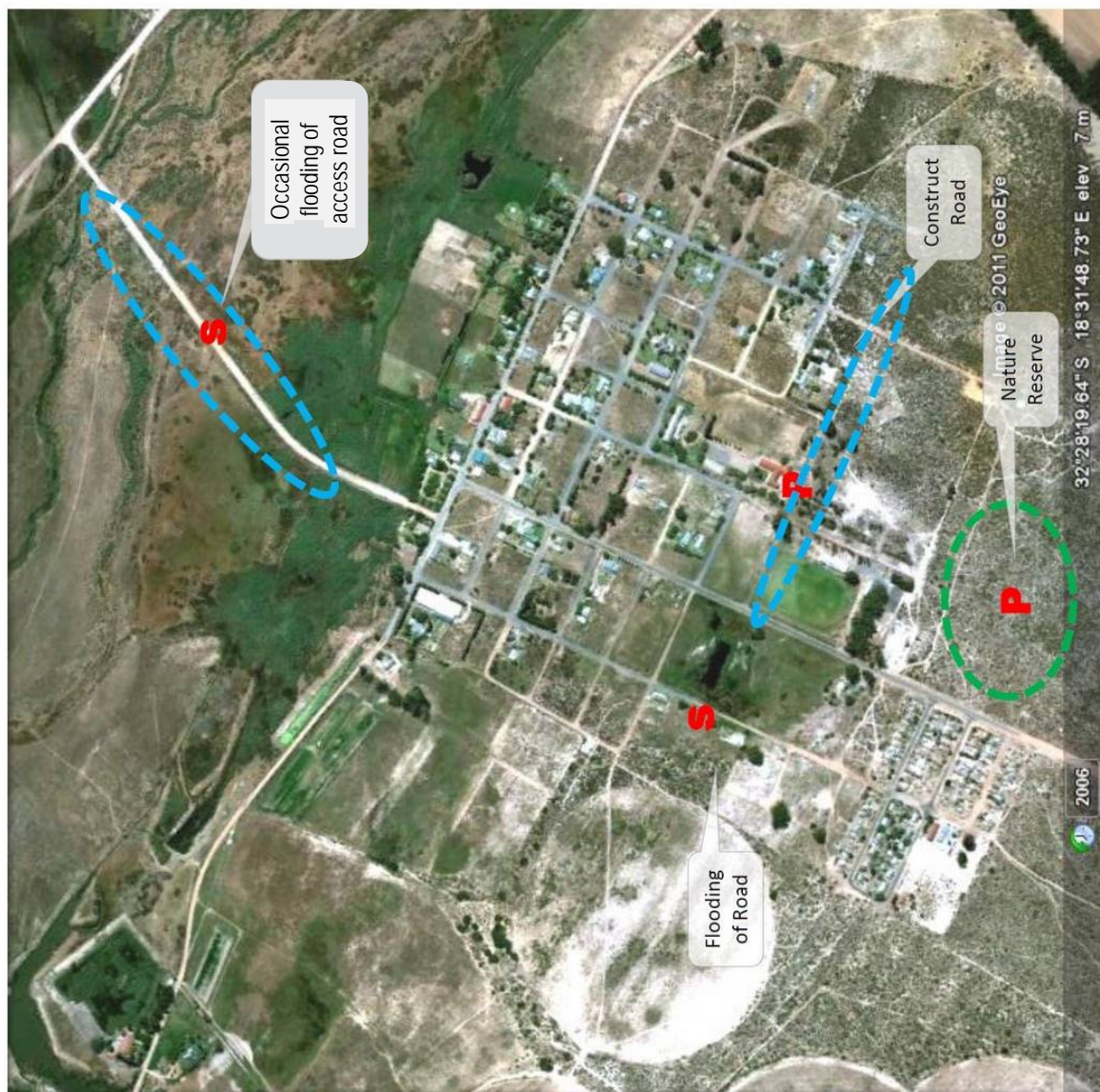
STATUS QUO: < Bad Good >

	1	2	3	4	5
Housing					
Water					
Sanitation					
Roads					
Stormwater					
Electricity					
Solid Waste					



Workshop held on
1-2 September
2011





Map 2.3 (j): Development Needs and Projects, Redelinghuys, 2011

2.3.2.5 Velddrif and Laaiplek (Ward 7)

In Velddrif the upgrading of the sanitation system is the highest priority need, whilst housing (subsidized and other) and water infrastructure also need attention.

In Ward 7, with Velddrif as its main town, the following challenges were identified:

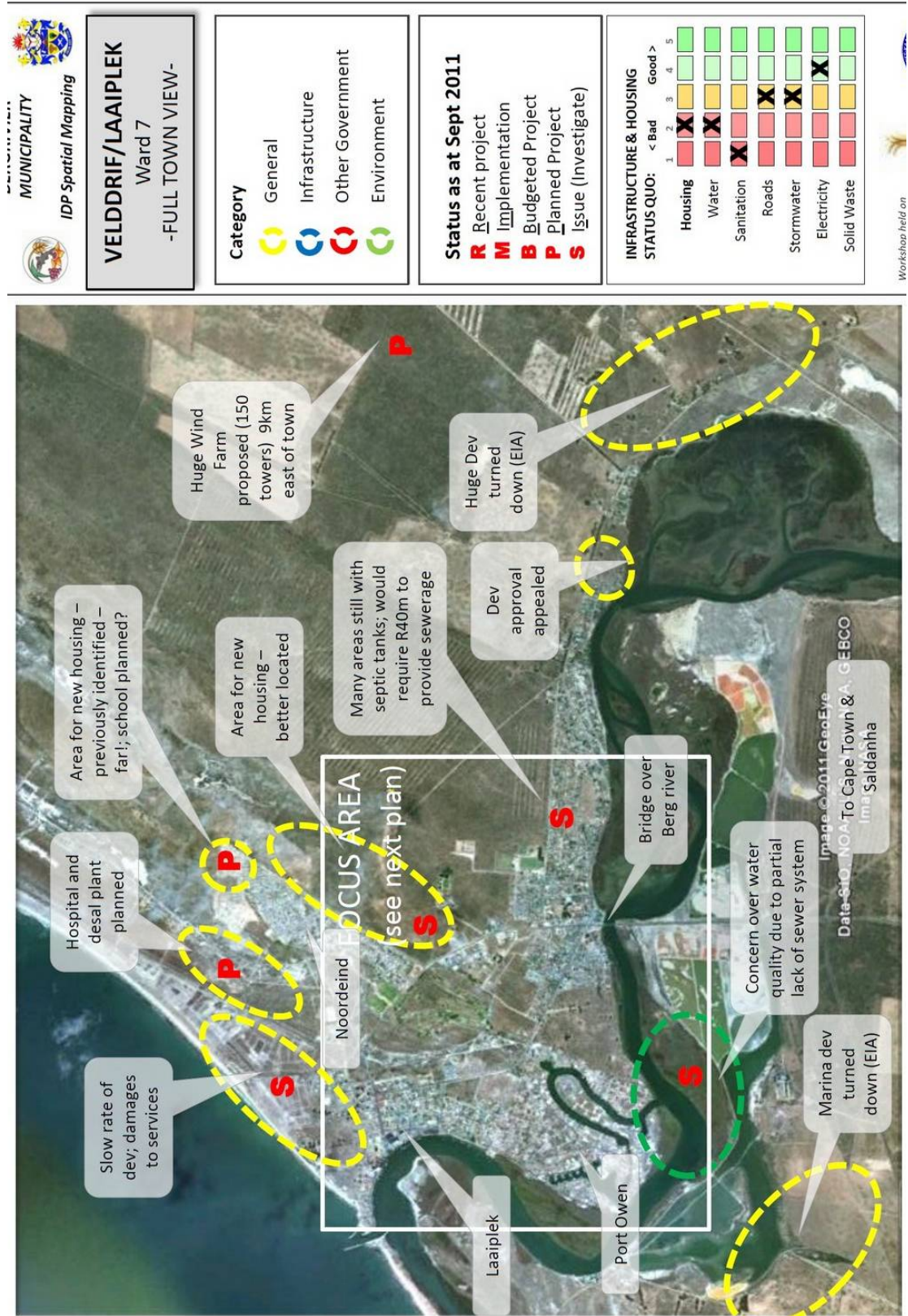
Velddrif Ward 7	
Sanitation	Indoor toilets
Electricity	Upgrade network
Streetlights	Pedestrian crossing Laaiplek, school, old cemetery & VGK
Solid Waste Management	Close & rehabilitate solid waste disposal site
Sport & Recreation	Smit sports grounds – complete building. Lighting Eric Goldsmith Lighting Picnic area Erf 483
Housing Infrastructure	Land for housing
Trading facilities	Provide facilities for traders
Public Toilets	Public toilets
Town Planning	Plan for development of open areas Land for police station
Commonage	Land for emerging farmers
Multi-purpose/ Thusong	Community based multi purpose centre

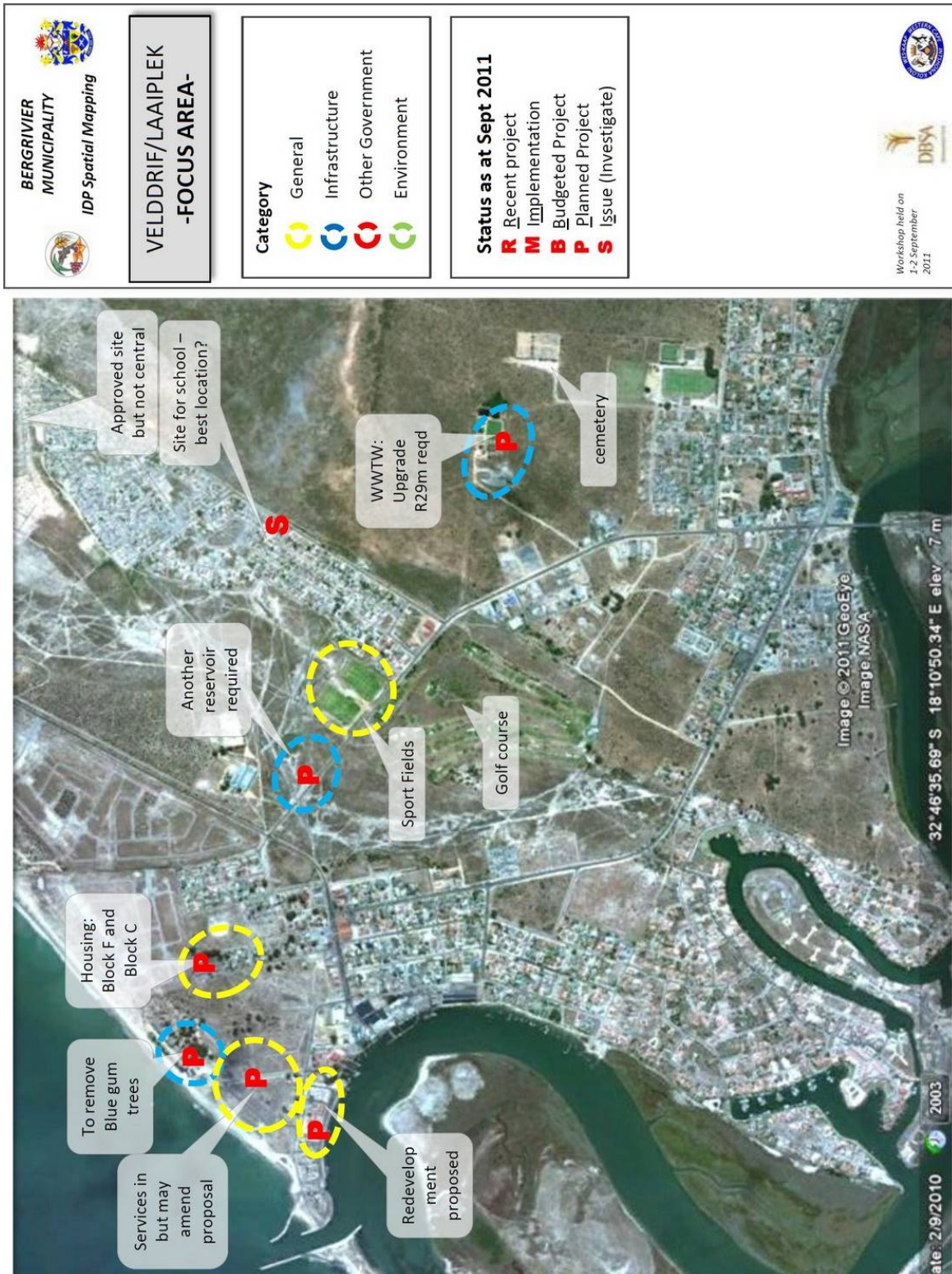
Table 2.3(k): Ward 7, Municipal Funded Needs, Bergrivier Municipality, 2012.

Other needs identified in Ward 7 to be funded by specific provincial and national departments are:

Town	Ward	Need	Department
Town	Ward	Need	Department
Noordhoek	7	Construct a toilet and waiting room at clinic	DOH
Noordhoek	7	Improve shelter for people waiting for hospital transport	DOH
Velddrif	7	Housing	DHS
Noordhoek	7	Noordhoek school need to be expanded and education provided in more languages	DSD

Table 2.3(l): Ward 7, Provincial and National Funded Needs, Bergrivier Municipality, 2012.





Map 2.3 (l): Development Needs and Projects, Velddrif, Focus Area, 2011

2.3.3 Sector issues and informants

Three sectors dominate: Housing, Conservation and Economic growth.

Housing

The Housing Master Plan (2008) proposes that a target of 550 houses per annum should be set, where after it can be re-evaluated. Housing in Piketberg, Porterville and Velddrif is priority in the Bergrivier municipal area. Considering the growth potential of these three towns highlighted in the 2004 Growth Potential Study and as per IDP, the municipality will give priority to address the housing needs in Piketberg, Porterville and Velddrif.

Constraints to implement housing projects are:

- Lack of funding;
- Approval of Environmental Assessment application;
- Availability of land, and
- Scarce water resources (Porterville).

Biodiversity and Conservation

Bergrivier Municipality biodiversity features are of global conservation significance and the Groot Winterhoek Wilderness is a Cape Floral Region World Heritage Site. The municipality is further part of the Cape Floristic Region and one of the 34 globally identified biodiversity hotspots. Linking the World Heritage Site (Groot Winterhoek) within Bergrivier Municipality to rest of the voluntary conservation sites is a challenge facing Bergrivier Municipality.

The greatest threat to biodiversity within the municipality is linked to agricultural development. Mainstreaming of biodiversity conservation into the agricultural sector was seen as the primary means of addressing off-reserve or informal conservation in an environment dominated by agricultural development. Two projects were launched by the Greater Cederberg Biodiversity Corridor in collaboration with Potatoes South Africa and the South African Rooibos Council in the pursuit of the objective. They became known as the Biodiversity Best Practices for Potato Production in the Sandveld and the Right Rooibos project. The focus of these projects has broadened and has become driven by a vision for a sustainable agricultural future.

Local Action for Biodiversity (LAB) is a unique global initiative aimed at improving biodiversity management by local government. Bergrivier is part of a 3 year LAB programme aiming to develop a long term Local Biodiversity Strategy and Action Plan (LBSAP) and to implement the said plan. The strategy is based on mainstreaming biodiversity into fine scale planning and landscape planning initiatives i.e. Biodiversity Sector Plan with the aid of Critical Biodiversity Area Maps. Possible new

ideas around linking resources to existing and new environmental projects and conservation programmes should result from this planning.

Bergrivier Municipality benefits from the Greater Cederberg Fire Protection Association and their Working on Fire programme.

Part of CAPE Estuaries Programme and Integrated Coastal Management Act 24 of 2008 involved the compilation of an Estuary Management Plan (2009). An Estuary Management Forum was established in 2010 and operates successfully with local role-players and government department representatives. The Verlorenvlei Estuary, which is a RAMSAR site, falls outside the Bergrivier Municipal area, yet most of the upper catchment, does fall within the Municipality. Challenges include funding for Bergrivier Estuary Management Forum initiatives, promotion of educational and awareness initiatives, law enforcement initiatives and job creation projects.

Economic Growth

The following initiatives are prioritized to ensure economic growth:

- Business Process Outsourcing (BPO);
- Tourism:-
 - Agri-tourism facilities on farms should be promoted;
 - Agri-processing facilities could evolve and grow in size and become a tourism attraction;
 - Natural resources including archaeological resources should be kept intact to attract foreign, nationals and regional tourists;
 - Holiday resorts at villages such as Goedverwacht and on the golf course at Porterville should be promoted.
- Floriculture (Cut flowers);
- Kelp farming and processing;
- Fishing along the coast and the Berg River as well as some fish processing;
- Mining salt along the Berg River;
- Conferencing;
- Residential developments for retirees as well as holiday and weekend visitors (including Port Own as an up-market Marina)(Marina & Waterfront development);
- Retain and recruit local and provincial administration and infrastructure services;
- Retain and recruit larger enterprises like Pretoria Portland Cement;
- Market Bergrivier Municipality as a film production destination.

2.3.4 Intergovernmental department plans and consideration

International

- a) Millennium Development Goals (by 2014)

Combat poverty and hunger, Improve health (pregnant women, child mortality and HIV/Aids), Achieve universal primary education, Promote gender equity, Ensure environmental sustainability, Develop global partnerships.

National

- a) New Economic Growth Path (incorporating *ASG/SA*) is a programme based on partnerships between government and private sector to create employment in different sectors and in particular the green economy (alternative energy), agriculture (land transfers), mining, manufacturing and tourism;
- b) National Spatial Development Perspective focuses on the development potential of areas, investment and infrastructure development priorities;
- c) The Election Manifest (2009) focuses on five priority areas: meaningful job creation, education, health, rural development, foodsecurity, landreform and the combatting of corruption;
- d) 2010 Cabinet outcomes and strategies focusing on economic growth and transformation, economic and social infrastructure, rural development & food security, education and training, health, safety and security, resource management including natural resources and sustainable human settlements;
- e) National land and agricultural reform program;
- f) Comprehensive rural development programme;
- g) Rural transport strategy promoting effective transport through institutional reform.

Provincial Strategies

- a) Western Cape Provincial Growth and Development Strategy, 2006 (iKapa Elihlumayo): define the spatial form of the province through four spatial elements that are key areas for economic growth and opportunities:
 - Regional growth drivers: Cape Metropole, Saldanha-Vredenburg and Southern Cape;
 - Regional development corridors: Oliphants River Valley and Breed River Valley;
 - Regional transport corridors: N1, N2 and N7;
 - Leader towns.

To enhance the development of these elements investment categories based on growth potential (best value for money) and need (best social advantage) were formulated:

- Town investment – high development potential and low human development potential;
- Social investment – high development potential and low human development needs;
- Social and town investment- high development potential and high human development potential;
- Leader towns- highest growth potential;
- Minimal investment – low development potential and low human development needs.

- b) The Provincial Strategic Objectives provide directives and are outlined below:
- Expedite economic growth and transformation to create meaningful work and a living;
 - Build economic and social infrastructure using comprehensive programmes;
 - Link land and agricultural reform and food security to a comprehensive rural development strategy;
 - Strengthen human resources by means of increased skills levels;
 - Improve the health profile of all South Africans;
 - Strengthen the fight against crime and corruption;
 - Build coherent, caring and sustainable communities;
 - Manage and use resources appropriately;
 - Build a developmental government including the improvement of public services and strengthening of democratic institutions.
- c) The Provincial Spatial Development Framework, giving spatial expression to the Provincial Growth-and Development Strategy and municipal Integrated Development Plans (IDP's) and:
- Create spatial guidelines for land uses to re-orientate communities for a more equal and sustainable future without the creation or removal of land use rights;
 - Promote development that is socially equal, economic viable and environmentally sustainable. Provision has to be made for the development needs of the current generations without compromising future generations meaning to provide for their needs, balancing *Ecological integrity* (the Planet), *Social integrity* (the People), *Economic efficiency* (the Market)².

2.4 Vision

The proposed Bergrivier Spatial Development Framework Vision is:
"Bergrivier Municipality is economically prosperous" (vision)
through the balancing of development and conservation and making economic opportunities easily accessible to all. (mission).

Bergrivier Municipal Vision reads as follows:

Bergrivier Municipality strives towards a satisfied community by means of balanced, agreed upon, sustainable and effective service delivery.

Whilst the vision outlines what Bergrivier Municipality wants to achieve, its mission gives direction as to how the municipality is going to achieve its vision:

Bergrivier's mission is *to deliver cost-effective, sustainable services with a well represented army of employees who are motivated to stimulate local economic development as well as environmentally*

²WCSDP, p. 2-1, November 2005.

sensitive development through transparent decision making based on sound management principles within the ambit of unique character and cultural, historical heritage.

To formulate the Bergrivier SDF vision, the following was considered:

- a) the IDP consultative process and needs analysis;
- b) the normative principles of the NSDP;
- c) Legislative requirements and normative principles (in Development Legislation and Municipal policies);
- d) Trends that require management;
- e) The inherent character, culture, qualities and roles of the area.

2.4.1 The IDP needs analysis

The IDP needs analysis reflects that the biggest challenge is of an economic nature and one that is likely to impact on the financial viability of the municipality and the social well-being of communities. Hence the municipality will have to ensure that it has the internal capacity and LED strategies, policies, processes and organizational structures and capacity are in place to address such a threat. To overcome this challenge, the Bergrivier Municipality will seek partnerships with developmental agencies such as the Development Bank and others that will contribute to its ability in preparing for such a complex challenge.

2.4.2 Legislative requirement

Legislative requirements or normative principle directives are as follows:

- harmony with nature, sustainable natural and built resource use;
- urban efficiency, accessibility, proximity to work & liveable settlements;
- celebrate diversity;
- Redress spatial and social imbalances focussing on people to ensure sustainable environments for the future;
- Everyone must enjoy equal protection and benefits;
- Procedural efficiency with the minimum expenditure of resources;
- Integrated development planning and land use (a complete and harmonious whole);
- Fair and good governance, be democratic, legitimate and participatory;
- Government spending on fixed investment must be prioritized within areas with economic growth and potential (NSDP) and change the present pattern of resource spending;
- Settlement and economic growth opportunities must be channeled within activity corridors and nodes that are linked to main growth points.

2.4.3 Trends that need management

The Bergrivier Municipality has identified six trends that require management. Related trends, but not necessarily similar in scope or in sector focus on the West Coast District Municipality are listed next to the trends identified in Bergrivier Municipality.

Trends identified by Bergrivier Municipality	Areas of focus within the West Coast District Municipality
Economic decline: revenue reduction, increased unemployment and increase in low income and indigent households.	Poverty Alleviation and EPWP Job Creation
Lack of municipal finance to be able to comply to provincial and national legislation	Shared services and sharing skills Communication and information sharing
Decline in conventional agriculture.	
Climate change	Air Quality Preservation of the environment
Social decline, increased crime, substance and alcohol abuse.	
Decline in and closure of local businesses	
An increased number of indigent households due to in-migration	
An Archeological and Paleontological Strategy	

Table 2.4(a): Trends that require Management, Bergrivier Municipality.

An analysis of poverty and economic development potential informs the trends and focus areas identified in the municipality and district (See figure 1.4 (a). This analysis informs the growth potential of towns in the Western Cape.

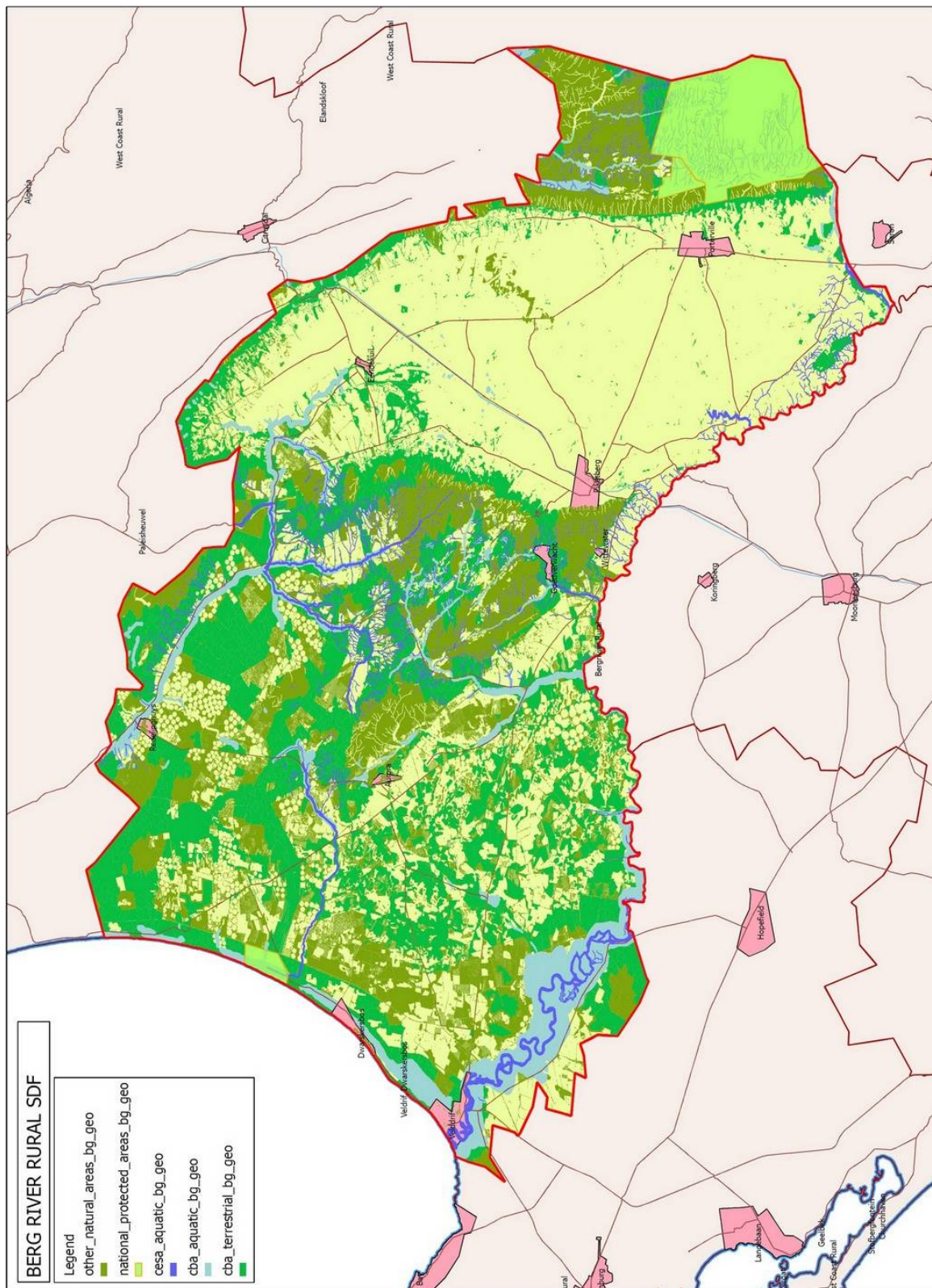
Therefore, the Bergrivier municipality identified economic development as the biggest challenge likely to impact the financial viability of the municipality and the social well-being of communities. Accordingly the municipality will have to ensure that it has the internal capacity and LED strategies, policies, processes and organizational structures in place to address such a threat. The latter challenge brings about the following opportunities:

1. Increased regional economic growth and development spill-over effect in Bergrivier Municipal area;
2. Unique and exceptional natural conservation areas that offer a variety of economic development opportunities;
3. Tourism and more specifically sports tourism;
4. Mining potential;
5. The possibility of natural gas along the West Coast, and
6. Limited demand regarding informal settlements.

The IDP's response to this challenge is as follows: "It is critical that these economic opportunities be pursued and explored in an attempt to establish a diversified economy not dominated by agriculture. In the case of tourism it is also critical to ensure that the current tourism sector becomes appropriately organized and is developed into one that can relatively independently take responsibility for growth, increased revenue and job creation. Cooperation with other municipalities and more specifically those on the West Coast seem to be critical in order to ensure that Bergrivier secures a share of the expected returns from developments that are being anticipated".

2.4.4 Assessment of inherent character, culture, qualities and roles of the area

Bergrivier Municipal Area is equally a natural conservation and tourism destination as it is an agricultural and fishing hub. Culturally the eastern part of the municipality (Piketberg and Porterville) represents the wheat fields of the Western Cape, whilst the south western part represents the West Coast. The northern western part represents the Cederberg.



Map 2.4 (a): Critical Biodiversity Area and Ecosystem Support Areas, Bergvliet Municipality

2.5 Problems and issues statement

During the IDP participation process the following threats have been identified:

Threats identified by Bergrivier Municipality	Weaknesses
Reduction in revenue sources and/or inability of current revenue to ensure financial sustainability due to expected increase in unemployment, reduced government subsidies, less investment into the area, reduced per capita income, and the exchange rate	Financial viability of the municipality. Also in this context, weaknesses are the infrastructural and bulk service capacity backlogs, the narrow rates base and the ability to provide economic development opportunities (third highest priority)
The cost and ability of compliance by local government	Delays in the restructuring and transformation of the municipality especially at top management level (highest priority). The impact of brittle relationships amongst municipal departments, between the administration and the political component, between political parties, between the municipality and provincial and national departments and politicians and between the municipality and its beneficiaries and potential partners (2 nd highest priority). Ageing fleet and equipment and the impact on service delivery and the need for a fully-fledged SCM division (fourth highest priority)
The impact of climate change on the agricultural sector	Increased pressure on water sources (fifth highest priority)
Negative impact on the well-being of communities by social ills, e.g. crime, substance and alcohol abuse, etc	
Profitability of local businesses and how to retain local business	
An increase in the number of indigent households due to in-migration	Increased pressure on water sources (fifth highest priority)

Table 2.5(a): Threats and weaknesses, Bergrivier Municipality.

Delays in finalizing the institutional structure of the municipality inevitably have a negative impact on relationships. Fundamental changes need to be made and accordingly a different mind and skill set will be required. The development of a Communication Strategy is also identified as of critical importance.

However good accounting practices, statutory compliance, risk management practices and policies and by-laws in place count for the municipality. The current financial health of the municipality is another plus point and experienced councilors, executives and staff provide stability and a good platform from which to operate.

Therefore Bergrivier Municipality aims to:

1. Establish a strong economic development focus within municipal operations and decision-making;
2. Complete the restructuring and transformation process and the optimum development and utilization of human capital in accordance with the strategic repositioning demands of the municipality;
3. Establish a strong relationship-orientated culture and tactical approach, i.e. in respect of internal and external stakeholders;
4. Secure the financial viability of the municipality;
5. Reduce the infrastructural and bulk service backlogs;
6. Find a solution to the negative impact compliance demands are having on the capacity of the institution;
7. Mitigate the impact of climate change and more specifically the reliability of existing water sources, and
8. Management of the negative impact of the economy on the social well-being of communities.

Other challenges experienced by specific departments are:

a) Relevant Departments

Department of Water Affairs and Forestry:

- Limited water resources in both Oliphant's Doorn and Berg river catchment areas;
- High salt content of groundwater in areas (especially in the south) – expensive to desalinate this water;
- Health of Catchment Management Areas and Water Quality of the Berg River;
- Alternative energy facilities increase along West Coast and care should be taken that these facilities are not close to or within wetland areas.

Department of Human Settlements:

- Need land for subsidized housing/ serviced stands in priority areas i.e. Piketberg, Porterville and Velddrif;
- Property transfers lagging;
- Bulk Service Infrastructure: Piketberg - adequate bulk services infrastructure, Porterville –does not have sufficient bulk service infrastructure.

Cape Nature:

- Illegal agricultural practices in Berg river region, farmers act without the required applications to the Departments (Clearing of natural vegetation, Irrigation pivots, ploughing of natural areas, Intensive agricultural uses);
- Conservation of natural areas within Stewardship programs;
- Development of the Corridor areas;
- Address climate change impacts – conservation of natural areas to lower impact of areas becoming arid;
- Focus on Conservation of Critical Endangered Areas according to CBA's as per Fine Scale Planning;
- Piket-bo-Berg – on the mountain plateau above Piketberg – important for various conservation processes.

SANBI:

Biodiversity Sector Plans from CBA mapping –should be used in SDF to provide “red flags” for development -it act as

a primary biodiversity informant for land-use planning and decision-making, and does not claim to address other land-use or town and regional planning policy– it is a tool to inform people/municipality of the potential of endangered area – they provide examples of potential translation of CBAs to the Spatial Planning Categories SPCs in the document that can be used.

The CBAs maps already include buffers areas as well as proposed corridors - no need to provide for additional buffers and corridors– use CBA maps as the basis.

Bergrivier Municipal focus areas:-

- Strengthen links with surrounding conservation areas, i.e. the Cederberg Conservation Corridor affects the north-western side of the Bergrivier towards the sea;
- Piket-bo-Berg – part of water catchment areas and should be protected. Also known for the occurrence of leopards;
- CBAs were not created to accommodate alternative energy locations. Appropriate locations should be identified by both Cape Nature and Department of Agriculture i.e. preferably in already disturbed areas;
- Sand mining and mining in general – large areas/farms are being developed for sand mines;
- Tributaries – farming activity along the tributaries – rivers are being opened up or areas along banks manipulated. The 30 meter buffer areas should be maintained along all rivers;
- Illegal agricultural activity on farms - illegal clearing of areas;
- Area between Laaiplek and Dwarskersbos, there was already approved developments in these areas with offsets determined, preferred no developments, edge should be where the last serviced sub divisional area stops north of Laaiplek. It is preferable that no development should take place south of Dwarskerbos and Soverby Lapa;
- Area surrounding the Bergrivier estuary should be kept intact;
- Cape Nature: support re-active stewardship programmes but do not have capacity to manage these areas and applications;
- Conservancies should be promoted.

Department of Transport:

- Development leapfrogs roads within the urban areas and long linear stretches of development along roads confuse motorists if the area they entered is urban. Speeding is a threat;
- The placement of schools along major roads in urban areas creates problems with the safety of the children. High speed of vehicles travelling along the road creates a problem for the safety of children at the school, especially if they walk to the school.

Department of Education:

Movement of people caused location of planned schools to change.

Department of Trade and Industry:

Would assist in enhancing tourism.

Department of Heritage Resources:

Utilise Heritage Resources to enhance tourism.

Department of Mineral Resources:

Department of Tourism: Cape Town Routes Unlimited

Would assist to enhance tourism.

Department of Health:

- Mobile clinics serving seasonal workers have limited services;
- Access to health service is a challenge for rural communities;
- Malmesbury Regional Clinic will also provide some of the health services for the Bergrivier area. Transport to Malmesbury will be provided;
- A new sub district office will be located at Radie Kotze hospital in Piketberg.

Department of Rural Development and Land Reform:

- Require agricultural villages or housing development in urban areas for farm workers;
- Moravian mission stations, Wittewater and Goedverwacht, Moravian Church made land available for land reform;
- Identified projects for different types of land reform. Acquired various portions of land: around Piketberg, Wittewater and Goedverwacht: (different types of projects, upcoming farmers, small farmers, urban farming).

Department of Agriculture:

- Protect agricultural land (specifically cultivated land) and sensitive areas such as wetlands etc;
 - Management of storm water and sewerage as a result of new development areas and the protection of agricultural land from pollution;
 - Prevent fragmentation of agricultural land and injudicious placement of access roads into towns;
 - Set realistic growth targets translated into areas (ha) needed for the next 10/15/20 years and identify these possible growth areas and directions of the towns;
 - Try and accommodate growth as abutting existing town infrastructure;
 - Identify and show all types of development areas e.g. industrial, residential, small holdings etc. on maps, preferably with aerial photography that adopts a user friendly scale;
 - Protect and maintain agricultural productivity and the rural character of the area;
 - Prevent other zonings or hap-hazard development nodes in the rural areas other than agriculture.
-

b) Neighbouring Municipalities

Cederberg Municipality:

- Disputes over municipal boundaries – Cederberg Council does not support the proposed boundary changes that were lodged with SA Demarcation board by Bergrivier Municipality, on the proposed changes along the boundary between Bergrivier and Cederberg;
- Moutonshoek – concerned about the potential impact of mining in this area on the Verlorenvlei/ Elands Bay region;
- Illegal building on properties along coastline between Dwarskersbos (Berg River) and Elands Bay (Cederberg) and the creation of small settlements along the coast north of Dwarskersbos;
- Include the Cederberg Mountain to Coast corridor into the Bergrivier municipal area where applicable;
- The conservation of the Verlorenvlei, originating in the Bergrivier municipal area, through proper management to limit potential impact on the lower Verlorenvlei as RAMSAR wetland. Promote environmental and sustainable land practices in the agricultural areas around the Verlorenvlei to ensure healthy environment and eco-system;
- Potential integration of tourism areas of Bergrivier and Cederberg including transport routes N7 Piketberg to Citrusdal and Clanwilliam, Dwarskersbos/Elands Bay along West Coast, along Verlorenvlei Redelinghuys to Elands Bay.

Swartland Municipality :

- Potential integration of tourism initiatives in both Bergrivier and Swartland i.e. transport routes N7 Piketberg to Malmesbury as Wheat and Wine Route;
- Mutual management of Bergrivier as water and recreation source;
- Co-operation between related agricultural activities.

Saldanha Bay Municipality :

Contact was made with officials and they will provide written comments.

Witzenberg Municipality :

Contact was made with the official and he will provide written comments.

c) District Municipality

West Coast District Municipality:

- Long-term water provision to Porterville and Wittewater;
- The service backlog in the rural areas which include Wittewater, Goedverwacht, Aurora, Redelinghuys and Genadenberg;
- Water Quality in the Berg River;
- The management and control of activities on and around the Berg river – problems with boat traffic on river, permits, boat houses along river, 'boat launching sites, uncontrolled fishing along the Berg River, limited or no service infrastructure at popular fishing spots and other recreation spots along the Berg River. Illegal camping along the Berg River;
- Extension of RDP houses where no provision is made for additional services (water and sanitation);
- Mining in the region and its impact on the environment. (Moutonshoek);
- Illegal development along the coast within the 1000 meter from the high-water mark between Dwarskersbos and the northern boundary with Cederberg Municipal area;
- Urban edge of Velddrif/Laaipek which include the opposite side of the Berg River is of concern;
- The placement and development of renewable energy projects (Solar and wind farms);
- Large quantities of vacant erven in coastal towns.

2.6 Spatial Concept and Direction

2.6.1 Areas to be protected

The following rural areas need protection or ecological enhancement (combine agriculture and conservation):

Terrestrial Ecosystems

- Fynbos:
 - Leipoldtville Sand Fynbos around Aurora, between Redelinghuys and the Engelsman se Baken area; the area from Redelinghuys to Paleisheuvel and from Paleisheuvel north to Alexandershoek due to the likelihood of endemic plant species;

- Strandveld:
 - The entire remainder of Varkvlei Shale Strandveld (on the coastline south of the Berg River);
 - Large contiguous patches of Bergrivier Flats Strandveld, especially those patches with known occurrences of Red Data listed species; all remaining large patches of Graafwater Flats, Bergrivier Flats and Lamberts Bay Strandveld;
- Renosterveld:
 - The slopes of the Piketberg (Swartland Shale Renosterveld);
 - Weltevrede-Kleigat area north of Engelsman se Baken and North West of Aurora;
- Shrubland:
 - Piketberg Quartz Succulent Shrubland (the Otterdam site being the best known example);
- Aquatic vegetation types:
 - Berg River mouth (Cape Estuarine Salt marsh vegetation);
 - Extensive salt marshes north of the Berg River and along the Sout River;
 - Rocher pan area;
 - Parts of the Wadrif Soutpan and the edges of the Verlorenvlei.

The vegetation surrounding and supporting aquatic sources should be protected by buffers. Buffer widths have been recommended for different river types depending on their ecological importance.

Aquatic Ecosystems

- Wetland ecosystems comprising of floodplain wetlands, valley bottom wetlands, seeps, depressional wetlands, estuaries;
- River ecosystems comprising of mountain streams, foothill rivers and lowland rivers.

Catchments and Rivers

- Main rivers feeding the Water Management Area include the Berg, Papkuils and Verlorenvlei Rivers.

Estuaries

The Berg River estuary is identified for partial Estuarine Protected Area status. This means that at least one side of the system should be managed as a sanctuary, to be protected from all activities that use up a resource (e.g. fishing).

Wetlands

Wetlands or vleie are those areas where water covers the soil permanently or periodically, at or near the surface. The inland wetlands of the West Coast have been classified as isolated or non-isolated systems, depending on the connection or proximity to riverine systems and further subdivided into functional, structural and habitat units (i.e. floodplain, valley bottom, seeps and depressions).

Groundwater ecosystems

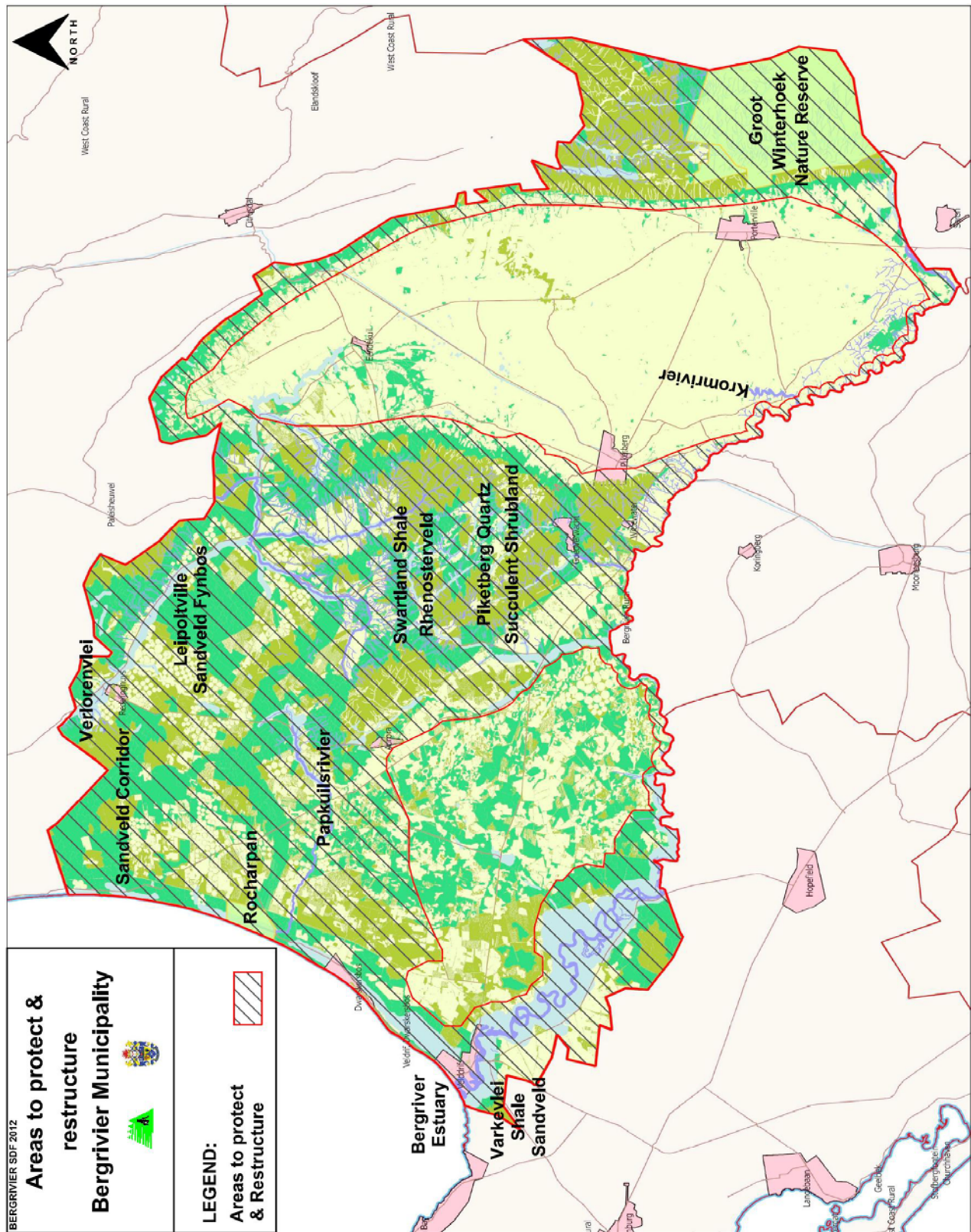
Groundwater is the term for any water found subsurface in the saturated zone below the water table, i.e. the water table marks the upper surface of the groundwater systems.

Marine and Coastal Ecosystems

- The Namaqua Bioregion from Cape Columbine northwards includes the coastline of the Bergrivier Municipality.

The following West Coast landscape corridors, stretching beyond the boundaries of the Bergrivier Municipality, remain vital and their protection must be prioritised:

- West Coast National Park northwards towards the Berg River Estuary;
- The Berg River corridors;
- Rocher Pan Nature Reserve eastwards;
- Elands Bay Nature Reserve and Verlorenvlei, eastwards towards the Cederberg Wilderness Areas via the Sandveld corridor (as identified by Cape Nature's Greater Cederberg Biodiversity Corridor Project);
- The Sandveld Corridor.



Map 2.6(a): Areas to Protect, Restructure and Develop, Bergervier Municipality

2.6.2 Urban areas to be restructured and protected

In the towns Piketberg, Porterville and Velddrif, areas within and around existing business and industrial activity should be restructured. To ensure close proximity to the workplace and easy access to amenities attentions should be given to such areas. Mixed land uses in the areas identified could enhance densification.

Alternative living locations and areas to be protected are Aurora, Eendekuil, Goedverwacht, Redelinghuys and Wittewater,

Aurora

The town should be protected and landscaped as is as it is integrated. Given its character, densification should be within keeping its spacious rural identity.

Eendekuil

The sport and amenity complex in the subsidized housing precinct located in the south, the area around the municipal and Spoornet buildings located west and the church and cafe located in the east should be restructured. Mixed uses should be promoted around the church area.

The corridor along the river bed on the western edge of Eendekuil should be protected and sport and recreation should be promoted.

Piketberg:

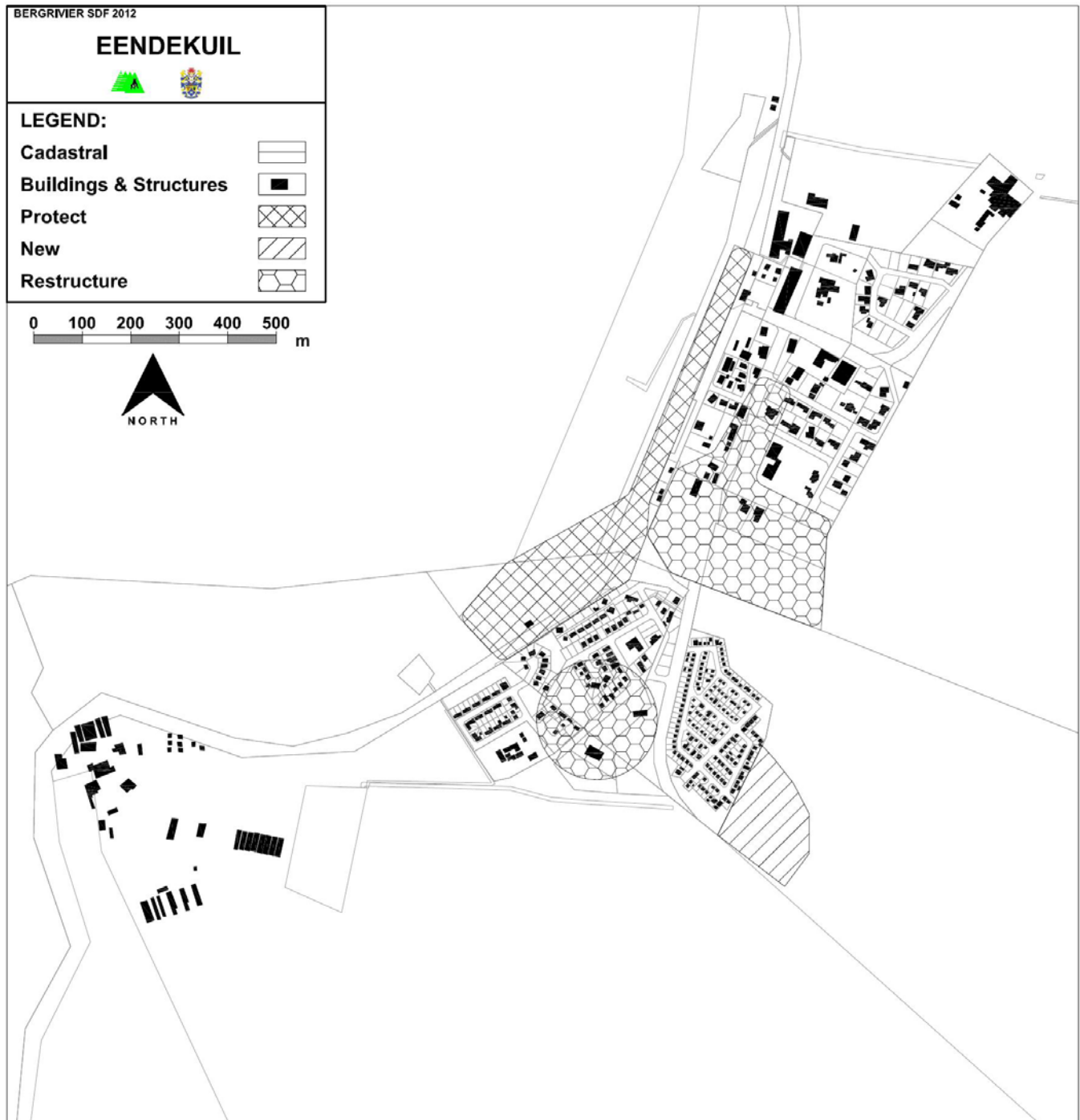
The subsidized precinct and middle and high income precinct are integrated through the business area, business axis and amenities. However the subsidized precinct grew away from the central area in a northern direction, creating a dispersed community. The restructuring area is proposed at the entrance from town (from Porterville) as well as partially along the golf course and bowling range, moving the golf course in a northern direction but still along the N7, linking it to the existing sport complex on the west in the recent subsidized precinct.

The strengthening of the business area and axis and in particular the development of vacant land in the area will enhance densification and mixed use development.

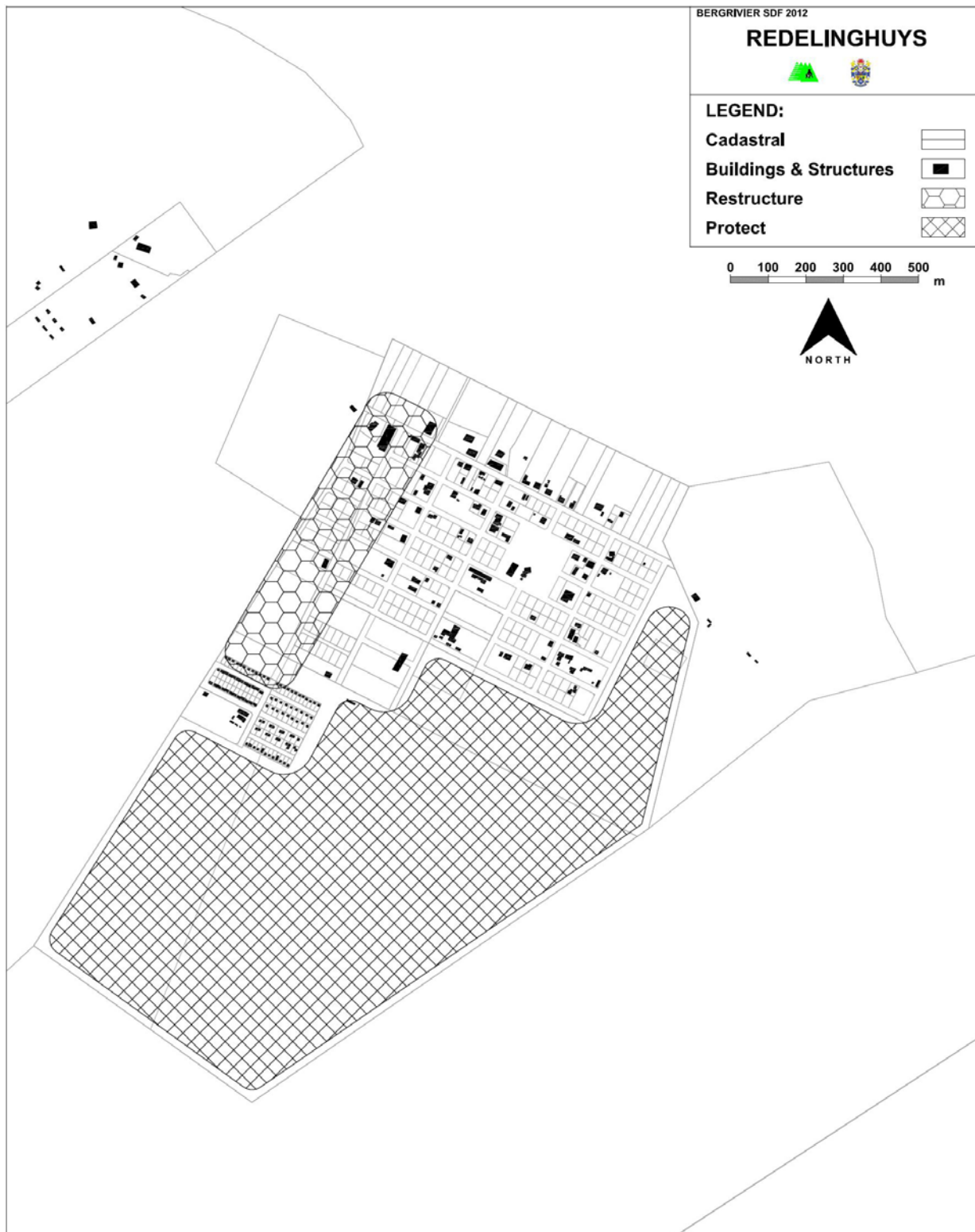
A development line along the mountain should be developed to protect the mountain slopes.

Porterville

The area between the historically subsidized precinct in the south and the town of Porterville as well as the area around Porterville station is earmarked for restructuring.



Map 2.6(b): Urban Areas to Protect and Restructure- Eendekuil, Bergrivier



Map 2.6(c): Urban Areas to Protect and Restructure- Redelinghuys, Bergrivier Municipality.

Redelinghuys

The strip of land on the north western edge of Redelinghuys, between the subsidized precinct and the industrial area, will be restructured by means of densification and mixed use will be promoted. Once again densification should be within keeping its spacious rural identity.

The southern part of town should be protected and rural living may be condoned.

Velddrif and Laaiplek

A strip stretching from the harbour along the activity street in Laaiplek connecting to Noordhoek, to the industrial area south of Noordhoek and ending at the business node as one enters Velddrif at the Carinus Bridge. The subsidized precinct, Noordhoek, developed north east from Laaiplek and grew in a northern direction away from the core of the precinct, away from the business centre of Laaiplek and away from industrial and business area of Velddrif.

2.6.3 Areas to develop (New developments)

The biggest need for subsidized housing exists in three towns of Piketberg, Porterville and Velddrif. The need for middle and high income retirement housing exists in Velddrif, Laaiplek and Dwarskersbos, Piketberg and Porterville.

Proposed areas to development (*New* as per map keys) are as follows:

Dwarskersbos

A new precinct is proposed south of Slakkepas formed around the café, reaching the crèche, to be developed as a mixed use development. The old farmstead directly behind this could be linked to this mixed use precinct whilst the buildings are preserved.

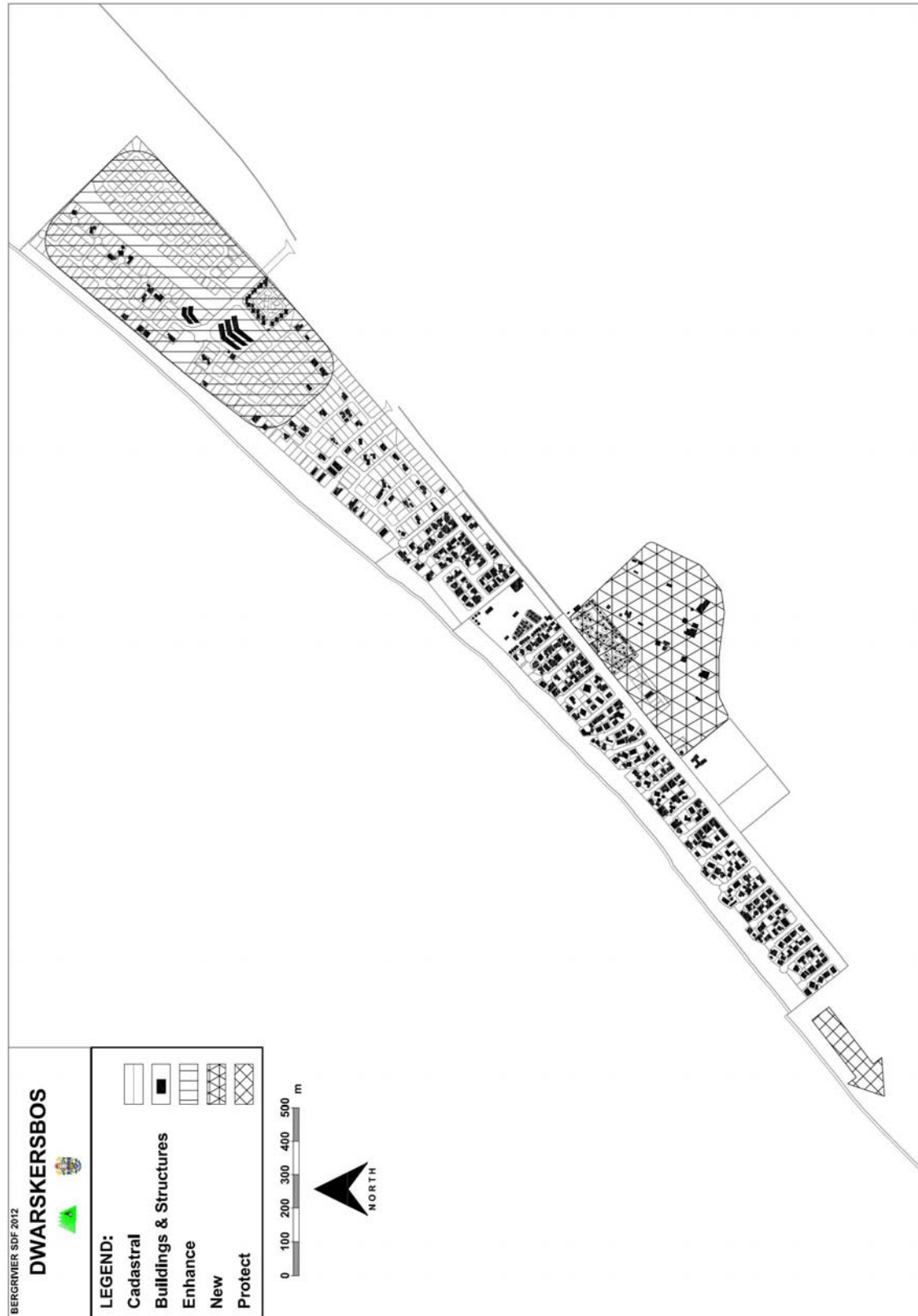
The developed erven in Kersbosstrand are sufficient to serve the need for holiday and retirement housing.

Eendekuil

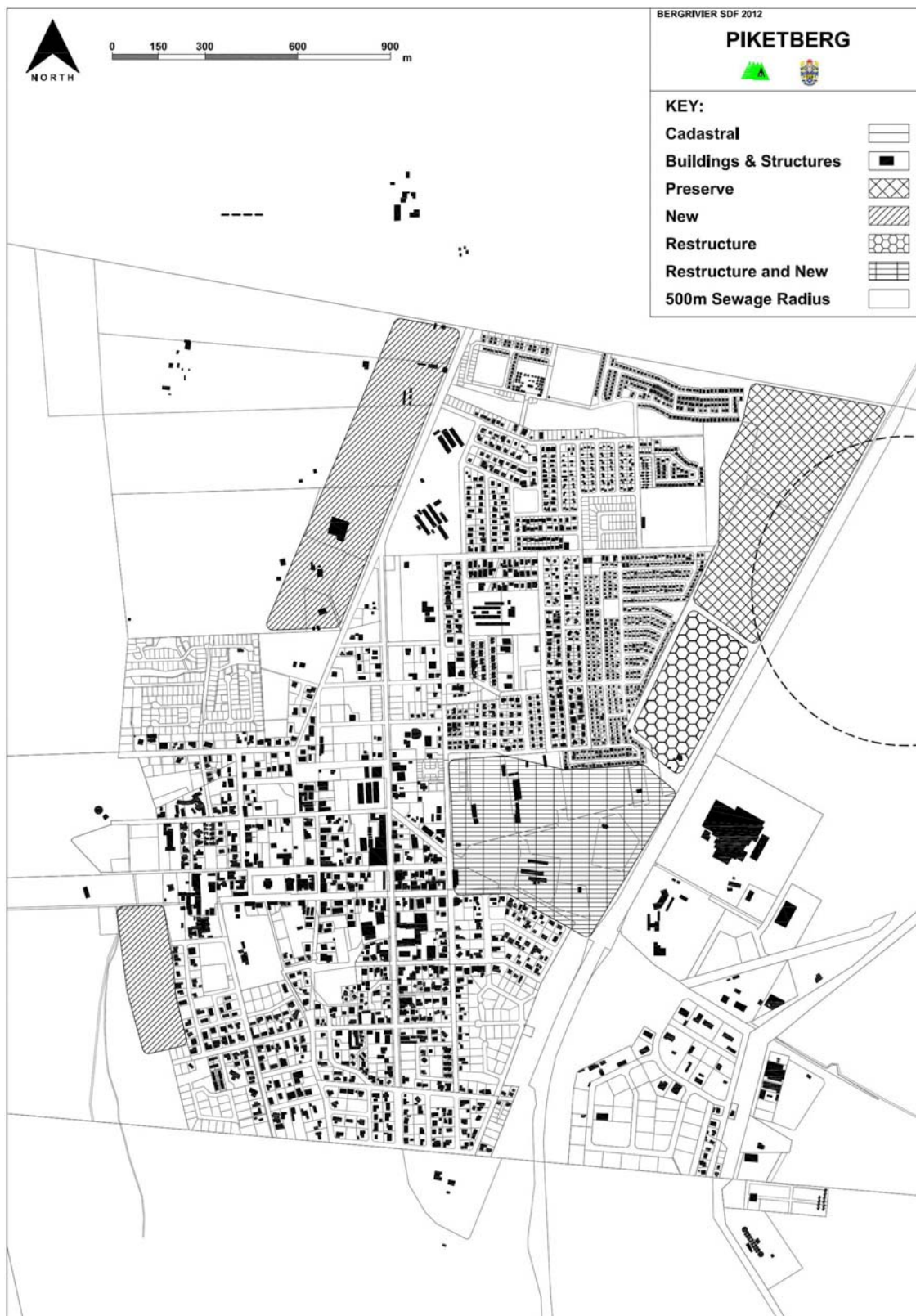
The existing south eastern subsidized housing precinct should be expanded.

Piketberg

The area north west of the road to Eendekuil has been identified for GAP and subsidized housing. The area south east of town as permitted by a botanical assessment has been identified for higher income housing.



Map 2.6 (d): Areas to Develop, Dwarskersbos, Bergrivier Municipality



Map 2.6(e): Areas to Develop, Piketberg, Bergrivier Municipality.

Porterville

The south eastern part of the old town is earmarked for new GAP and subsidized housing, forming part of the restructuring area.

The area north east of the old town surrounding the golf course and dam is earmarked for higher income housing and for densification.

Smaller areas on the western side of town, along the subsidized housing precinct and along the old town have been earmarked for subsidized housing and for densification.

The area between the railway line and the road going out of Porterville in a southerly direction has been identified for industrial development.

Velddrif

The area south of Noordhoek and east of the industrial area in Velddrif has been earmarked for subsidized and GAP housing.

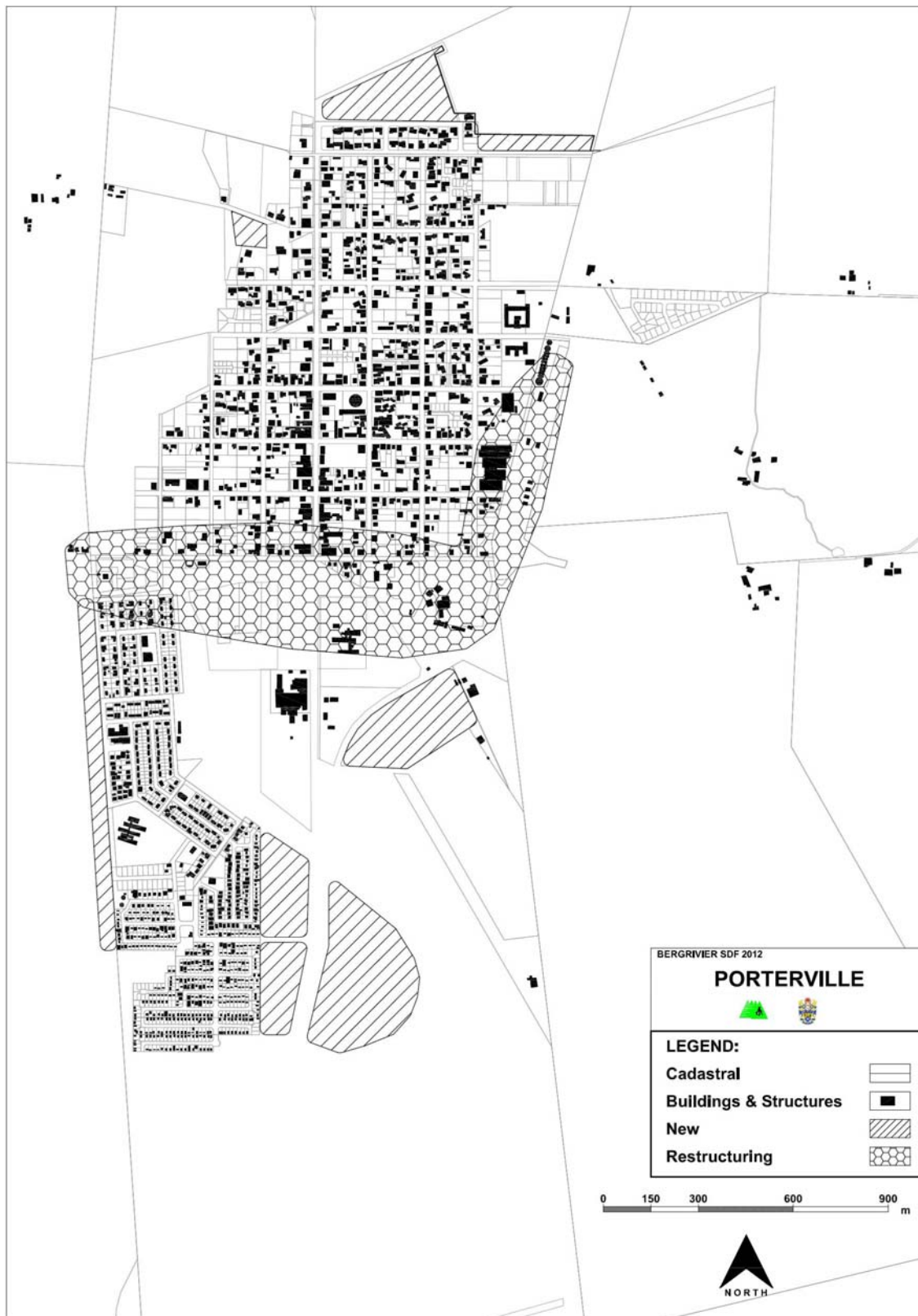
No further development of subsidized housing should take place in a northerly direction.

Open erven within the harbour area and along Main road, north of the marina as one enters Laaiplek from the south, have been identified for densification.

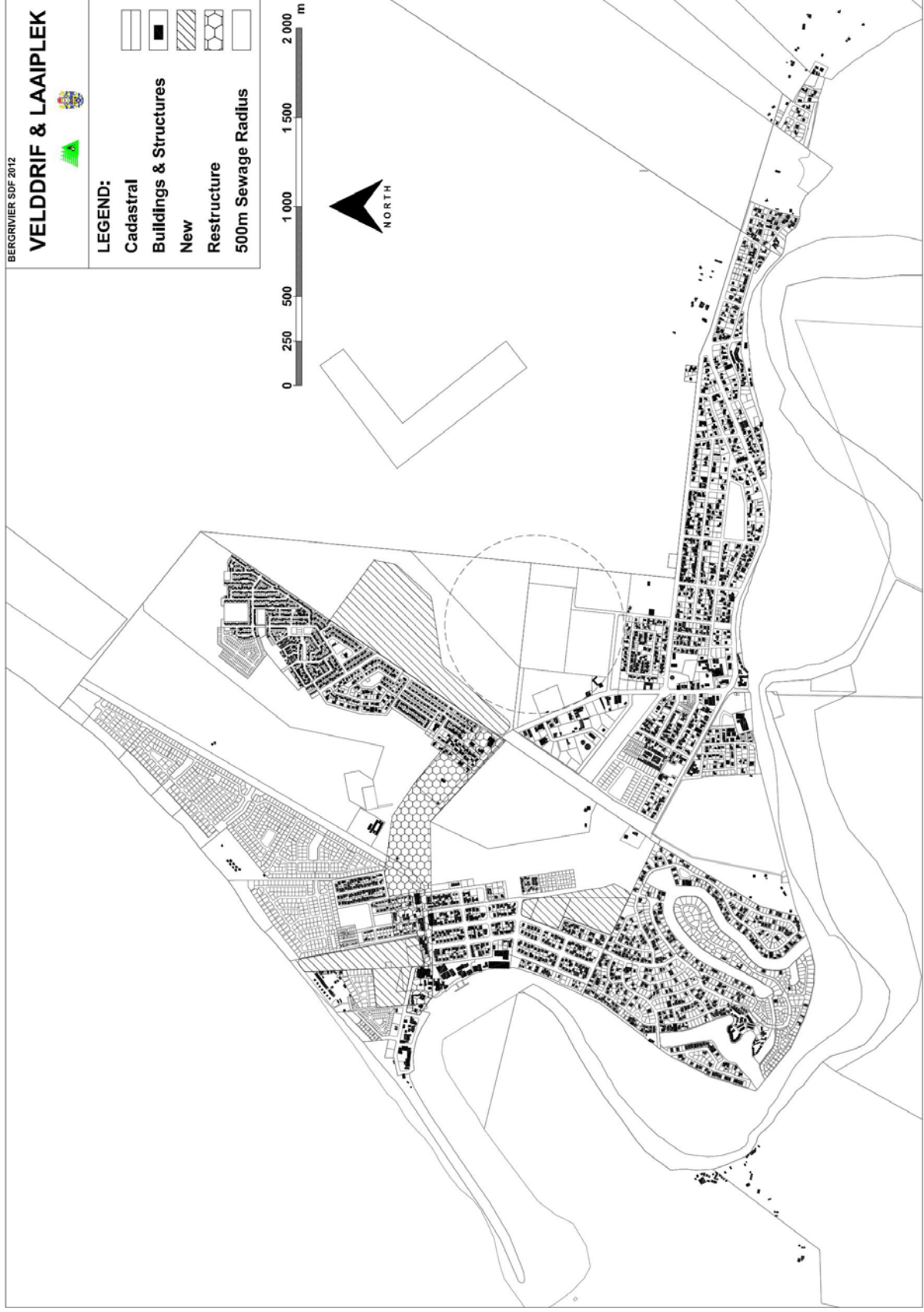
Environmental implications

The proposed rural areas to protect and restructure and the new urban areas to develop may cause impact as follows:

- Developments surrounding the Bergrivier mouth, along the river and along the coast line have environmental implications that should be investigated to ensure conservation and development is balanced;
- The proposed mine in Moutonshoek Valley has environmental implications on the Verlorevelei and should be investigated;
- Agricultural practices and expansions have to be balanced by conservation (including buffer areas). These practices include intensive (i.e. potatoes along the West Coast, deciduous fruit Op die Berg and Rooibos) and extensive (i.e. area west of Mountain) agriculture;
- Existing and proposed ecotourism activities and 4x4 trails should be investigated.



Map 2.6(f): Areas to Develop, Porterville, Bergervier Municipality.
 Bergervier Spatial Development Framework: 2012 – 2017, Volume I



Map 2.6 (g): Areas to Develop, Velddrif, Berggrivier Municipality

2.7 Core land use management principles (high level policy direction)

For the protection of assets, as mentioned, the following principles must be adhered to:

2.7.1 The protection of biodiversity, agriculture or heritage assets

- Ensure sustainable development by acknowledging the relationship that exists between biodiversity protection, human well being and economic efficiency within the specific geographical areas;
- Classify land uses according to the Spatial Planning categories (SPC's) by means of further detail land use investigations on local level;
- Develop sustainable coastal areas based on bioregional planning principles whereby the needs of the ecological processes are integrated with those of the communities;
- A sector plan must be developed/ revised specifically for the coastal area within the jurisdiction area of the local authority.

2.7.2 The form and nature of new developments

The following principles provide guidance to achieve well functioning settlements:

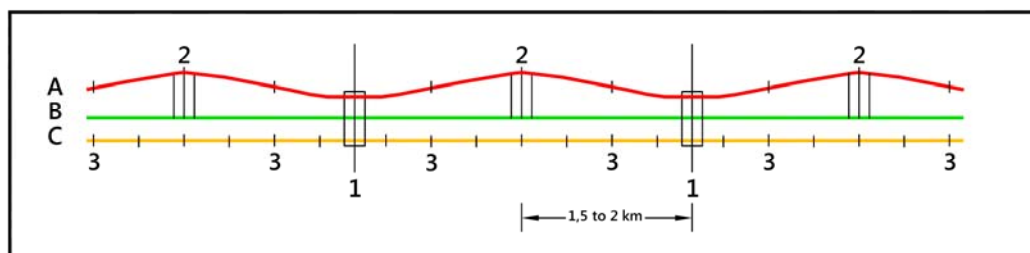
- Work, education and recreation is in close proximity;
- A variety of services, education, recreation and job opportunities are accessible;
- Facilities are shared;
- A variety of housing forms are provided for;
- Reliable and affordable public transport are provided;
- Precincts are planned within walking distance and the dependence on motorised transport is minimized;
- Public areas of high quality are provided;
- All inhabitants experience a positive place identity;
- Mixed uses are present in precincts;
- Resources are used effectively;
- Developments are compact, including infill developments with revised development parameters and higher densities;
- Open spaces and the agricultural landscape, natural beauty and critically endangered vegetation are protected;
- Community and affected parties partake in development decisions;
- Restructure and create integrated and compact urban settlements that incorporate growth proactively;
- Provide suitable levels of services utilize the current services optimally and provide subsidized housing on a fair basis.

The structural and spatial principles to follow provide detail to the above general principles.

2.7.2.1 Structural Principles

Reinforcement

- Structural elements to support one another;
- Different forms of transport (pedestrian, bicycle (A), train (C), taxi, bus (B) and vehicles) are brought together in one single corridor thereby creating a range of structural opportunities;
- Where different forms of transport connects opportunity exist to create an activity node.



Nodes: 1, 2, 3

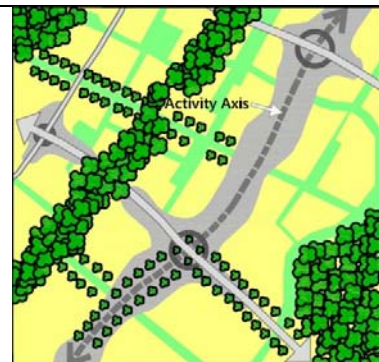
Continuity

Continuity of open spaces:

A network of openspaces is required to serve as habitats and migration routes for plant- and animal species;

Provide variety with regards to functionality (i.e recreation) and the visual impression (i.e. softening the built environment);

Use open spaces as productive spaces for evaporation ponds or as storm water retention systems or for rural agriculture.



Continuity of public spaces:

Public open spaces should form a continuous network;

Simultaneously a feeling of enclosure and definition is important. Building arrangements can be used to create a feeling of enclosure.

Continuity of built form:

Integrate new developments with existing developments to create economic agglomeration (economy of scale and effects of networks);

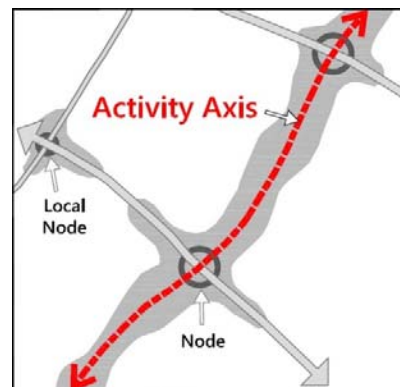
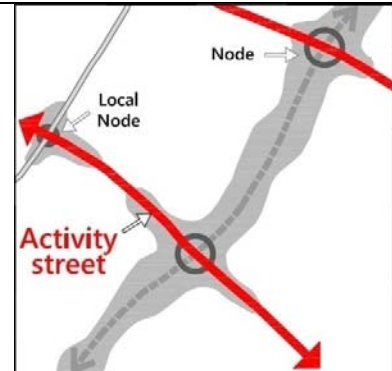
Scale as an element providing continuity, should be interrupted to ensure easy access to natural open spaces and the rural landscape.

Continuity of Movement

The movement of people, finances, goods and services form the heartbeat of a settlement. Activities that require a high degree of exposure should be placed at the most accessible points in the movement network. When transport opportunities in the movement network come to a halt, movement (energy) gets distributed within the network. The potential of the different transport types to come to a halt differ, i.e. a taxi vs a train. The coordination of different transport types cause some points to be strengthened and the opportunity is created for group activities. The strengthened and grouped activities constitute an activity axis or street.

A Movement network:

- Includes all transport and pedestrian routes. Public facilities, social focus points/ economic activities concentrated along transport routes should be accessible. (Provide for road reserves, pedestrian walkways, cycle tracks, horse riding trails and walking trails);
- Should form part of the public open space systems, connecting green open spaces and public open spaces. The movement networks contribute to the aesthetics and quality of the environment.



Activity Axis and Streets:

An Activity axis form firstly the core of the activity corridor and secondly the connector between different nodes. An activity street is similar to an activity axis, but exists on a local road and the activity levels are lower. An Activity street strengthens the tertiary road network. An activity street has a role to play in both big and small settlements.

Discontinuity

Discontinuity of movement:

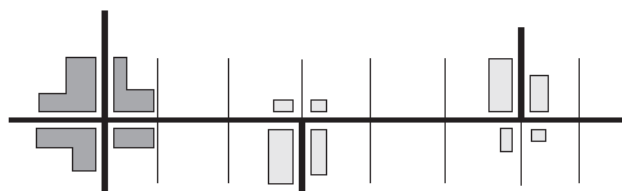
Discontinuity can be used along high order routes to create special spaces i.e. public open spaces and parks. The principle of discontinuity can be used to connect existing focus points in the built environment with natural areas.

Discontinuity of built form:

Public open spaces, such as plains or parks, can be used to interrupt buildings and to create visual diversity in the built environment.

Externalizing

Social facilities and high order urban activities do not get located within residential areas. The existence of the facility is not completely dependent on the surrounding community. The facilities are accessible to a variety of community members. The location of such a

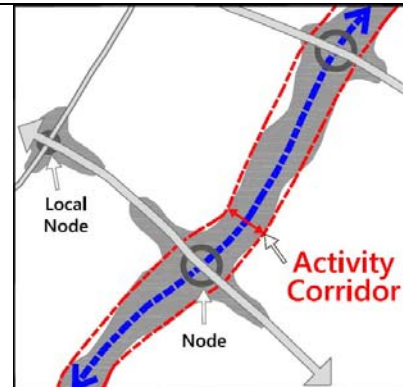


facility should contribute to the symbiotic relationship between different activities and the facility.

Concentration along routes

Placement of intensive activities and facilities along external and continuous routes. The more intensive activities are concentrated along the most accessible points along the movement network and routes.

An activity corridor represents linear development zones along public movement routes. Such a corridor consists of a main route surrounded by high density development on both sides of the route, which in turn supports public transport. Development along a corridor makes provision for mixed uses which includes residential, commercial, business and industrial community facilities. Development along such a corridor does not realize instantaneously, but the environment develops over time.



Homogeneity and heterogeneity

Acknowledge and treat all communities, individuals and cultures in a democratic, multi-cultural society with respect.

2.7.2.2 Spatial Principles

Four spatial principles are central to the use of space to create positive settlements: definition, scale, flexibility and intensity.

Definition:	In positive environments public open spaces are defined by buildings and other space defining elements such as walls and landscaping. The elements create a feeling of enclosure in contrast with free standing elements in a shapeless sea of space.
Scale	Refer to the relationship between size, distance and height. "Human Scale " is a norm for all development planning.
Flexibility	Refer to the creation of spatial structures that accommodate unexpected change over a period of time.
Intensity of use of space (Land use)	<ul style="list-style-type: none">• Create high level support for economic and social goods and services;• Create an economic climate within which economic activities can prosper;• Create the conditions for sustainable public transport systems.;• Use infrastructure effectively;• Improved land use, contributing to compact urban areas, reduced transportation and energy use as well as the reduction of pollution.

The following structuring elements contributes to densification and improved land use:

- Centres/ Nodes (Administrative, Educational, Legal and Services);
- Nodes (Collective Economies, Specialised Economies, Retail, Private Services, Manufacturing, Mining, Agriculture, Tourism Attractions, Tourism environments, Bio-gas, Presidential Industrial Development Zones (IDZ), Restitution, Nature Reserves and Conservancies);
- Hubs (Economic, Jewellery, Petro Chemical, Logistics);
- Routes (Tourism);
- Axis (Transport);
- Corridors (Development);
- Zones (Tourism, Commercial Agriculture, Irrigation).

Table 2.6(a): Spatial Principles.

2.7.2.3 The types of land use changes that would be promoted and types of locations in which this would be supported:

- Bioregional spatial planning categories to be promoted in rural areas of Bergrivier Municipal Area;
- Biodiversity area categories to be applied to all areas of the Bergrivier Municipal Area;
- Mixed land use to be promoted in urban areas and in particular areas earmarked for restructuring;
- Residential and industrial land use in urban area where the need has been identified;
- Rural land use where the need for intensive agriculture or conservation is required.

2.8 Spatial Tools and Strategies

To enhance the application of the above principles the following spatial tools and strategies should be used in developing Objectives, Strategies and Proposals for the Bergrivier Municipal Area.

- Strategy 1: Determine a 5 year urban edge for all towns and settlements as a growth boundary. Such an edge should include adequate supply of land that can be efficiently provided with urban services (roads, sewers, water and storm water systems and streetlights) to accommodate expected growth of the urban area for a 5 year period.
- Strategy 2: Develop a densification strategy based on a densification norm set for each settlement, the current density (number of dwelling units per netto hectares of

developable land), the population growth rate and a natural densification factor (including vacant developable land).

Strategy 3: Define biodiversity networks and develop bioregional planning categories.
The Berg River is located within one of the richest biodiversity areas of South Africa and forms part of the Cape Flora Region. The Groot Wintehoek Wilderness area and Berg River Mouth are of significant in terms of global conservation. To conserve critically endangered areas to avoid the loss of natural habitat, Critical Biodiversity Areas (CBA) were identified to ensure appropriate land-use for the best possible sustainable benefits to society, and to promote integrated use and management of natural resources.

Strategy 4: Spatially define a climate change adaptation & mitigation strategy.
Climate change can be described as the increased frequency with which anomalies occur, i.e. positive or negative weather conditions to which people have not yet adjusted. Thus we need to identify what we should adapt to and when to start (i.e. switch to drought-resistant cereal strains, when to abandon some natural areas suitable for sport activities). Measures should provide options for various degrees of extremity. These measures, including spatial directive, will not guarantee absolute protection, but will make damage controllable and provide a means of coping with climate related surprises.

Strategy 5: Integrate transportation & land use.
Movement networks improve connectivity in and outside towns and include all transport and pedestrian routes. As such movement networks are being used to improve spatial integration between areas and in particular developing activity routes and corridors. Land uses supporting these corridors include commercial uses (shops, cafes), service industries, professional services (offices and medical practitioners), high density residential (apartments), mixed land use areas, community facilities and public transport stops.

Strategy 6: Determine heritage and urban conservation zones.
Heritage resources should be protected from any changes through the application of the law through grading resources in line with the *System of Grading according to Significance (A4)*, conducting archaeological studies and determining urban conservation zones.

Strategy 7: Develop design principles for public environments (streets, squares, public open spaces, etc.)

Apply spatial and structural principles as outlined above.

Strategy 8: Develop urban design principles for developments (e.g. height, bulk and street interface).

Apply spatial and structural principles as outlined above.

3.1 Geology and Soils

Geology:

The Bergrivier municipal area covers approximately 426 332ha and the area is recognized through the diverse soil types, altitudinal gradients and rainfall patterns. The foundations of the area comprise rocks of two geological formation groups, covered by shallow sandy deposits in the coastal plain area. In order of oldest-youngest, one can see the Malmesbury Group and the Table Mountain Group followed by Quaternary deposits.

The Malmesbury Group consists of ancient rocks, less than 600 million years old, which have compacted and changed shape over many years into predominantly impermeable rocks. This Group has two subgroups in the area, named the Swartland and Boland subgroups or terrains. These two subgroups are made up of mostly phyllitic and schistose rocks with limestone lenses and sandstone horizons. The rocks have weathered over time with erosion creating a low-lying, undulating topography. In accounting for the outcrop area covered, this Group covers 42.4% of the study area.

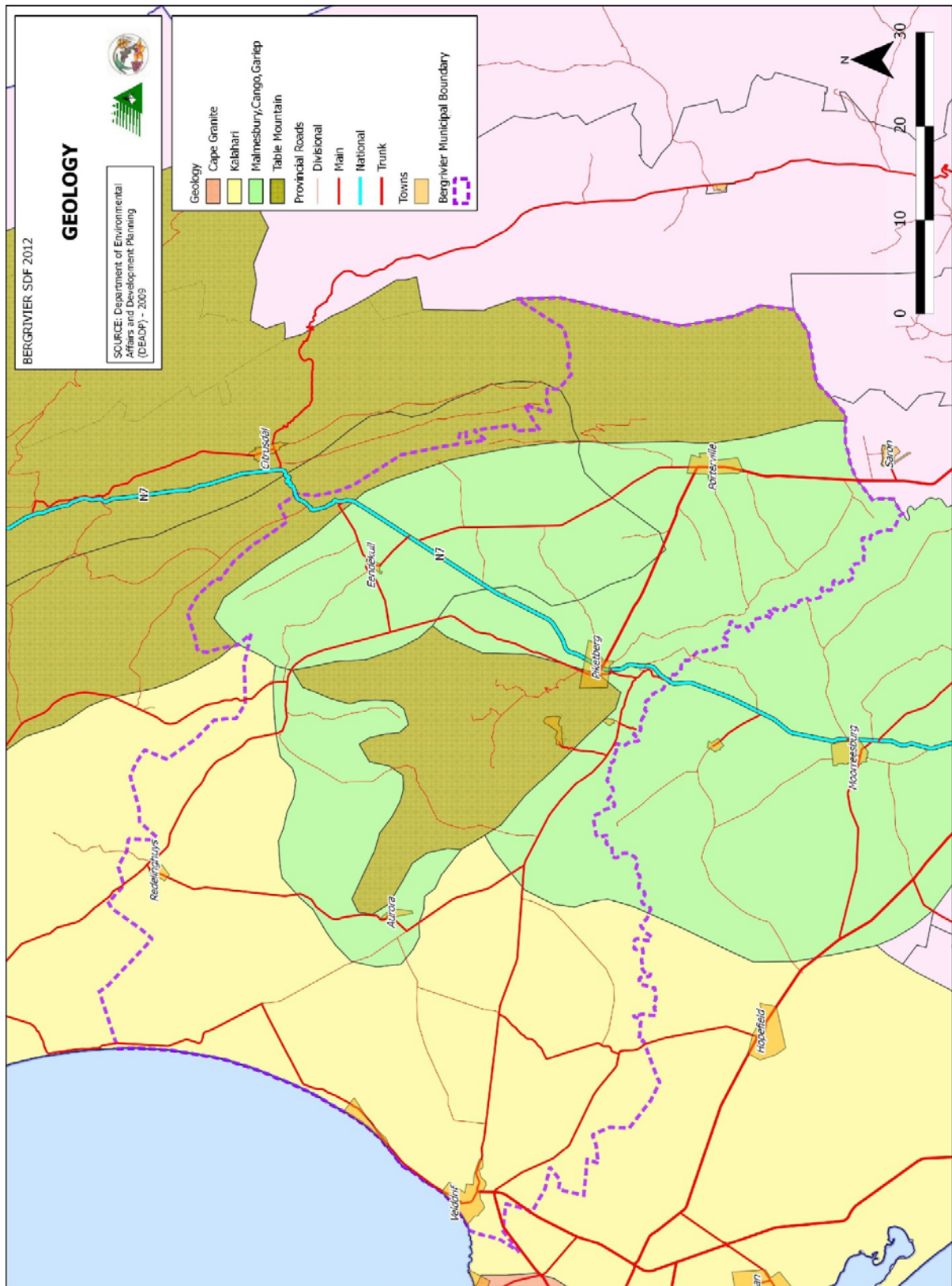
Resistant quartzitic sandstones of the Table Mountain Group form part of Piketberg and the mountains to the east, the Oliphant's River Mountain. The Group has various formations. The most notable being the basal Piekenierskloof Formation, with conglomerate and sandstone, which is up to 390m thick; The overlying Peninsula Formation, a dense formation of resistant quartzites and quartzitic sandstones with a maximum thickness of 1 800 m; The Cederberg Shale Formation, a marker horizon approximately 120 m thick; The Nardouw Subgroup consisting of two sandstone formations in the study area and only present in the southern part of the Piketberg. These rocks cover 22.4% of the study area.

The Quaternary deposits are made up of sandy and loamy soils, inland, transformed into windblown sand and calcrete overlying more dense sand and gravel deposits of marine and alluvial origin in the coastal areas. These deposits are most dense with an estimated 70 m thickness on the Farm named Melkplaas (Afrikaans for "Milk Farm"). In turn this covers an area of 35.2%, within the entire study area.

There are various faults and fold structures in the region. The more major fault is named the De Hoek Fault which covers the western boundary of the Piketberg, in a NW-SE direction. Parallel-running faults are found in the Piketberg and ENE-WSW trending faults towards the east. There is a synclinal fold structure travelling through southern Piketberg with the Eendekuil Valley representing a broad anticlinal formation (Bergrivier IWMP, p3)

Mineral deposits

This area has comparatively few exploitable mineral deposits. The setting of the working and non-working mines is shown on the geological plan. The minerals mined mostly are Salt (NaCl), Limestone (Ls), Gypsum (Gy) and Phosphate (P). Salt and Limestone are mined in an exploitative manner.



Soil types

Soil types are the best indicator of which type of farming occurs in any given area. The carrying capacity of agricultural land is usually a result of the type of soil found there and subsequently soil types will be described for each farming area. A brief overview of the lithosphere or earth crust and the uppermost mantle supporting the various soils follows. The uppermost part of the lithosphere reacts chemically to the atmosphere, hydrosphere and biosphere to form soil.

The ground plates underlying the municipal area are summarized in the table below. The western area shows predominantly sandy, well-drained soils under laid by Kalahari formation. The soils within the central part of the municipal area, north-west of Piketberg and in the east segment are poor bases for agriculture, are under laid by the Malmesbury formation. The soil is shallow with a hard/eroded rock base. Limestone is usually a component of these soils. In the area falling between Piketberg and Porterville, there is a mixture of hardy clay soils, and weak-structured soils with a high base status can also be found that are underlain by the Table Mountain formation. The Oliphant's River Mountains comprise of a clay layer in some areas, while the mountainous parts are rocky (Bergrivier SDF, p3).

Lithosphere	Area	Resource utilization
Kalahari	West (along the coast & central area)	Potatoes, wheat
Malmesbury, Congo, Gariep	Central & east	Annual crops (wheat) & vineyards
Table Mountain	On & around mountain ranges	Intensive farming i.e. deciduous fruit

Table 3.1(a): Geology and resource utilization.

3.2 Building Materials and Mining

Salt, limestone for cement and sand for building purposes are the three products that are currently mined in the Bergrivier Municipal Area. The following registered mining activities are located in the Bergrivier Municipal Area:

Salt:

- Kliphoek Salt works on Farm Kliphoek No 59, an opencast mine, mining salt on the southern bank of the Berg River;
- Velddrif Salt Company (Pty) Ltd on Portion 69 of Farm 110, an opencast mine, mining salt, on the southern bank of the Berg river at the southern entrance to Velddrif;
- Berg River Salt Works (Cerebos Pty Ltd) on Farms Kliphoek, Uitkomst and Vlaminke Vlei, an opencast mine, mining salt located on the southern bank of the Berg River, as one crosses the river in a northern direction on your way to Velddrif.

Limestone

- d) Pretoria Portland Cement De Hoek on Farm Langefontein & Rietfontein 184, an open cast limestone, aggregate and shale mine, at De Hoek south of Piketberg.

Sand

- e) Fox Sand Mine, Dezehoek, an open cast mine mining sand on Farm Dezehoek No 150, Piketberg.
- f) Môrester Sand Mine, an open cast mine mining sand on Farm Ouwinkel Werf No 145.

The map reflects all sites that carry minerals or have mining potential. A complete list can be found in the addenda.

3.3 Climate

The Bergrivier Municipal area experiences a Mediterranean climate with warm dry summers and mild wet winters.

Temperature

The mean annual temperature varies between 16°C in the east to 18°C along the West Coast, with an average of 16°C. Maximum temperatures are experienced in January (average daily maximum of 29,4°C) and minimum temperatures usually occur in July (average daily minimum of 4,5°C). Temperatures along the coast are a few degrees cooler than in the interior (DWAf 1994).

Temperatures for the four farming areas are described below:

Sandveld grain growing and grazing area The proximity to the coast causes temperatures to stabilize.

January, February and March are the hottest months. During these months there is an approximately 8%, 14% and 14% chance respectively that heat waves of higher than 30°C occur. The farming area in the vicinity of Het Kruis and along the Verlorenvlei close to Redelinghuys experience even higher temperatures. There is a 40% chance that heat waves higher than 34°C occur. In the southern part of the Sandveld little frost occurs, the chances are 7% and less during the months of June to September. Minimum temperatures of -2°C seldom occur but if they do, they occur along the low lying areas along the Bergrivier and along the Verlorenvlei.

Red Karoo Dry Land Grain Growing Area	<p>The highest temperatures occur during the period from December to March. There is a 57% chance and even higher possibility that heat waves with a higher temperature than 30°C will occur, whilst there is less than 36% chance that heat waves of 34°C occur.</p> <p>Frost seldom occurs, and if it does, it takes form from June to September. A minimum temperature of -2°C has not occurred in the last twenty years.</p>
Piketberg and Porterville grain growing area	<p>The hottest months are December, January, February and March whilst June, July and August are the coldest. There is a 43% chance or more that heat waves of 30°C and hotter may occur. The lowest temperatures occur in the Porterville area and there are slight changes from June to September meaning temperatures lower than 2°C occur. The summer temperatures in the Porterville are on average 6°C hotter in the summer and 3°C colder in the winter.</p>
Mixed agriculture area	<p>The distance from the coast means temperatures can increase to a heat greater than 34°C.</p> <p>The winters are frost free with the exception of the low lying areas along the rivers where temperatures of below 2°C are experienced.</p>

Rainfall

The area has winter rains of a cyclonic nature, normally extending over a few days with significant periods of fine weather in between. Little rain falls during summer, with the rainy season extending from April through to October (DWAF 1994). The mean annual rainfall averaged 400 mm, with the southern portion receiving more rainfall than the northern portion. In the south-eastern section, the rainfall changes from a low 300 mm to a more prominent 450mm in the mountainous area. The same is true for the area to the north of Piketberg and Aurora. In the northern section of the study area, the mean yearly rainfall ranges from between 200mm to 350mm. The coastal zone gets access to the least precipitation throughout the year with an average of between 150mm to 200mm.

Sandveld grain growing and grazing area	<p>This area has the lowest rainfall in the region with an average of 200mm per annum. Rain falls from April to September in area. The areas with the lowest rainfall get 170mm per annum. The sandy soil has a low moisture retention ability. The rain is spread evenly over the rain season.</p>
Red Karoo Dry Land Grain Growing Area	<p>This area has an average low rainfall of 250mm per annum. Some years the rainfall is less or the rainfall period is shorter causing seasonal draught.</p>
Piketberg and Porterville grain growing area	<p>This area has an average rainfall of 300mm per annum with the highest rainfall of 600 mm per annum. The rainfall increases from west to east</p>

and in the higher lying areas. Eighty percent (80%) of the rain occurs from April to September in area. Piketberg and Porterville boast the highest rainfall as they are located close to high mountain ranges.

Mixed agriculture area	This area is elevated 100m – 300m above sea level and has a high rainfall of between 400mm – 600mm per annum with 80% of the rainfall in the winter from April to September. The higher above sea level the area, the higher the rainfall. Hence the rainfall fluctuates between 500 – 600mm and is even as high as 700mm in the high lying mountainous areas.
-------------------------------	--

Evaporation

Evaporation levels are high with approximately 1600 mm per year, which is four times the mean annual rainfall rate (Bergrivier IWMP, p1).

Sandveld grain growing and grazing area	A high rate of evaporation occurs during the summer months whilst little evaporation takes place during the winter months. The maximum evaporation is 20mm per day during the period of September.
--	--

Red Karoo Dry Land Grain Growing Area	A high rate of evaporation occurs during the summer months whilst little evaporation takes place during the winter months from May to August.
--	---

Piketberg and Porterville grain growing area	A high rate of evaporation occurs during the summer months whilst little evaporation takes place during the winter months.
---	--

The maximum evaporation of 18mm per day during the period of September, together with high temperatures and a strong south Easter wind, may prohibit the absorption of moisture.

Mixed agriculture area	A high rate of evaporation occurs during the summer months whilst little evaporation takes place during the winter months. The elements combined i.e. a high evaporation rates during the months of December to March together with high temperatures and warm berg winds blowing, can cause damage.
-------------------------------	--

Wind

Wind directions in the area are categorized with reference to seasonal change. The two main categories are summer, where wind travels from a south-easterly direction and winter, where wind travels from a north-westerly direction. The Oliphant's River Mountains create frequent cases of berg winds. Berg winds as well as north-westerly winds can harm agricultural produce. (Bergrivier SDF, p1).

Sandveld grain growing and grazing area	<p>Most wind occurs from May to September and from November to February. With a winds covering ground of 500km per day the average speed of the wind is 20km per hour. The wind is fairly strong and causes erosion of the sandy soils. The direction of the wind during the May to September period should be from the north west as this wind brings rain.</p> <p>During the summer months strong south and South Easterly winds are blowing.</p>
Red Karoo Dry Land Grain Growing Area	<p>Most strong winds with a speed higher than 20km per hour occur in January and originate from a south eastern to eastern direction. Mild winds occur from July to August. The dry South Easter winds occur from May to June whilst a gale force wind blows during October and November.</p>
Piketberg and Porterville grain growing area	<p>Winds with a wind speed of 20 km per hour and more seldom occur in this farming area. The only exception is the South Easter blowing in October and November in the corridor along Porterville Mountain.</p>
Mixed agriculture area	<p>Strong winds of more than 20km per hour seldom occur in this area. Most wind occurs in the winter months with the month of July having the highest possible change of wind speed of more than 20km per hour. These winter winds are North Westerly winds bringing rain whilst South Easter winds occur in summer months. The cool south to south western winds occurring in summer means there is likely to be no temperature hikes.</p>

3.3.1 Climate change

Climate change can be described as the increased frequency with which anomalies occur, i.e. positive or negative weather conditions to which people have not as yet adjusted. Thus we need to identify what we should adapt to and when to start (i.e. switch to drought-resistant cereal strains, when to abandon some sport terrains) climate protection. Measures should provide options for various degrees of extremity. These measures will not guarantee absolute protection, but will allow for damage control and provide a means of coping with climate related surprises. Climate protection³ has to become each individual's concern through supporting climate protection measures or by responding to changeable climates to reduce the risks and take advantage of the opportunities.

It is predicted that the Western Cape could experience more drought periods, coupled with increased evaporation and temperatures, this will negatively impact water supply. Regional predictions suggest a drying trend from west to east, possibly slightly more summer rainfall (mainly in the eastern regions associated with the mountains) with a weakening of winter rainfall, a shift to more irregular rainfall of possibly greater intensity, and rising temperatures everywhere. It is likely that the greatest impacts will be on water supply (Midgley *et al.* 2005). For each of the four major farming areas the consequences are like to be as follows:

³the reduction of greenhouse gas concentrations in the atmosphere
 Bergvrierv Spatial Development Framework: 2012 – 2017, Volume I

Sandveld: Lower rain fall will cause the coastal area to be drier, and given the cost of cultivating grain, cultivation of grain may cease or cultivars that are hardier may be introduced. The drier climate will cause the natural veldt's carrying capacity to decrease. Wind erosion will have to be prevented given the sandy soils and decreased coverage, naturally or cultivated.

Red Karoo Dry Land Grain Growing Area: is sensitive to water erosion and will become more sensitive with less rain. The physical condition of the soil may deteriorate and yields will drastically decrease. In the vicinity of Eendekuil there are fields that are sensitive to wind erosion and will require more stringent erosion protection measures than are currently in place.

Piketberg and Porterville Grain Growing Area: The dry land cultivated red and yellow soils are subject to water erosion whilst the potato fields are subject to wind erosion. Climate change may cause these crops to change whilst stringent erosion protection measures will be required.

Mixed farming Area: Crop rotation will have to be improved whilst decreased yields may not balance out the costs. Crops may change too.

Climate change will have a drastic effect on agriculture which is the biggest contributor to the Bergvriër Gross Geographical Product. Climatologists predict a 50% reduction in rain-fed agricultural yield in some African countries by the 2020s (Intergovernmental Panel on Climate Change, 2007). It poses significant threats to the basic provisions of life: water, health, food production and the environment, with the poorest communities likely to be hit the hardest.

This highlights the importance of protecting our water resources from over-abstraction, degradation and the spread of invasive alien plants (which 'drink' more water than indigenous plants). Management of mountain catchment areas is critical in this regard, as they are the primary source of our water supply. For example; a fynbos mountain catchment can lose up to 68% of its water yield due to a dense cover of invasive alien shrubs or trees.

The increase in temperatures anticipated with the advent of climate change may result in increased fire occurrences. Invasive alien plants are often highly flammable and with their large volumes, are likely to fuel more frequent fires. The combination of more frequent and intense fires will have a devastating impact on the region.

The West Coast is especially vulnerable to two of Climate Change's most severe impacts, i.e. freshwater flooding and sea level rise. To prevent flooding of vulnerable coastal properties, the natural defence mechanisms i.e. primary dune systems, estuarine mudflats and sand dunes must be protected from further conversion through urban development or agricultural practices. Therefore coastal corridors and buffers to rivers and estuaries are important for safeguarding both the environment and human property along with life.

One of the most effective ways to mitigate the impacts of climate change, at the local level, is to safeguard Critical Biodiversity Areas and Ecological Support Areas. Crucial management actions for the Bergvriër Municipal area include:

- maintaining intact riparian (river bank) vegetation;
- restricting building to above the 1:100 year flood line;
- establishing a coastal set back line (i.e. a set distance inland from the coast);
- protecting major landscape corridors with biodiversity compatible land-uses;
- protecting water resources;
- appropriate fire management;
- removal of alien invasive plants; and
- restoring and maintaining biodiversity for carbon storage.

To ensure resilience against the impacts of climate change, landscape corridors need to be kept intact to function as large-scale ecological process areas. These corridors enable the migration of plants, animals and birds, and thereby enhance their ability to persevere despite changing climatic conditions.

3.4 Topography and slopes

The municipal area is rather flat, excluding the area surrounding the Piketberg and the eastern fringe of municipal land which houses a mountain range. The southern section slopes towards the Berg River, while the northern area has its drainage point nearer the Oliphant's River. The western area slopes in the direction of the Atlantic Ocean (Bergvriër IWMP, p1).

The region is cut by two mountain ranges, namely the Oliphant's River Mountains and the Piketberg Mountain. Other significant mountain ranges include the Koue Bokkeveld Mountains, the Witzenberg Mountains and the Cederberg Mountains, falling just short of the area studied.

The topography of the Lower Berg River is comparable to that of a lower stage river and displays the makings of a flood plain. The coastal section has a somewhat lower relief with big sandy beaches, interspersed with low-lying, peaked dunes.

To the west of area are the Oliphant's River Mountains including the Witzenberg Mountains and the south-westerly side the Piketberg Mountains. The southern Boundary of the Bergrivier Municipality is the Great Berg River. The Great Berg River and its tributaries are the most significant section of the drainage system of the region (Bergrivier SDF, p2).

The farming landscape varies from extensive farming along the West Coast to wheat fields in the east, whilst the wheat fields are interspersed with mountains where intensive agriculture is taking place. Four definite farming areas are identified:

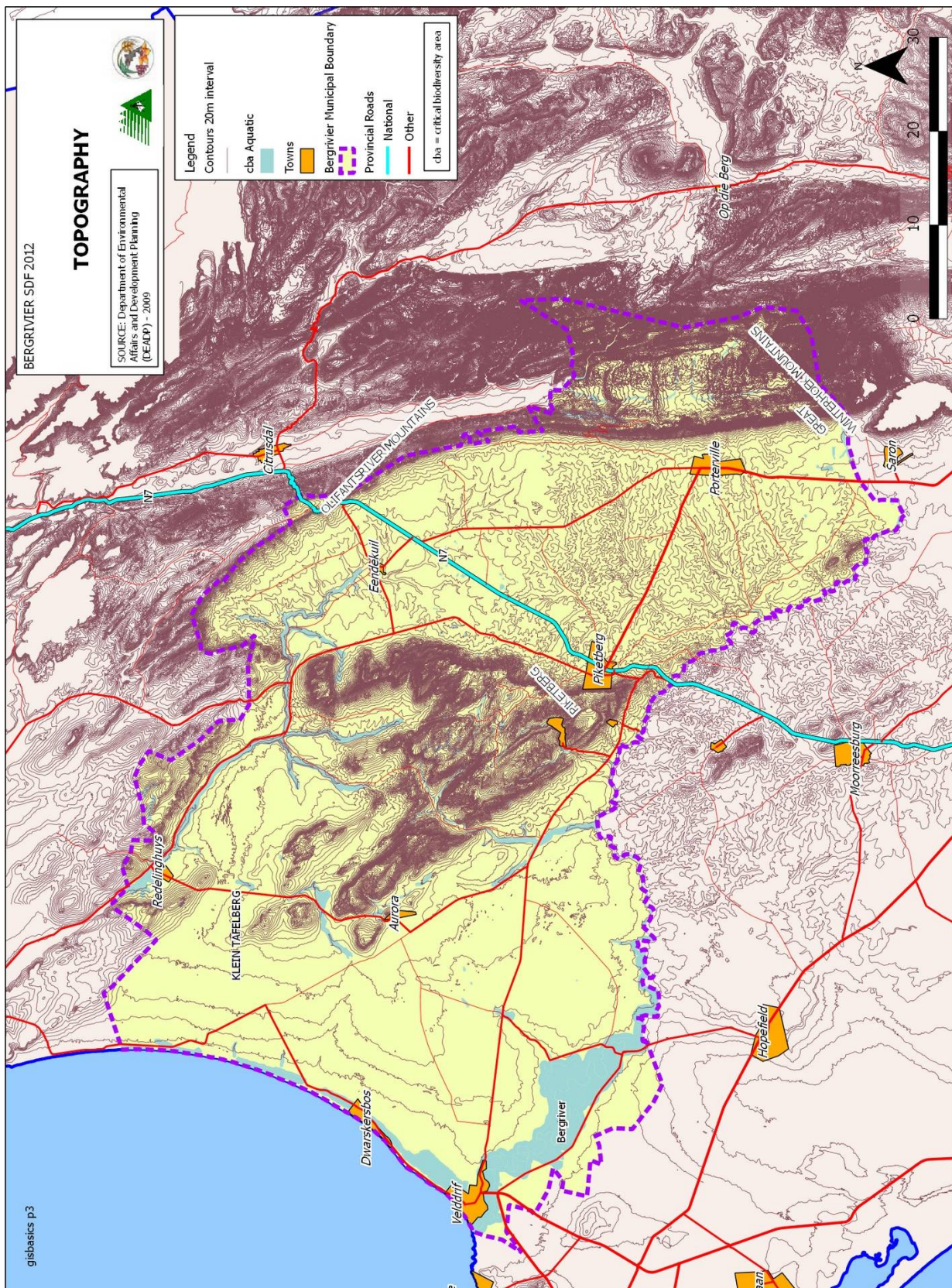
Farming Area 14: Sandveld grain growing area located along the Berg River and the Coast, of which more than half of the area is covered in natural vegetation.

Farming Area 15: Red Karoo Dry Land Grain Growing Area and Farming Area 16: Piketberg and Porterville grain growing area, made up of made up of hilly wheat fields.

Farming Area 18: Mixed agriculture area located at the foot of the Wintershoek Mountain range characterized by wheat fields and orchards.

Wilderness landscapes are present on the Oliphant's, Witzenberg and Piketbeg Mountains with fynbos and tree thickets and the surroundings area made up of fynbos, estuaries, floodplains and the coast.

Settlement areas are mainly located on relatively flat areas, but are along a river or the coast, whilst Piketberg is located at the foot of the Piketberg Mountains. All the settlements are characterized by an eclectic, spacious and rural identity.



Map 3.5(a): Topography, Bergervier Municipality

3.5 Hydrology

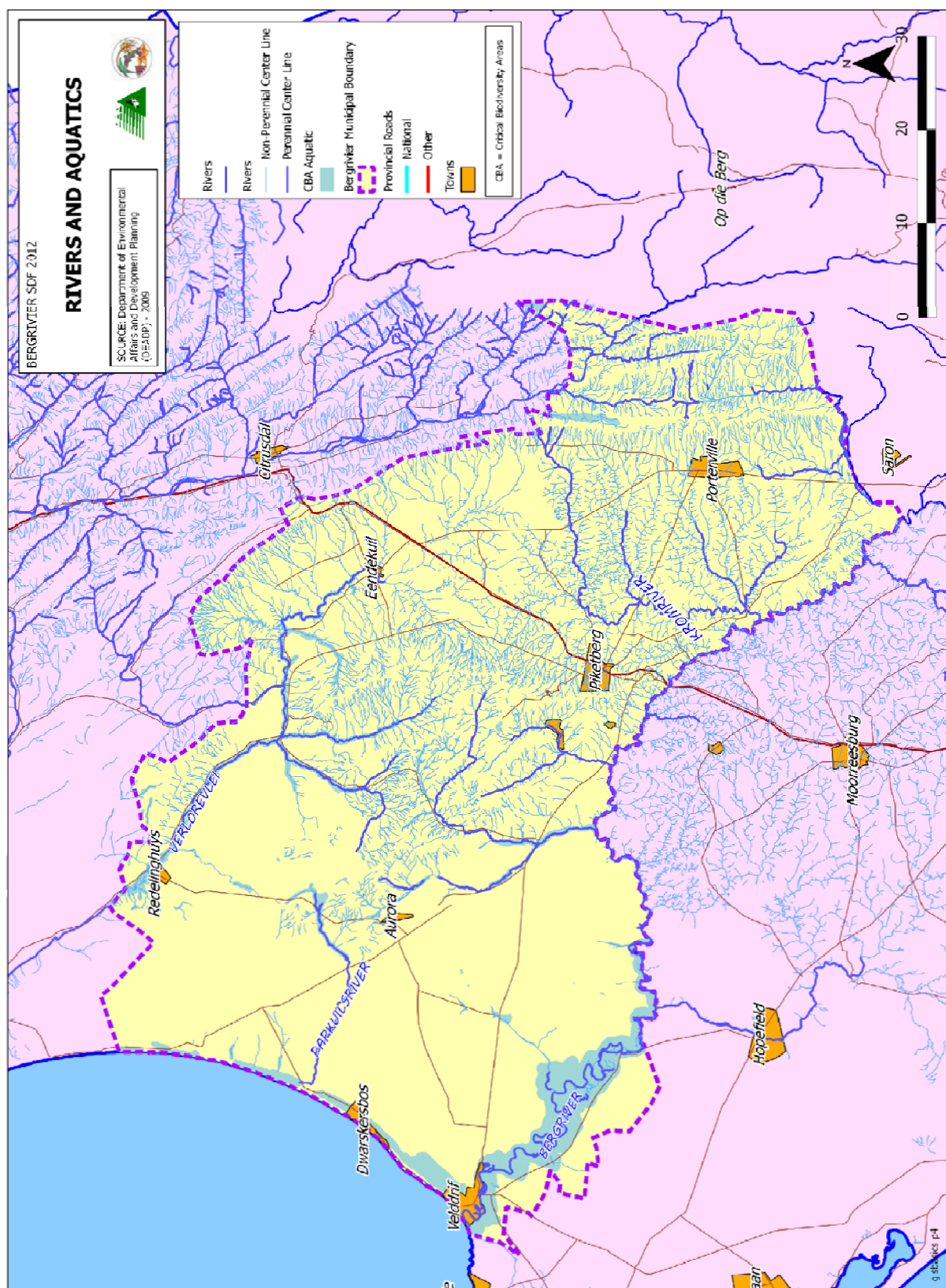
The Berg River Mouth falls within the Berg River, Papkuils, Verlorenvlei and Oliphant's catchments, under the management area of the Department of Water Affairs (DWA).

The Berg River Catchment takes up approximately 9000km² of the Western Cape Province area, and is sub grouped into 12 quaternary catchments ranging in size from 125km to 2000km from the headwaters. Catchments closer than 200km are found in the drier western parts of the catchment (Map 3). These western catchments have low density drainage channels on foundations of unconsolidated sandy deposits. The river runs in a northerly direction for 285km, and drains into St. Helena Bay on the west coast of South Africa. Most of the catchment is rather flat, except for the uppermost areas (Clark & Ractcliffe 2007).

With reference to bioregional planning, the catchment areas play a significant structuring role and are used to highlight bioregions. In the Western Cape catchment areas are usually associated with mountainous, high rainfall regions.

Sources of Water

The study area is rich in water sources, found above and underground. The Berg River is the most important surface water source. Other smaller rivers include the Kruismansrivier, Papkuilsriver and Kuldervier. The Kruismans River flows from Eendekuil to the Verlorenvlei and is a source for agricultural irrigation. The availability of water for consumption in urban spheres is however, limited (Bergrivier SDF, p2)



Map 3.5 (b): Rivers and aquatic areas, Bergvliet Municipality

Water Quality

The Berg River is the main source of water in the Bergrivier municipality. The water from the Bergrivier and smaller rivers contain a fair amount of dissolved salts. During the winter months salts are washed out from the soils and are carried down the river. In summer the sea pushes up in the lower Berg River whilst the flow of the river is kept constant by adding water from the Wemmershoek and Voëlvlei dam scheme. Despite the salt content of the water, it can still be used for irrigation given the depth of the sandy soils.

Some of the fountains provide fresh water, but as one moves away from the mountainous areas, the borehole water is brackish and not suitable for irrigation, but can be used for livestock.

The water provided by the government water scheme is purified and of good quality.

3.6 Biodiversity

"Biodiversity is the technical term for nature. Biodiversity encompasses the diversity of all living things (such as plants, animals, insects and micro-organisms), their habitats, and the processes and interactions by which they are sustained and allow them to persist over time. The way in which the components of biodiversity are arranged is referred to as biodiversity *patterns*, while the series of actions and interactions are termed *ecological processes*. Biodiversity patterns can be expressed as different vegetation types (such as forest, grassland, shrubland), or habitats (the natural home of a living organism, such as a wetland), or specific features (populations of rare plants which grow in a specific area and nowhere else). Ecological processes are those actions and interactions that enable natural systems to function and run as healthy, working systems" (Cape Nature, p2).

"Biodiversity is maintained by ecological processes at micro-scale (such as in pollination, nutrient cycling via microbial action) through to the mega-scale (natural events, e.g. fire, tidal movement, floods, migration of species along river valleys or coastal areas, the quality and quantity of water feeding rivers and estuaries, marine sand movement, and the seasonal to-and-fro inland mountain-to-coast migrations of birds that pollinate plants). 'Process' and 'pattern' are essentially interdependent. Processes are dependent on the health and integrity of the pattern component of biodiversity (species, habitat etc.), while pattern is essentially maintained by processes or the functional aspects of biodiversity" (Cape Nature, p2). The maintenance and functioning of both biological pattern and ecological process is dependent on rainfall, temperature, fire, herbivory, etc. This interdependency of living and non living (soil, water) components of biodiversity are termed ecosystems. Ecosystems can operate at any scale from very small (e.g. a small pond) to an extensive landscape (an entire mountain water catchment area).

Every aspect of our livelihoods depend upon healthy ecosystems to provide us with water, foodstuffs, wood fuel, medicines, clean air, stable landscapes, grazing for livestock, food-crop pollination and safeguarding against flooding. As a result biodiversity is the pinnacle of our economy.

The following ecosystems are present in the Bergrivier Municipal area:

Terrestrial Ecosystems

- Fynbos:
 - Leipoldtville Sand Fynbos around Aurora, between Redelinghuys and the Engelsman se Baken area; the area from Redelinghuys to Paleisheuwel and from Paleisheuwel north to Alexandershoek due to the likelihood of endemic plant species.
- Strandveld:
 - The entire remainder of Varkvlei Shale Strandveld (on the coastline south of the Berg River);
 - Large contiguous patches of Bergrivier Flats Strandveld, especially those patches with known occurrences of Red Data listed species; all remaining large patches of Graafwater Flats, Bergrivier Flats and Lamberts Bay Strandveld.
- Renosterveld:
 - The slopes of the Piketberg (Swartland Shale Renosterveld),
 - Weltevrede-Kleigat area north of Engelsman se Baken and North West of Aurora.
- Shrub land:
 - Piketberg Quartz Succulent Shrubland (the Otterdam site being the best known example)
- Aquatic vegetation types:
 - Berg River mouth (Cape Estuarine Salt marsh vegetation),
 - Extensive salt marshes north of the Berg River and along the Sout River;
 - Rocher pan area,
 - Parts of the Wadrif Soutpan and the edges of the Verlorenvlei;

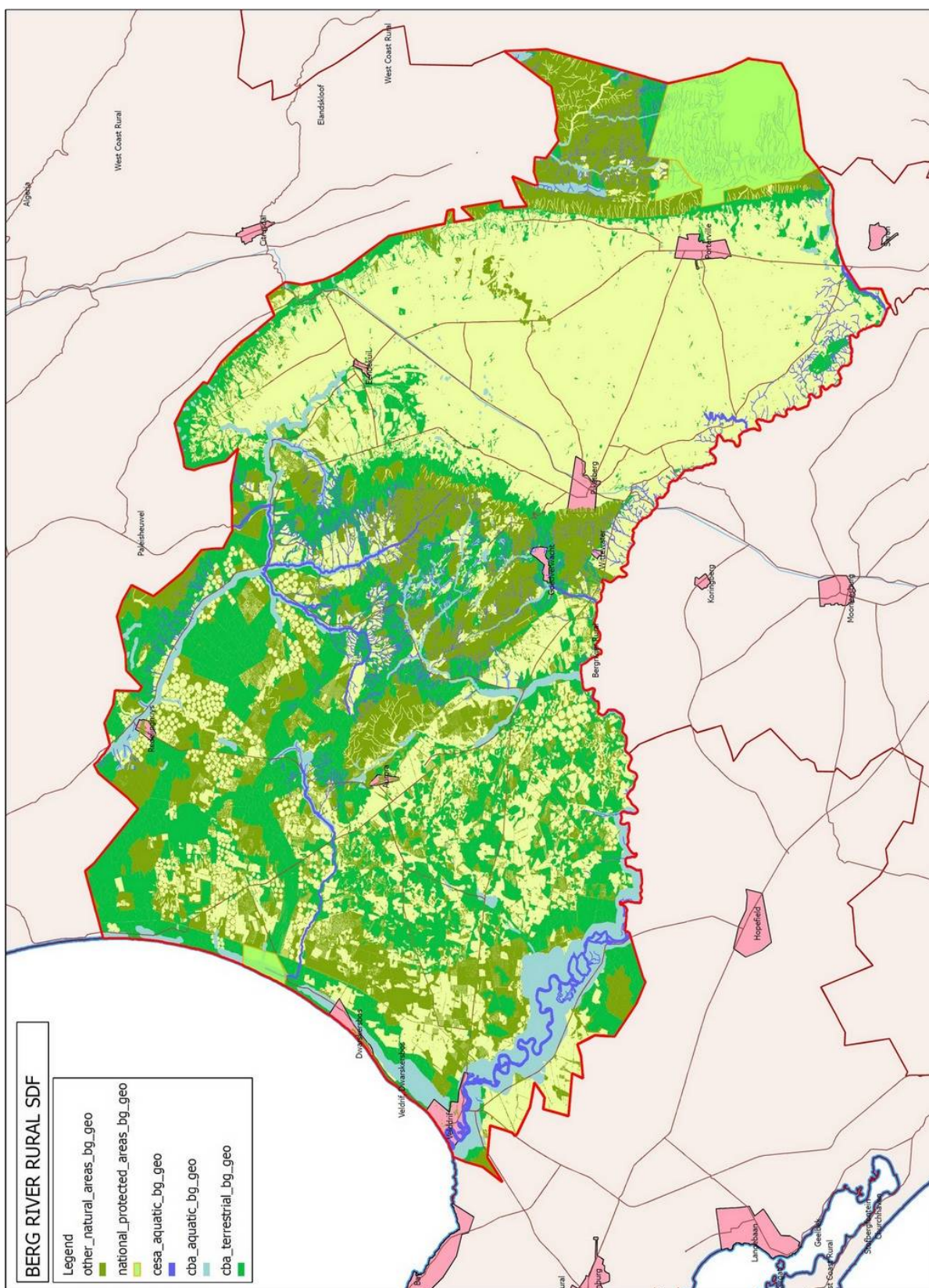
The vegetation surrounding and supporting aquatic sources should be protected by a buffer area. Buffer widths have been recommended for different river types depending on their ecological importance.

Aquatic Ecosystems

- Wetland ecosystems comprising of floodplain wetlands, valley bottom wetlands, seeps, depressional wetlands, estuaries;
- River ecosystems comprising of mountain streams, foothill rivers and lowland rivers.

Catchments and Rivers

- The main rivers feeding this Water Management Area include the Berg, Papkuils and Verlorenvlei Rivers.



Estuaries

The Berg River estuary is identified for partial Estuarine Protected Area status. This means that at least one side of the system should be managed as a sanctuary, to be protected from all activities that use up a resource (e.g. fishing).

Biodiversity and land use

Sustainable development aims to ensure that all development serves both present and future generations. To ensure natural services such as clean and adequate water supplies, nutritious veldt for grazing livestock, and stable healthy soils which are resilient to flood damage and erosion, stay intact, biodiversity (i.e. the variety of local plants and animals, their habitats, and the natural processes that sustain them) has to be safeguarded.

Spatial planning and land-use management decisions must by law (*National Environment Management Act (NEMA) (Act No. 107 of 1998)*), take into account the biodiversity of an area. To make this possible, priority areas (Critical Biodiversity Areas and Ecological Support Areas) requiring special safeguarding were identified, as well as areas of lesser biodiversity importance (Other Natural Areas) and those sites which have insignificant biodiversity remaining (No Natural Remaining Areas) as a result of intensive land-use such as urban development or cultivation.

The overall aim is to avoid the loss of natural habitat in Critical Biodiversity Areas (CBA) and prevent the degradation of Ecological Support Areas (ESA), while encouraging sustainable development in Other Natural Areas. The broad objective is to ensure appropriate land-use for the best possible sustainable benefits to society, and to promote integrated use and management of natural resources.

3.7 Vegetation and Fauna

Flora

The municipality is covered with Coastal Renosterveld (or West Coast Renosterveld), Coastal Fynbos (or Salt Plain fynbos), Mountain Fynbos, Strandveld vegetation (or Strandveld succulent Karoo Fynbos) and Dune Thicket.

Fynbos vegetation is found on the sandstone Fold Mountains and sandy coastal plains of the Western Cape. Fynbos plants make up 80% of all the plants in the Cape Floristic Kingdom. This, however is the smallest floristic kingdom on a global scale, covering a mere 0,04% of earth's surface. Although the soils found on the mountains and coastal plains of the Western Cape are not nutrient-rich, roughly 8600 fynbos species are

believed to occur here. About 5 800 of which are endemic and some have such a restricted range that they possibly only occur on one specific mountain peak or area.

The vegetation is hardy and well adapted to the warm summer months and winds prevailing off the coasts of the Western Cape Province. These adaptations can be seen in leathery leaves (as in the Protea species); or fine, small leaves, frequently with rolled edges (seen in the Erica family); or long, thin stems with no leaves (found in the restio family); or underground storage organs (as can be seen in the Lillies and orchids). Fynbos is found in nutrient-poor, well-drained and frequently shallow soils.

The primary veldt types of the municipal area as per Map 4, are briefly described below:

(a) **Strandveld** (Vegetation type 55, Strandveld succulent Karoo) is normally seen on the lower lying sections of the sandy western coastal areas, where rainfall ranges from 50mm-300mm per year, and grows predominantly in winter. There are two types: a thick, dwarf, semi-succulent shrub and an open, semi-succulent shrub. Bush-forming groups are located on small hills. The Strandveld found north of Velddrif is in rather good condition and can grow to 1,5m high. Formal conservation measures are needed in the isolated areas so the natural veldt is unharmed by uncontrolled motor and recreational pastimes. However, a negative impact is still seen on Strandveld fynbos in Velddrif and south of the Berg River Estuary, with the advent of agricultural, industrial and residential development as well as alien plant invasion.

(b) **Coastal Renosterveld** (Vegetation type 62, also known as West Coast Renosterveld), can be found in two areas of the study site, the western coastal plains and on the southern coastal plain. In these locations the clay-like soil has already been ploughed so extensively for wheat production that the natural vegetation has very little chance of survival or what is left is found in a poor condition. Coastal Renosterveld is located at a height above sea-level ranging from 0m - 300m and within areas where the annual winter rainfall measures 300mm - 500mm.

(c) **Coastal Fynbos** (Vegetation type 68 also know as Sand plain fynbos): grows on sand and limestone in the western coastal areas of the study site. Ploughing has not affected these areas as much as is the case with Coastal Renosterveld. Coastal fynbos, with shrub-like veldt in grassy fynbos, is found in the drier west coast strip with its winter rainfall. The thick thorny and semi-succulent nature of shrubs found on heavier soil types is not seen here. Height above sea-level ranges from 0m - 300m and rainfall from 300mm - 500mm annually, during winter.

(d) The **Estuary and flood plain**, shows 145 plant species varieties in the Berg River Mouth and vicinity, with 111 from the estuary and flood plain area. Of these, 11 species are alien species. The diversity of habitats, and the vegetation's highly productive nature, create a high fauna biomass per unit area, and rich fauna diversity. This is also seen in the bird life of the area.

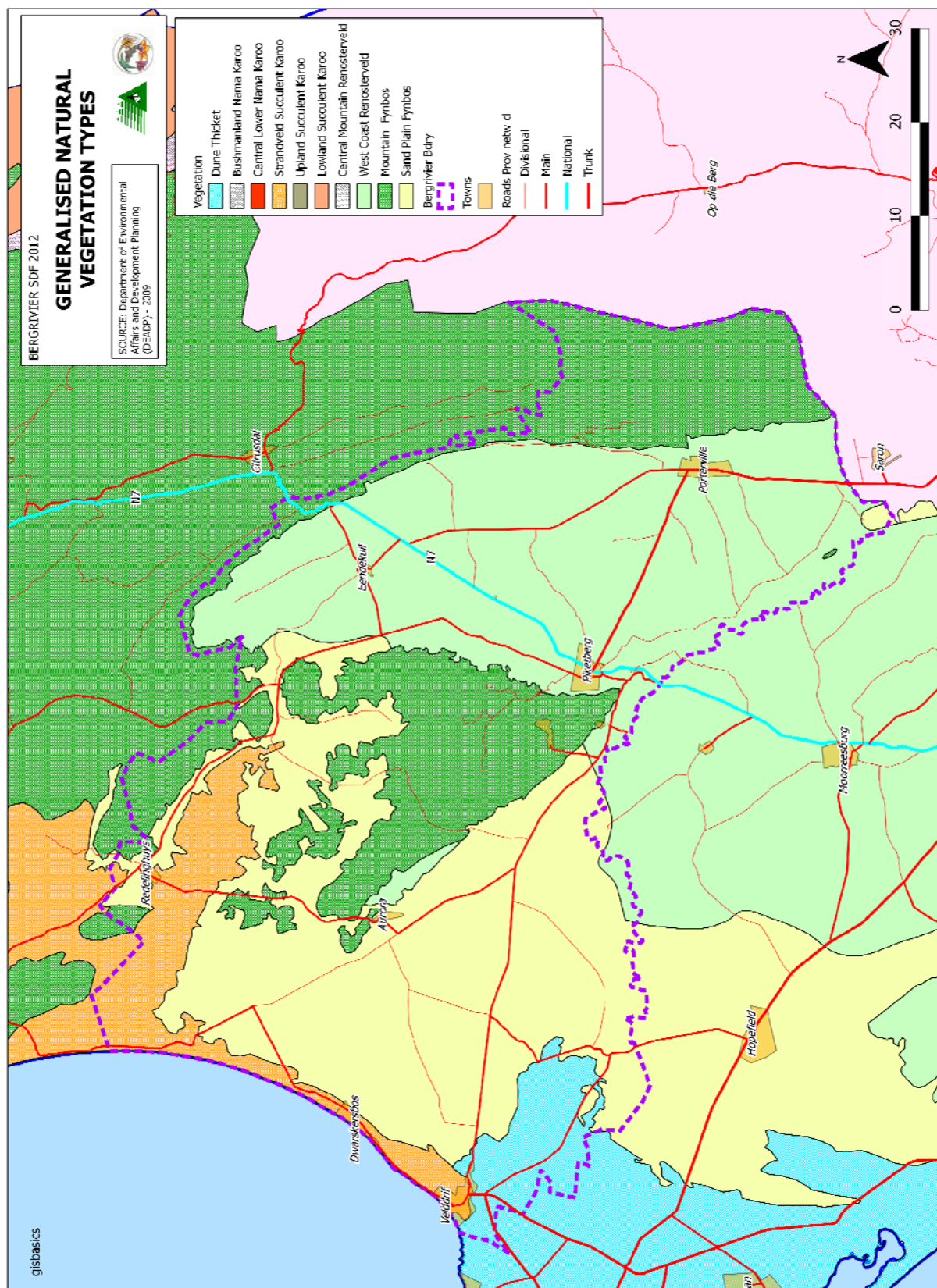
Wetlands, pans and flood plains are very valuable as they create a habitat for a variety of plant species. The wetlands and pans have their own plant species such as water hyacinth, sea-grass, restios, 'waterblommietjies' (Cape pondweed) and water-grasses. The Berg River mouth is rich in nutrients that support plant life, that of the wetlands and surrounds. Plants are an ingredient essential for estuary life (Lower Berg River Sub regional Structure Plan. 2001).

e) Mountain fynbos or Standstone fynbos grows on the mountain slopes.

f) Dune Thicket grows on the southern banks of the Berg River in the most western corner of the municipal area.

The percentage of each vegetation type occurring in the Bergrivier Municipality is listed below. The values also indicate the degree of endemism of each vegetation type (i.e. 100% indicates that a vegetation type occurs in only that particular location and nowhere else in the world).

Cape Estuarine Salt Marshes	49.55%
Cape Inland Salt Pans	9.84%
Cape Lowland Freshwater Wetlands	26.80%
Cape Seashore Vegetation	1.39%
Cape Vernal Pools	61.57%
Cederberg Sandstone Fynbos	1.15%
Doringrivier Quartzite Karoo	0.16%
Graafwater Sandstone Fynbos	6.59%
Hopefield Sand Fynbos	52.22%
Langebaan Dune Strandveld	15.22%
Leipoldtville Sand Fynbos	27.43%
Northern Inland Shale Band Vegetation	8.95%
Oliphant's Sandstone Fynbos	13.97%
Piketberg Quartz Succulent Shrubland	90.87%
Piketberg Sandstone Fynbos	100%
Saldanha Flats Strandveld	32.12%
Swartland Alluvium Renosterveld	11.58%
Swartland Shale Renosterveld	28.09%
Swartland Silcrete Renosterveld	16.12%
Western Altimontane Sandstone Fynbos	2.77%
Winterhoek Sandstone Fynbos	22.75%



Map 3.7 (a): Generalized natural vegetation types, Bergervier Municipality

Impact of other land uses on natural vegetation

The status of natural vegetation in the farming areas is described below per farming area:

Sandveld grain growing and grazing area	<p>The biggest area of natural veldt is found in the Sandveld. According to Adcocks (1975) there are mainly two types of natural veldt i.e. Strandveld of the western coastal region (veldt type 34 and fynbos of the coastal region (veldt type 47)). Natural grazing constitutes nearly 60% of the total extent of the farming area.</p> <p>The carrying capacity of both veldt types is 25 hectares per large livestock unit south of the Berg river whilst it is 30 hectares per large livestock unit north of the Berg river. Often the grain growing strips are developed in the natural veldt, leaving too little natural veldt for coverage. Port Jackson also occurs and weakens the grazing capacity.</p>
Red Karoo Dry Land Grain Growing Area	<p>The contribution of natural veldt is insignificant from an agricultural perspective. Furthermore very little Rhenosterveld (veldt type 46) has survived the agricultural activities and if so, the veldt is scattered as patches over the farming area and are treated as natural veldt.</p>
Piketberg and Porterville grain growing area	<p>The natural vegetation has been removed through cultivation. However where natural veldt occur, it consists of Rhenosterbosveld (Veldt type 46) and Fynbos (Veldt type 47) both from the Coastal zone.</p> <p>The carrying capacity of both veldt types is low and is utilized together with stubble wheat fields.</p>
Mixed agriculture area	<p>Natural grazing veldt</p> <p>The natural vegetation in these areas is localised to the mountainous areas. It is seldom utilized for grazing. As its carrying capacity is 36 hectares per great livestock unit.</p>

A major agricultural related threat is the clearing of land for harvesting potatoes and Rooibos in the Sandstone Fynbos valley bottom wetlands. The expansion of these growing areas has led to a loss or reduction of the Sandstone Fynbos. Sometimes, with Rooibos cultivation, and other crop production, comes the use of chemicals and fertilizers which tend to alter the water chemistry in wetlands. These acid-based systems are very vulnerable to a change in pH levels. These wetlands are in danger of being fragmented by, for example, roads crossing wetlands, rural development and the draining of wetlands. Such activities can cause seeps. Groundwater extraction also impacts negatively on wetlands.

Sandstone fynbos is reliant on fires to regenerate and create new growth and so changing the fire management scheme in this area would create a loss of species diversity (Bergrivier Biodiversity report, p19-48).

Alien vegetation such as rooikrans, pines, wattle and hakea compete with Fynbos and decrease the natural diversity, increasing the chance of fires, use up crucial water resources and often appears untidy.

Other threats include urbanization that does not take the environment into consideration, the mindless cutting down of veldt flowers, disturbance created by 4x4 vehicles and gravel mining. Of the 8600 fynbos plant species, at least 1600 are rare or endangered, with 35 now extinct. These 1600 plant species equate to 65% of the threatened plant species in Southern Africa. Therefore, the positioning of recreational activities like hiking trails, picnic and camping sites and tourism amenities must consider the sensitivity of the Fynbos biome (Bergrivier SDF, p4-6).

Fauna

The Berg River is home to the Berg River red fin (*Pseudobarbus burgii*) which is endemic to the ecosystem and presently considered a Critically Endangered species. Genetic research confirmed that the red fin occurring in the Verlorenvlei is genetically distinct from the Berg River red fin and is therefore a separate species. Other indigenous fish of this area include the Cape kurper (*Sandelia capensis*) and the Cape galaxias (*Galaxias zebratus*). Genetic studies also show that the Cape galaxias, originally believed to be a single species with a fairly large distribution range, is in fact a number of separate and undescribed species (Cape Nature. P18).

Pelagic fish are solely reliant on the estuary for their life cycle. Most fish breed in river and when the offspring have matured, swim back into the sea. What is seen most often in the estuary is mullet (*harders*) living off detritus and plankton. Those who cast a line in the area are likely to catch steenbras and kabeljou (Bergrivier SDF, p6-8).

The most significant bird colony is likely to be at the river mouth and floodplain of the Berg River that creates a home to hundreds of bird species at times. The Berg River mouth is one of two places in South Africa where approximately 30 000 wading birds migrate to annually. This area has been considered as a RAMSAR site due to its international importance for waterfowl.

Another significant area where birdlife is pronounced is the Rocher Pan Nature Reserve. Many bird species with seaweed and fish diets make use of the varied landscape of vlei and marine environments suitable for feeding and nesting sites. For instance, land-dwelling birds seen are ostriches, black-shouldered kite, blue crane, brown snake-eagle and white stork; while vlei-dwelling birds found here are the white pelicans, great white egret, yellow-billed duck, spur-winged geese, and giant kingfisher; and lastly coast-dwelling birds found here are the jackass penguins, black oystercatcher, cape gannet and white-breasted cormorant.

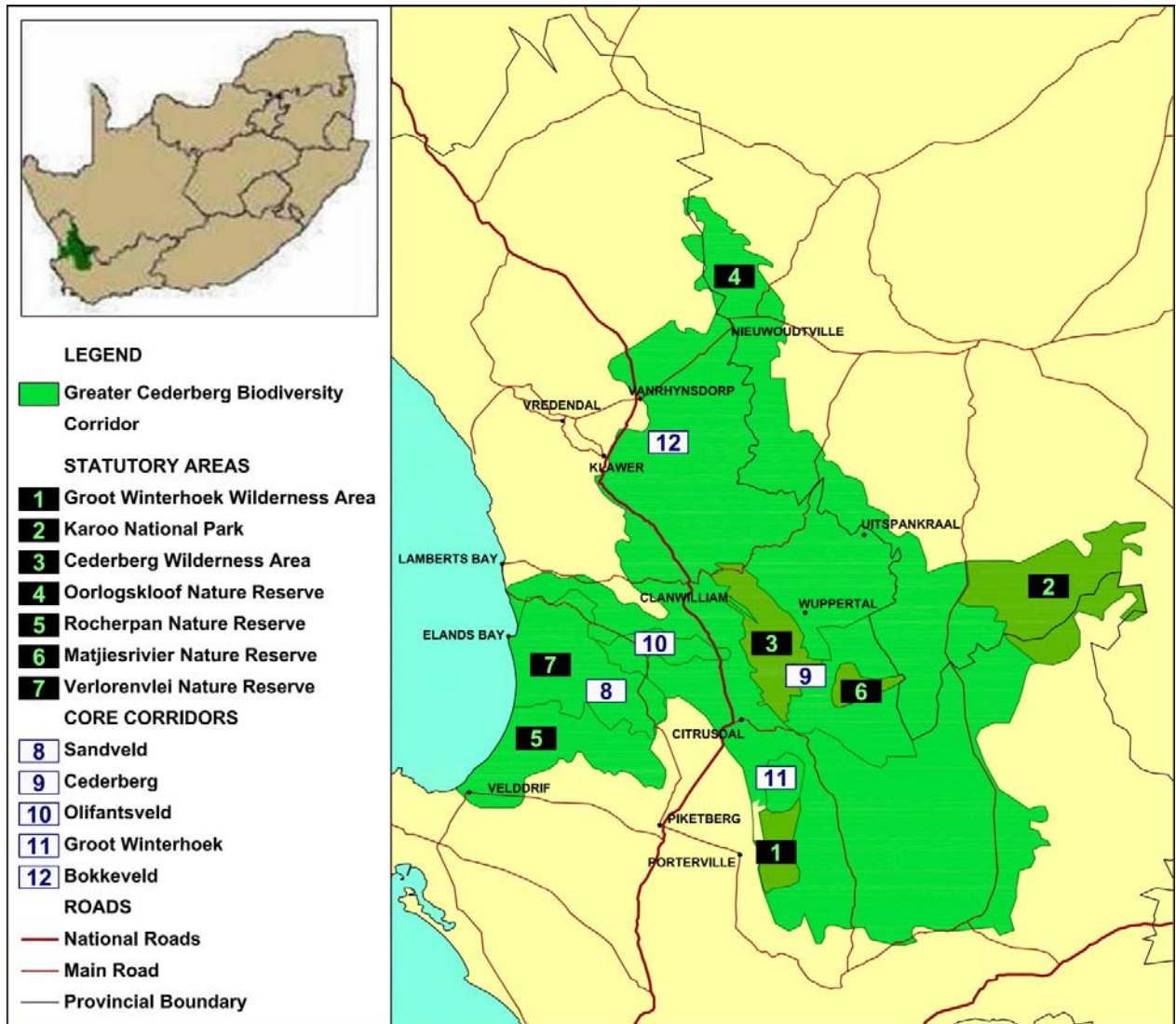
3.8 Conservation and Heritage

The Bergrivier Municipal area is recognized via numerous unique natural and cultural elements that are protected via a series of conservation efforts, both formal and informal, that involve different conservation areas. These conservation-driven areas are situated predominantly along the Berg River, the coast, or in the mountainous regions.

The following Table provides a summary of the formal and informal conservation areas:

Authority Level	Conservation Area	Size	Under management of
National	Rocher Pan Marine Reserve	896ha	Department of Environmental Affairs and Tourism (DEAT)
Provincial	Rocher Pan Nature Reserve	929ha	Cape Nature
	Groot Winterhoek (Entire area, one of eight protected areas constituting Cape Floral Region World Heritage Sites.)	30 608 Wilderness (19 200ha) Nature reserve (11 408ha)	Cape Nature
Private	Stalkrans Private Nature Reserve	77ha	Private: Dr. B. Dommissie
	Tweekuilen Contract Nature Reserve	879	Owner & Cape Nature
	Redelinghuys Contract Nature Reserve	62	BRM & Cape Nature
	Rust Roes Contract Nature Reserve	892	Owner & Cape Nature
	Vredelust Biodiversity Agreement	227	Owner & Cape Nature
	Winterhoek Mountain Catchment Area	15 356	Cape Nature & Private Landowners
	Gys se Kraal Nature Heritage Area	650ha	Heritage: Varingvliet (Edms) Bpk
	Lower Berg River Conservancy	31 354ha	Conservancy: Lower Berg River Conservation Trust
	Groot Winterhoek proposed conservancy		Conservancy: info pending from the Porterville office of Cape Nature
	Proposed Oliphant's River Mountain conservancies		Conservancy: info pending from the Porterville office of Cape Nature

Table 3.8(a): Formal and Informal Conservation Areas.



Map 3.7(b): Greater Cederberg Biodiversity Corridor, Bergrivier Biodiversity Report.

A long-term conservation strategy known as the Cape Action Plan for the People and the Environment (CAPE), funded by the Global Environmental Facility (GEF) in 1997, is managed by the World Wildlife Fund-South Africa (WWF-SA). Strategic conservation of the area under the jurisdiction of Bergrivier Municipality includes the terrestrial or marine areas that are formally protected in terms of the National Environment Management: Protected Areas Act (Act No. 57 of 2003) and/or Marine Living Resources Act (Act No.18 of 1998).

The Greater Cederberg Biodiversity Corridor is a landscape scale conservation initiative of international significance. With multiple stakeholders backing this initiative, this conservation intervention has goals to conserve a representative sample of biodiversity in the Cape Floral Region and the Succulent Karoo within a “lived-in, worked-in landscape”. This conservation intervention has brought together partnerships between authorities, government departments, communities, landowners, non-governmental organizations and conservation agencies.

3.9 Agriculture

Agriculture in this region, with reference to potatoes, rooibos, wheat, and in particular to potato production is unlike other municipalities, the central economic activity and contributor to the Gross Regional Product, in the Sandveld area of the Western Cape. On average, approximately 6500 hectares of potatoes are planted each year to harvest seed potatoes, fresh potatoes and potatoes for processing i.e. French fries and frozen products.

The value of the National Potato Industry is estimated at around R4.0 billion (10%) per annum of which a substantial portion comes from the Sandveld region with an annual turnover that can reach R400 million per annum (Calculated on 6500ha x 40t/ha x R13/10kg).

Agriculture is recognized as the largest employment sector within the Bergrivier municipality, providing employment for more than half the total labour force (53%). Primary agricultural activities within this sector include livestock farming (sheep, cattle and pig), grain and fruit farming with cultivated crops like grapes, water melons, proteas, waterblommetjies, assorted vegetables and Rooibos. The Agricultural sector is also responsible for secondary employment like packaging, bottling (i.e. milk processing) and agro processing jobs. (Bergrivier IWMP, p7-8).

The potato industry offers an estimated 3 250 job opportunities. Of note is the costs incurred per hectare that have risen from R65 000-00 p/ha, to R105 000-00 p/ha to produce Sandveld potatoes. This is mainly due to escalating fuel, fertilizer and crop protection costs (Bergrivier Biodiversity report, p76).

Farming areas:

There are five farming areas which include:

Farming Area 14: Sandveld grain growing and grazing area

The area is evenly distributed along the west coast from Elands Bay in the North to Milnerton in the south. The area stretches in an easterly direction up to Het Kruis and runs past the Piketberg mountains on the western side in a southern direction past and across the Berg river along the eastern boundary of the Hopefield district to the north west of Darling, where it runs parallel with the coast line to Atlantis in a southerly direction to Milnerton. The farming associations of Redelinghuys and Velddrif are included in this farming area. The Piketberg Sandveld farming area covers 201 020 hectares.

Farming Area 15: Red Karoo Dry Land Grain Growing Area

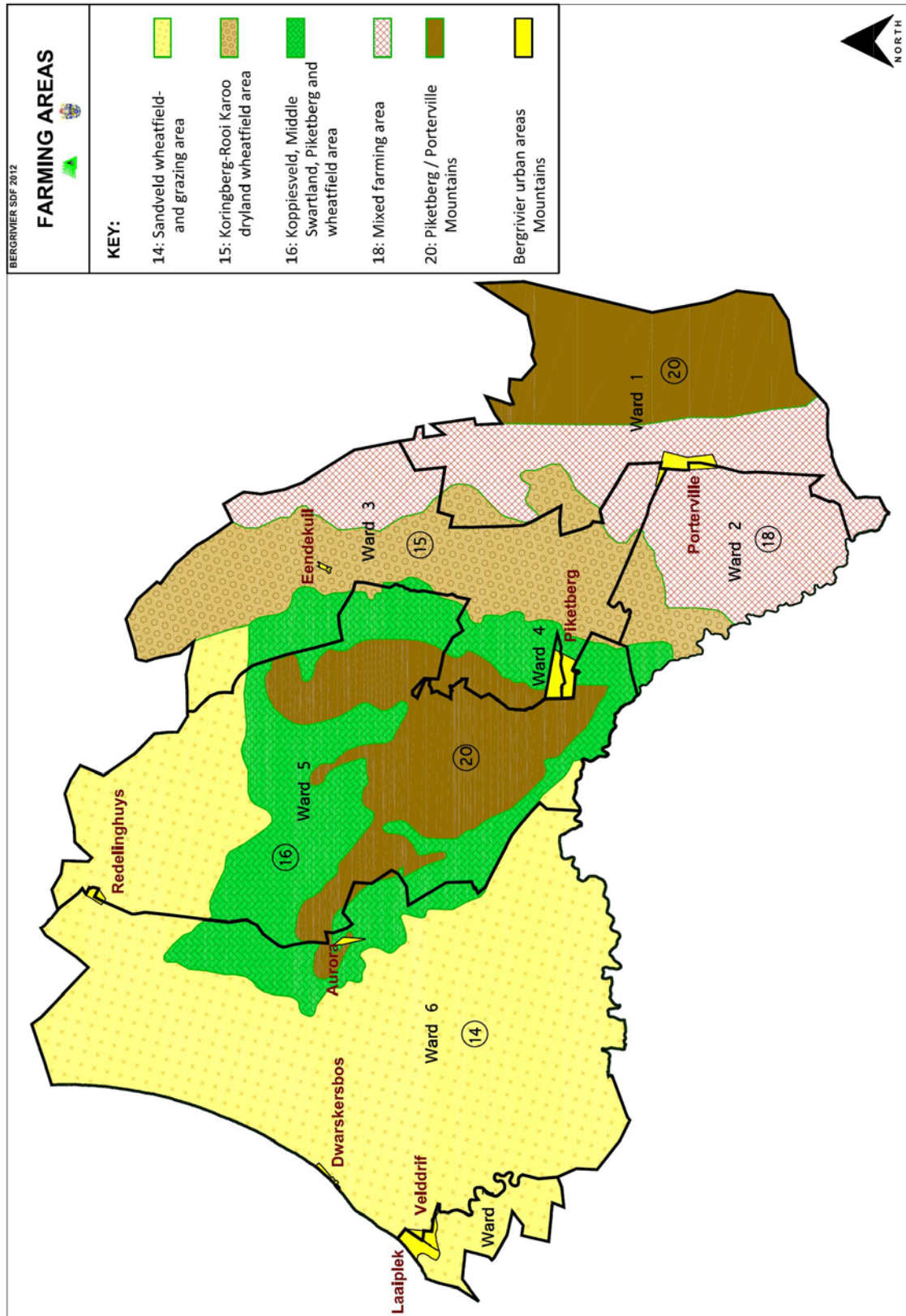
The area stretches from Rhenosterhoek in the north as a 10 -12 kilometre wide corridor in a southerly direction up to the Bergrivier. The Red Karoo Dry Land Grain growing area constitutes 51570hectares in the Bergrivier Municipal area including Eendekuil and Pools.

Farming Area 16: Piketberg and Porterville grain growing area

The area stretches from the Berg River in the south to the north in the direction of the Oliphant's Rivier Mountains. It encircles the Piketberg Mountains. It includes the town of Piketberg and Aurora and the production areas of Winkelshoek and Moutonshoek. The farming associations of Piketberg and the Sandveld are included in this farming area. The Piketberg and Porterville grain growing area covers 119 280 hectares (The town of Porterville is situated in the mixed farming area).

Farming Area 18: Mixed agriculture area

The area is wedged in-between the Red Karoo dry land grain growing area and the most eastern boundary of the municipal area that include the sensitive Winterhoek mountain range. The area boasts diverse farming activities including small grain, wine grapes and livestock.



Map 3.9(a): Farming Areas, Bergervier Municipality

Soils

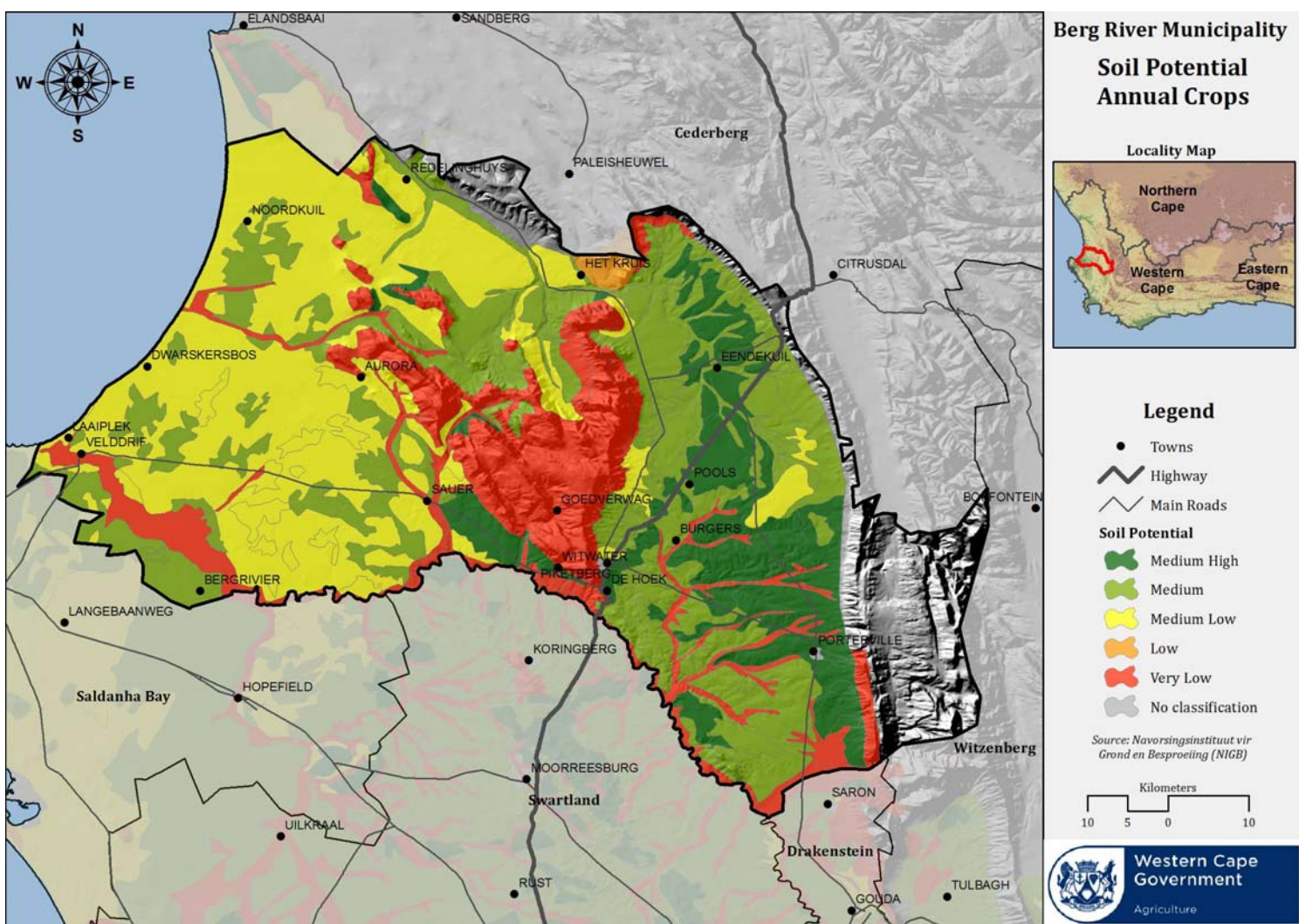
These farming areas have different soil characteristics which are summarized below:

Sandveld grain growing and grazing area	<p>The Sandveld farming area is mainly flat and the height above sea level varies between 5- 100m. Aeolian drift sand, blowing in from the coast, covers the farming area. Hence the soil consists of younger, fine and medium textured soils, rich in lime along the coast whilst the deeper and older acidic soils can be found further away from the coast. The depth of sand varies and sometimes soils from the earth crust (of the Kalahari formation) underlay the sand and duplex soils occur.</p> <p>Due to the physical and chemical composition of the soil it has low moisture containing capacity, low cation exchange ability, low nutritional status and a shortage of trace elements and hence low agricultural potential. As the soils is sensitive to wind erosion, good management is required for optimal usage.</p>
Red Karoo Dry Land Grain Growing Area	<p>The terrain is hilly to flat and the tributaries of the Berg (south) and Kruismans (north) River drain the area. Schales, schists, phillites and grauwacks from the Malmesbury group underlay the area. A characteristic of this area is the typical small hills that are evenly distributed over the area.</p> <p>The height above sea level varies from 100m-200m. Residual soils can be found in the south at a height of 140m above sea level whilst to the north in the vicinity of Pools, heavy textured red soils at height of 150m-200m can be found. For some time the soils were cultivated inappropriately and the heavy top soils were mixed with the base, causing the soils to appear to be in a bad condition. Crust formation and densification are common problems of these heavy red soils.</p> <p>These soils have a low moisture absorption capacity and allow a high run off that causes water erosion whilst the lower lying soils get brackish.</p> <p>Strips of drift sand occur in isolation in the northern part of the area near Eendekuil. The drift sand is blown from riverbeds in the vicinity.</p>
Piketberg and Porterville grain growing area	<p>The southern part of the Piketberg Porterville farming area is underlain by Malmesbury Schales providing the basis for highly eroded red soils together with shallow residual soils.</p> <p>The northern part of this farming area is located around Piketberg. Sand originating from Malmesbury Schales is present including a wide range of duplex soils, deep sand and residual soils.</p> <p>The area is located between 100m to 300m above sea level and the Berg river tributaries provide the drainage system for the area.</p> <p>50% of the soils are of medium depth, 33% percent is shallow and 15% is deep. 54% has</p>

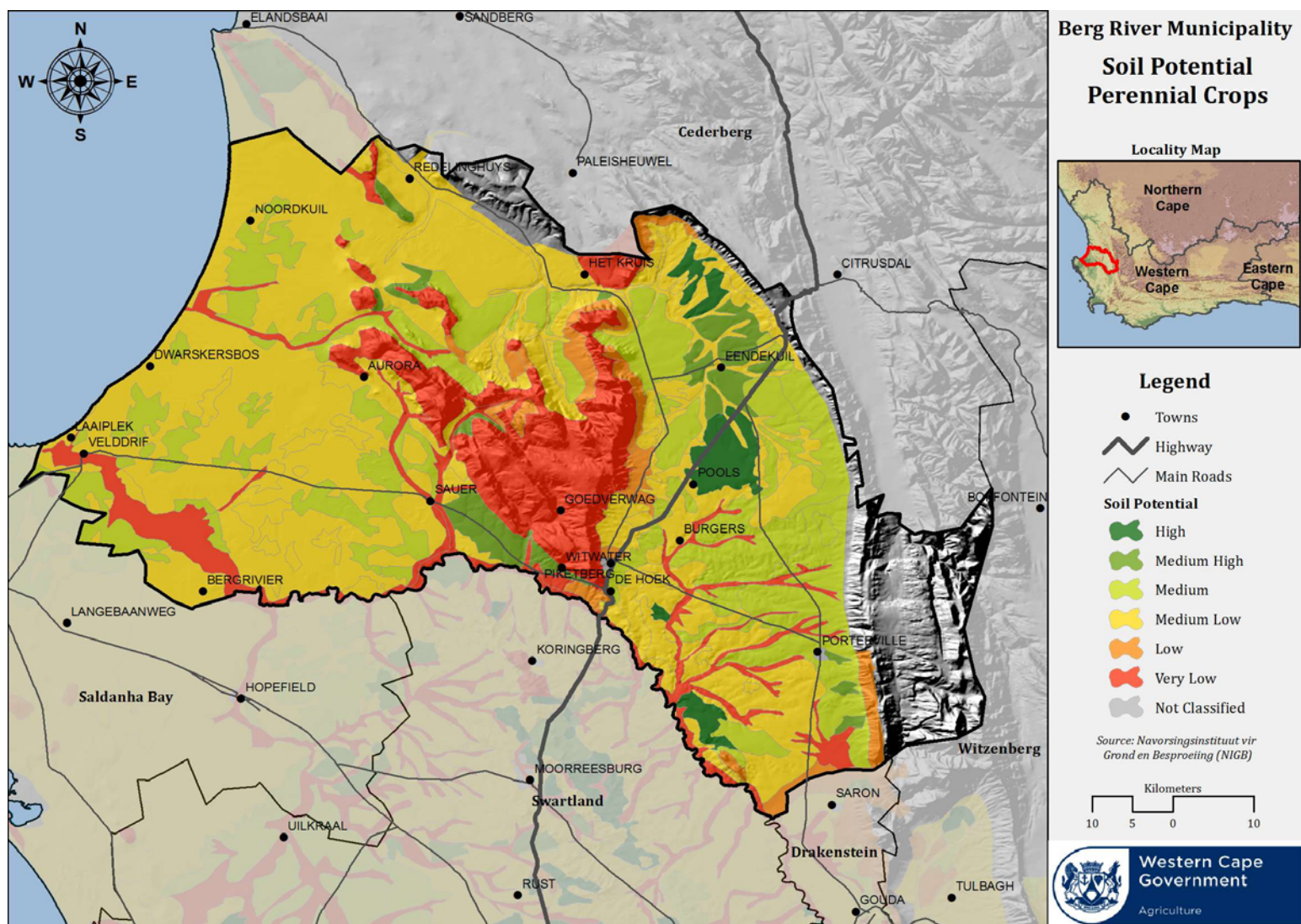
a very low pH (is acidic) and most of the soils have a low plant nutritional status. Therefore fertilizing programmes have to be applied annually.

Mixed agriculture area

The terrain and the soil distribution patterns are complex given the variety of geological material from the earth crust. The area is hilly and "koppies" and low mountains are also present in the area. The Piketberg consist of Table Mountain sandstone with soils of various depths on top of Malmesbury Schales. A third of the soils in the area are either shallow, medium depth or deep indicating low plant nutrition status and low acidity. The application of fertilizer is therefore a prerequisite to cultivate crops.



Map 3.9(b): Soil potential Annual Crops, Berggrivier Municipality.



Map 3.9(c): Soil potential Perennial Crops, Berg River Municipality.

Water Sources

Water is as important as soil, hence the water sources for each farming area are described below:

Sandveld farming area: Availability of water for irrigation is localized and 2 131 hectares of potatoes are irrigated using spill points.

Other water sources are:

- Rivers:** The Great Berg River flowing from east to west from the interior to the coast. As the water levels are low during the summer, irrigation is limited to farms along the river and as water is regulated in the river, water allocations are limited to 25 hectares of irrigation water. Other smaller rivers include the Krusmanskivier, Papkuilsvier and Kuldervier.

The Kruismans River flows from Eendekuil to the Verlorenvlei, and is the most important water source for the irrigation of potatoes of those farmers along the river. Potato crops of 492hectare under spill point irrigation and 55 hectares under sprinkle irrigation are produced annually along the Verlorenvlei and in the vicinity of Elands Bay.

- (ii) Underground water sources. Most farmers are dependent on underground water for stock watering and domestic use. At Het Kruis in the Redelinghuys area strong sources of underground water are present in the deep sandy soils. Here farmers utilize fountains and boreholes to irrigate 370hectares potatoes under spill point irrigation and 175 hectares under sprinkle irrigation. Approximately 10hectares of wine grapes are also produced in this area.
- (iii) Several farms access water for livestock watering and domestic use from the Voëlvlei dam that is piped to Darling, Koperfontein, Moorreesburg and Koringberg. The Withoogte-Saldanha government water scheme provides also water to farmers in the same vicinity.

Red Karoo Dry Land Grain growing area: Availability of water for irrigation is localized and on 30 farms 1000 hectares are irrigated from the Berg River, the only source of water in the south. As the river flows right through the year, irrigation is possible but restricted and managed by government. In summer the salt content of the river increase due to leakages from the surrounding fields whilst the salt content is washed away in the winter when it rains.

Piketberg and Porterville Dry Land Grain growing area: The area under irrigation is used to produce wine grapes, peaches, lucerne, potatoes, vegetables, grazing, citrus, guavas and apricots using spill point, sprinkle irrigation and drip and flood irrigation.

Available water sources are:

- (i) Rivers: The Great Berg River is the most important source of irrigation water for farms on the banks of the river. The Great Berg River flows from a south-easterly direction from the Heuningberg in a north westerly direction past Piketberg up to the Platkloof River;
- (ii) Mountain streams from the foot of the Olifantsberg and Piketberg, as well as the tributary of the Berg River and Kruismans River i.e. Essenbosch River, Platkloof River, Krom Antonies River, Hol River and Papkuils River. Most of these tributaries flows in the winter and not in summer and farmers have to build storage dams;
- (iii) Underground water sources. Most farmers are dependent on underground water for stock watering and domestic use. At the foot of the mountain and in Moutonshoek several boreholes have sufficient water for irrigation and vineyards and potatoes are irrigated;

Mixed Agriculture Area: Water for irrigation is sourced from the Great Berg River and runoff water from the mountains with a high quality. Water from boreholes and from storage dams (filled up by the runoff from the mountains) are similarly limited to the water allocation out of the Berg River.

Water use limitations

The limitation of water in the Bergrivier Municipal area can be summarized as follows:

- Water for irrigation from the Berg River is limited to farms on the banks of the river;
- Smaller rivers are not flowing in the summer months, and limited irrigation can take place. Given the sandy soils little winter water storage dams exists;
- Boreholes utilised for domestic use and watering livestock, are mainly brackish;
- Water from government water scheme can only be used for domestic purposes and for water livestock and is of good quality.

Utilization of resources in the farming areas are describe below:

In Farming Area 14: Sandveld Grain Growing and Grazing Area, approximately 50% of the area is natural veldt and utilized for grazing, 39% is utilized for dry land crop cultivation and 1% is under irrigation. The grazing is utilised for cattle and sheep and dry land production includes small grain, fodder and crops for grazing whilst the irrigated areas include potatoes, runner crops and fodder.

There are 402 properties with an average extent of 1153hectares. 40% of the farmers farm on more than one property and the average extent of farming entities on which these 241 farmer farm are 1922 hectares. Twenty percent of the farms are smaller than 500hectares and are not economically viable given the rainfall and the extensive farming practised.

The main agricultural income generating activities are small grain, potatoes and livestock. The table below provides detail of the crops and produce of the Sandveld.

Sandveld crops	Wheat is the most important crop despite the low rainfall, low potential grain growing soil, wind erosion and a variety of pests and weeds. Yields of 2 tons per hectare are obtained and maintained.
	Other wintergrains such as oats, barley and rye are cultivated as cash crops and in particular for fodder.
	Patatoes are cultivated in the northern Sandveld (along the Verlorenvlei and in the vicinity of Elands Bay) and along the Bergrivier where water for supplementary irrigation is available whilst dryland potatoes are cultivated on some farms during the winter. The sandy soil enhances the cultivation of table potatoes. Patatoes are planted between March and July and the winter rains are utilized. Production in the summer is problematic given the warm conditions and the low moisture containing capacity of the sandy soils. The average yield is 28 tons per hectare.
	Alternative crops are lupins as a cash crop, power fodder (energy-rich fodder), grazing (in particular salt lupins) and rotation crops. Where potatoes are cultivated and water for irrigation is available, melons, watermelons and other runner crops are cultivated. Peas including green peas and peas for fodder are cultivated. The cultivation of Kanola is on the increase and is used as a rotation crop together with wheat. The cultivation of Rooibos Tea is also increasing.

Sandveld produce	<p>Sheep and cattle keep well in the Sandveld farming area. Cattle are mainly crossbreeds used for meat production such as: Hereford, Simmentaler, Afrikaner and Aberdeen Angus. Sheep are mainly mutton and wool combinations. Both cattle and sheep contribute to optimum utilization of the veldt as the veldt will not be grazed selectively.</p>
-------------------------	---

In Farming Area 15, the Red Karoo Dry Land Grain Growing Area, resources are utilized as follows:

Approximately 94% of the area is cultivated whilst the remainder consists of natural veldt. Of the area 98% is cultivated as dry land whilst 2% is under irrigation. Crops include small grain, fodder and crops for grazing whilst the irrigated areas include lucerne, wine grapes and vegetables. Fields require fertilization to grow small grain crops.

There are 162 properties with an average extent of 543hectares. 35% of farmers farm on more than one property and the average extent of farming entities are 800 hectares.

The main agricultural income generating activities are small grain and livestock, wine grapes, peaches, table grapes and vegetables under irrigation. The table below provides detail of the crops and produce of the Red Karoo Area.

Berg River Municipality

Fine Scale Landuse

Locality Map



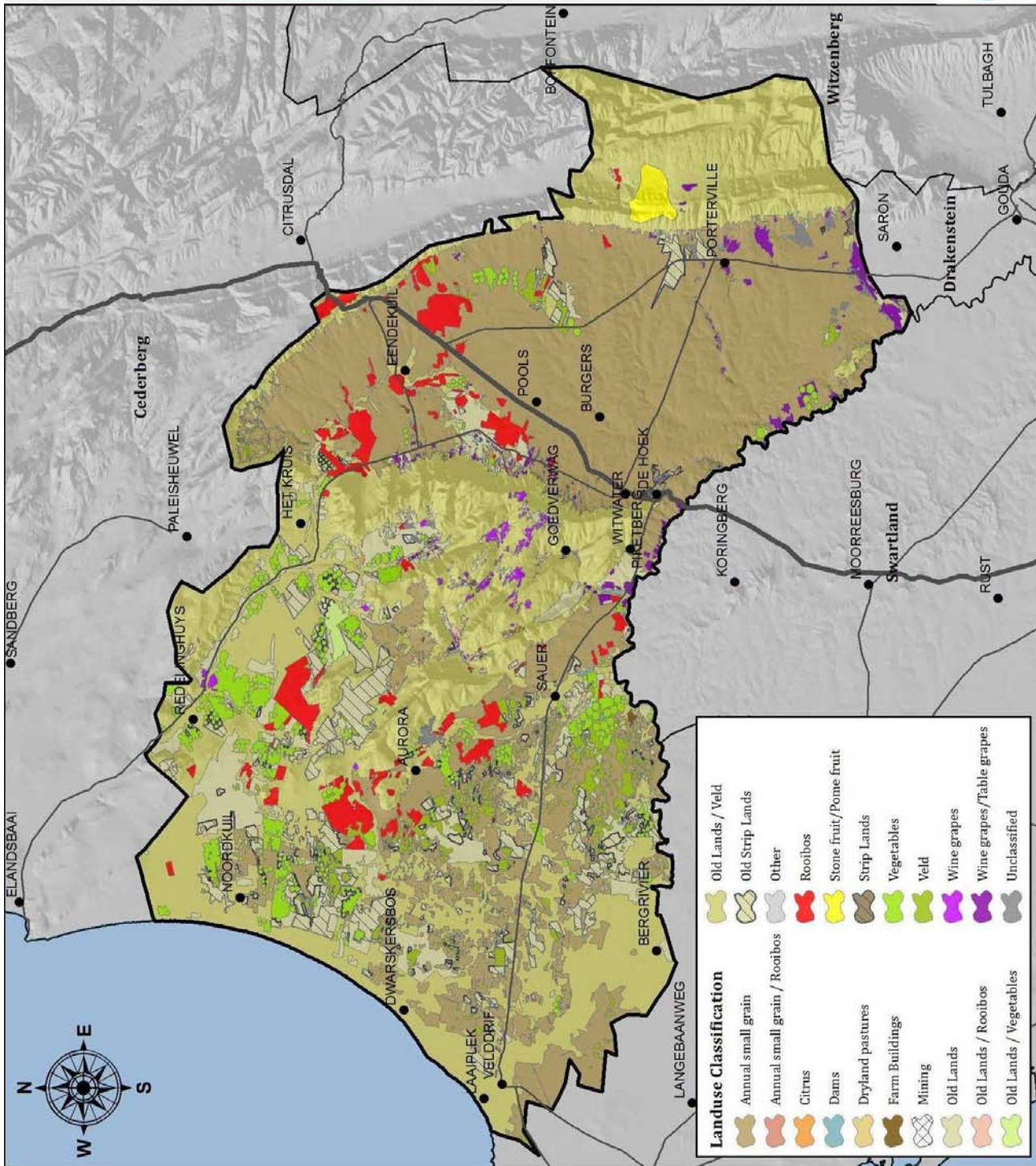
Legend

- Towns
- Highway
- Main Roads

Landuse Classification:
Digitised by
Western Cape Department of Agriculture
from 2010 SPOT5 images.



Western Cape
Government
Agriculture



Landuse Classification		Old Lands / Veld
Annual small grain	Old Strip Lands	Other
Annual small grain / Rooibos	Rooibos	Stone fruit/Pome fruit
Citrus	Dams	Strip Lands
Dryland pastures	Farm Buildings	Vegetables
Mining	Old Lands	Veld
Old Lands	Old Lands / Rooibos	Wine grapes
Old Lands / Rooibos	Old Lands / Vegetables	Wine grapes/Table grapes
Unclassified		

Map 3.9(d): Fine Scale Land Use, Bergvliet Municipality

Red Karoo Crops	<p>Wheat is the most important crop and well adjusted to the winter rain climate of the area and is drought resistant. The average yield is 1 ton per hectare and the production is constant. At Pools and Eendekuil successful cultivars are those that have a short to medium growing season.</p> <p>Other wintergrains such as oats, barley and rye are cultivated as fodder.</p> <p>Grapes: 1000 hectares of table grapes ripening early and 80ha of vine grapes are cultivated at Moravië.</p> <p>Alternative crops include Medics as rotation crop for fodder for sheep, lupins as power fodder and grazing.</p>
Red Karoo Produce	<p>Sheep and cattle are as much a part of the agricultural production as grain. Sheep are kept for mutton production and the South African Mutton Merino, Merino and Döhne Merino are the most common varieties the area. Both beef and dairy cattle are farmed as milk production has decreased in the area.</p>

The utilization of Farming Area 16, the Piketberg and Porterville grain growing area is as follows: Approximately 11% of the area is natural veldt and utilized for grazing, 88% is utilized for dry land crop cultivation and 1% is under irrigation. The dry land production includes small grain, fodder and stubble grain fields for grazing whilst the irrigated areas include vineyards for making wine, peaches, Lucerne, potatoes, vegetables and table grapes.

There are 470 properties with an average extent of 514 hectares. More than 50% of farmers farm on more than one property constituting 310 units and the average extent of farming entities is 780 hectares. The economic viability of grain growing farms smaller than 500 hectares is questionable.

The main agricultural income generating activities are small grain, livestock, wine grapes, lucerne and potatoes. The table below provides detail of the crops and produce of the Sandveld:

Piketberg and Porterville Crops	<p>Wheat is well adjusted in this area and provides a stable crop. More than 90% of the wheat production is A- cultivars adjusted for a medium length growing season and short and medium length straw cultivars.</p> <p>Other wintergrains such as barley is cultivated as fodder.</p> <p>Wine grapes are well adjusted particularly in the Piketberg – Winkelshoek and Cardouw production area.</p>
---------------------------------	---

Peaches and other deciduous fruit are cultivated in the Heuningberg area south west of Porterville on the border of the Swartland Municipal Area. Approximately 400 hectare peaches for canning are being cultivated and are irrigated from the Bergrivier. Peaches are well adjusted in the deeper light to medium textured red and yellow soils. An average of 18 ton peaches per hectare is produced. A 10 hectares nectarines, 100 ha apricots, 360 ha table grapes and prunes are cultivated along the Berg River.

Lucern is cultivated for fodder and 250 hectares of lucern grows along the Berg River from where it is irrigated. An average yield of 15 tons per hectare is obtained.

Potatoes are cultivated in the Moutonshoek and Eendekuil environment. On a few farms along the Berg River potatoes are produced under irrigation. 570 ha of potatoes are annually cultivated. In Moutonshoek potatoes are cultivated for seed harvesting purposes, culminating in 6 000 tons of seed potatoes.

The average yield is 32 tons per hectare.

Alternative crops are lupins as power fodder and for grazing. Where irrigation water is available melon and runner crops are cultivated.

Where potatoes are cultivated and water for irrigation is available, melons, watermelons and other runner crops are cultivated. Peas including green peas and peas for fodder are cultivated. The cultivation of Kanola is on the increase and is used as a rotation crop together with wheat. The cultivation of Rooibos Tea is also increasing.

**Piketberg and
Porterville Produce**

Several farms have piggeries. Besides piggeries, both cattle and sheep are part of the livestock in the farming area.

The resource utilization in Farming Area 18: Mixed Agriculture Area is as follows:

Approximately 14% of the area is natural veldt and utilized for grazing, 14% is utilized in growing vineyards for making wine, 1.5% under irrigation for deciduous fruit and 1% under irrigation for fodder, whilst nearly 71% is utilized for cultivating dry land crops. The dry land small grain production is used for fodder and for grazing.

The average farm extent is 445ha with 58% of farms in the farming area smaller than 500ha. 32% of the farms are smaller than 300 hectares and are farmed intensively. Farms in this farming area on which small grain is produced constitute 28% of all the farming units in the area and is 600+hectares in extent.

The main agricultural income generating activities are small grain, wine, table grapes and deciduous fruit. The table below provides detail of the crops and produce of the Sandveld:

Mixed farming crops	<p>Wheat and livestock production are a good combination as the crops provide roughage and fodder for the livestock. Other wintergrains such as oats, barley and rye are cultivated as fodder and in particular Oats hay.</p> <p>Patatoes are cultivated in the northern Sandveld (along the Verlorenvlei and in the vicinity of Elands Bay) and along the Bergrivier where water for supplementary irrigation is available whilst dryland potatoes are cultivated on some farms during the winter. The sandy soil enhances the cultivation of table potatoes. Patatoes are planted between March and July and the winter rains are utilized. Production in the summer is problematic given the warm conditions and the low moisture containing capacity of the sandy soils. The average yield is 28 tons per hectare.</p> <p>Alternative crops are lupins as cash crop, power fodder, grazing (in particular salt lupins) and rotation crops. Where potatoes are cultivated and water for irrigation is available, melons, watermelons and other runner crops are cultivated. Peas including green peas and peas for fodder are cultivated. The cultivation of Kanola is on the increase and is used as a rotation crop together with wheat. The cultivation of Rooibos Tea is also increasing. Guavas are also cultivated close to Porterville.</p>
Mixed farming produce	<p>Sheep and cattle are farmed in the mixed farming area.</p>

Climate

The climate in the Bergrivier Municipal Area affects agricultural activities. The Sandveld farming area's climate can be described as a low rainfall area, with sandy soils that could be damaged by wind erosion. The Red Karoo Grain Growing Area, the Piketberg Porterville Grain Growing Area and the Mixed Agricultural Area's climate is conducive for the cultivation of dry land winter crops as the even rainfall during the winter is ideal for dry land crops.

Temperatures have the following impact:

Sandveld grain growing and grazing area	<p>The farming area in the vicinity of Het Kruis and along the Verlorenvlei close to Redelinghuys experience even higher temperatures than 30°C. Beside the absence of summer crop cultivation given the temperature and lack of water, these high temperatures may cause damage to the potatoes crops in the northern Sandveld and in particular during February, March and April as root-rot is enhance. During the harvest season in October and November, the high temperatures increase rotting and cause degrading of the potatoes.</p>
---	---

The cold conditions have no effect on the agricultural production.		
Red Karoo Dry Land Grain Growing Area	<p>The heat has little impact on crops that are irrigated.</p> <p>Frost has not occurred in the last twenty years and does not impact on agricultural production.</p>	
Piketberg and Porterville grain growing area	The summer temperature in the Porterville is on average 6°C higher in the summer whilst it is 3°C colder in the winter and enhances fruit cultivation.	
Mixed agriculture area	<p>High temperatures (higher than 34°C) may cause heat damage to the fruit produced in the area.</p> <p>Low temperatures do not hold any threat to cultivated winter crops.</p>	

The rainfall in turn has the following effect:

Sandveld grain growing and grazing area	<p>The Sandveld is a winter rainfall area and dry land winter crops are cultivated. Summer crops can only be cultivated if water for irrigation is available.</p> <p>The sandy soil has low moisture retention ability and thus a limited ability to cultivate crops. As the rain is spread evenly over the rainy season, winter grain is produced</p> <p>Given the low rainfall, the Sandveld is the biggest area within the farming region covered with natural grazing. As the rainfall is low, the grazing potential in the veldt is low and there are virtually no farms left with only natural veldt.</p>	
Red Karoo Dry Land Grain Growing Area	Some years the rainfall is less than the average 250 mm or the rainfall period is shorter causing seasonal draught. Hence crops are limited to cultivars with a short growth season. Low rainfall on the heavy clay soil with low moisture retention ability is a limiting factor in the cultivation of crops in this area. Low rainfall and high temperatures in September causes damage to grain crops that are in their seed forming phase leading to low yields. To generate good yields, sufficient rain is required from May to August.	
Piketberg and Porterville grain growing area	<p>It is a winter rainfall area where dry land winter crops are cultivated. Summer crops can only be cultivated if water for irrigation is available.</p> <p>Several farms at the foot of Piketberg (as well as the Oliphant's Mountains) obtain water for irrigation from the mountains. On these farms wine grapes and other irrigation crops are cultivated.</p>	

Mixed agriculture area	The area is well suited for producing winter crops. Dry land vineyards are cultivated on soils that have a good moisture retention ability.
-------------------------------	---

The temperature and rainfall causes evaporation to take place impacting on the agricultural activities in the following way:

Sandveld grain growing and grazing area	The growing grain is afforded the opportunity to utilise the low rainfall maximally as the least evaporation take place in the winter. Evaporation together with high temperatures may cause damage as crops burn and growth is diminished.
--	---

Red Karoo Dry Land Grain Growing Area	From May to August the growing grain is afforded the opportunity to utilise the low rainfall maximally as little evaporation takes place in the winter.
--	---

Piketberg and Porterville grain growing area	As the grain grows during the winter when the evaporation rate is the lowest, the growing grain is afforded the opportunity to optimize the utilization of the low rainfall.
---	--

The evaporation rate has to be considered during the summer irrigation programme which has to be adjusted accordingly. The maximum evaporation of 18mm per day during the period of September, together with high temperatures and a strong south Easter, may prohibit the absorption of moisture and lead to lower yields.

Mixed agriculture area	The growing of grain is not affected by the evaporation, but the growing of dry land vineyards is. High evaporation rates during the months of December to March go together with high temperatures and warm berg winds blowing combined may cause heat damage and prohibit the absorption of moisture impacting on yields.
-------------------------------	---

The wind effects the growing of crops as follows:

Sandveld grain growing and grazing area	<p>The fairly strong summer wind causes erosion of the sandy soils. The North Western wind from May to September brings rain. This wind could cause recently prepared and ploughed fields to be windswept and young grain to die or to be damaged.</p> <p>During the summer months strong south and South Easterly winds blow and should any fields not be covered or overgrazed, such fields may suffer extensive wind damage.</p>
--	---

Red Karoo Dry Land Grain Growing Area	Mild winds from July to August have a positive impact on the pollination of the winter grain. Dry South Easter winds from May to June cause crops to dry out and together with a low rainfall, the germination of grain is restricted. Gail force wind during October and November cause damage to the ripe grain.
Piketberg and Porterville grain growing area	Wind in this farming area has no negative impact on the cultivation of crops. The only exception is the South Easter blowing in October and November in the corridor along Porterville Mountain damaging the ripe grain. To prohibit damages, farmers cut down their crops with windrowers.
Mixed agriculture area	The cool south to south westerly winds occurring in summer contribute greatly to prohibit temperature hikes. These conditions are ideal for the cultivation of wine grapes of high quality.

Chapter 4: Status Quo – Socio-Economic Environment, Bergrivier Municipality

4.1 Demographic Profile

Population figures and growth rate:

The population of the Bergrivier Municipal Area was accounted for in 2001 as 46 500 (10 568 households) and in 2011 as 61 897 people (14 061 households). An annual growth rate of 3.3% was experienced over the last ten (10) years.

	Black African		Coloured		Indian or Asian		White		Other		Grand Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
Redelinghuys	67	67	166	167	3	0	58	43	3	2	574
Eendekuil	13	22	663	703	8	8	52	47	14	0	1530
Dwarskersbos	93	107	38	27	11	7	180	205	0	1	670
Aurora	2	1	185	204	0	2	80	102	0	0	578
Velddrif	675	671	3015	3278	29	24	1580	1681	51	14	11017
Goedverwacht	29	40	914	955	5	1	15	18	2	0	1979
Beaverlac	1	0	28	19	0	0	5	3	2	1	59
Piketberg	543	432	4390	4830	40	23	771	962	56	28	12075
De Hoek	45	5	85	76	0	0	64	54	1	0	330
Wittewater	12	5	409	422	0	1	0	0	0	0	848
Porterville	65	46	2632	2762	12	15	660	824	27	13	7057
De Lust	109	86	198	183	2	2	55	49	0	0	684
Bergrivier Non Urban	1580	2285	8762	8802	34	27	1485	1464	37	20	24497
WC013: Bergrivier Total	3235	3766	21486	22429	144	112	5004	5451	191	78	61897

Table 4.1(a): Population Figures, 2011 per Town by Gender and Race Group.

The annual population growth rate between 2001 and 2007 was 2.3% (Census 2001 & Community Survey 2007). The annual population growth rate increased to 3% between 2007 and 2011 (See Table 4.1. (b)).

Whilst slightly more than half of the population was urbanized at a percentage of fifty six percent (56% or 25 965 people), forty four (44%) of all households lived in the rural areas in 2001. In 2011 sixty percent (60% or 37 400) of the population is urbanized whilst forty percent (40% or 24497 people) lived in rural areas. Urbanization took place at a rate of 0.4% per annum. The largest urban populations in 2001 and 2011 respectively are found in Piketberg (9271 and 12 075 inhabitants), Velddrif (7327 and 11 017 inhabitants) and Porterville (5 867 and 7057 inhabitants). Eendekuil (841 and 1530 inhabitants) and Redelinghuys (592 and 574 inhabitants) are small towns with more than 500 people (Bergrivier Housing Master Plan).

Town	Sub-area	2001 (Census)	2007	2011	2020	Annual Growth Rate
Aurora		342	682	578	470	7%
Dwarskersbos		335	681	670	1 600	10%
Eendekuil		841	879	1530	1 050	16%
Goedverwacht		1 407	1 328	1 979	1 596	8%
Piketberg		9 271	7 902	12 075	15 800	3%
Piketberg	Moravia/ Wittewater De Hoek	326	115	848		
				330		
Porterville		1 672	1 697	7057	10 600	1%
Porterville	Monte Bertha	4 195	3 848			
Redelinghuys		592	617	574	900	0%
Velddrif		1 621	2 405	11017	18 800	5%
Velddrif	Laaiplek	1 093	2 399			
Velddrif	Noordhoek	4 613	5 275			
Bergrivier	Rural	20 360	24 866	25 240		2.3%
Total Urban		25 965	27 827	36 657		4.1%
Total		46 325	52 693	61 897		3.3%
Growth Rate/ annum (AGR)			2.3% (‘01-‘07)	3% (‘07-‘11)		

Table 4.1(b): Population Figures per Town & Sub-area (Bergrivier IWMP, p6).

Hence the following conclusions were drawn for period from 2001 to 2011:

- In comparison to the annual population *growth rate* of 4.1% for the *Bergrivier Municipal towns*, the coastal town of Dwarskerbos and the towns of Aurora, Eendekuil and Goedverwacht have shown relatively higher annual increases in population whilst the coastal town of Velddrif and the central towns of Piketberg and Porterville have shown a steady and similar increase in population than in the Municipal Area;
- The population figures for the isolated villages of Redelinghuys and Wittewater have reflected no growth;
- Velddrif (5%), Piketberg (3%), Porterville (1%) and Eendekuil (16%) reveal the greatest need for subsidized housing as population growth points in the Bergrivier Municipality and having existing infrastructure.

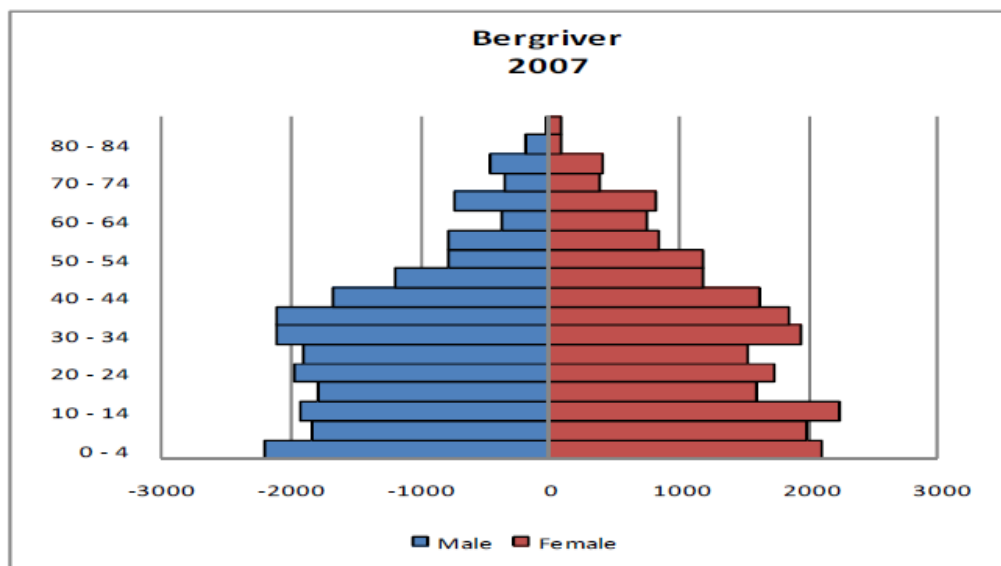
Racial Composition:

The population of Bergrivier municipality, according to the 2011 Census, is mainly Coloured (71%; & 74% in 2001), with 17% (& 20% in 2001) White and 11% (& 6% in 2001) African. Between the years 2001 and 2007, the racial composition of the Bergrivier stayed relatively constant; with small changes in proportional representation of different racial groups.

The number of African population grew proportionally by a mere 1% over this period in comparison to a 1% drop in the White population. The Coloured population increased by a mere 0.2%, equal to a similar decrease in the proportional representation of the Indian/Asian population. (Bergrivier MLB). The racial composition changed over the last 10 years. The number of African people grew with 5% (or 0.5% per annum) over the period, whilst the Coloured and White community both decreased by 3% each (Census 2011).

Age distribution:

Bergrivier has a rather young population with



children (0-14 years) and youth (15-34 years) accounting for 27% and 32% respectively of the total population in 2007. The proportional representation of children decreased slightly with 2% and that of youth increased with 1% in 2011 to 25% and 33% respectively. In 2007 the number of people in the age group 20-34 years has fallen due to, *inter alia*, migration in the pursuit of jobs, schooling and higher learning opportunities elsewhere (Bergrivier IDP, p50-51). In 2011 this trend stays the same and the need for jobs and educational opportunities is still prominent.

Age cohort	0-19	20-34	35-64	65+
No of people per cohort	20204	15004	21104	3963
Percentage of population	34	25	35	7

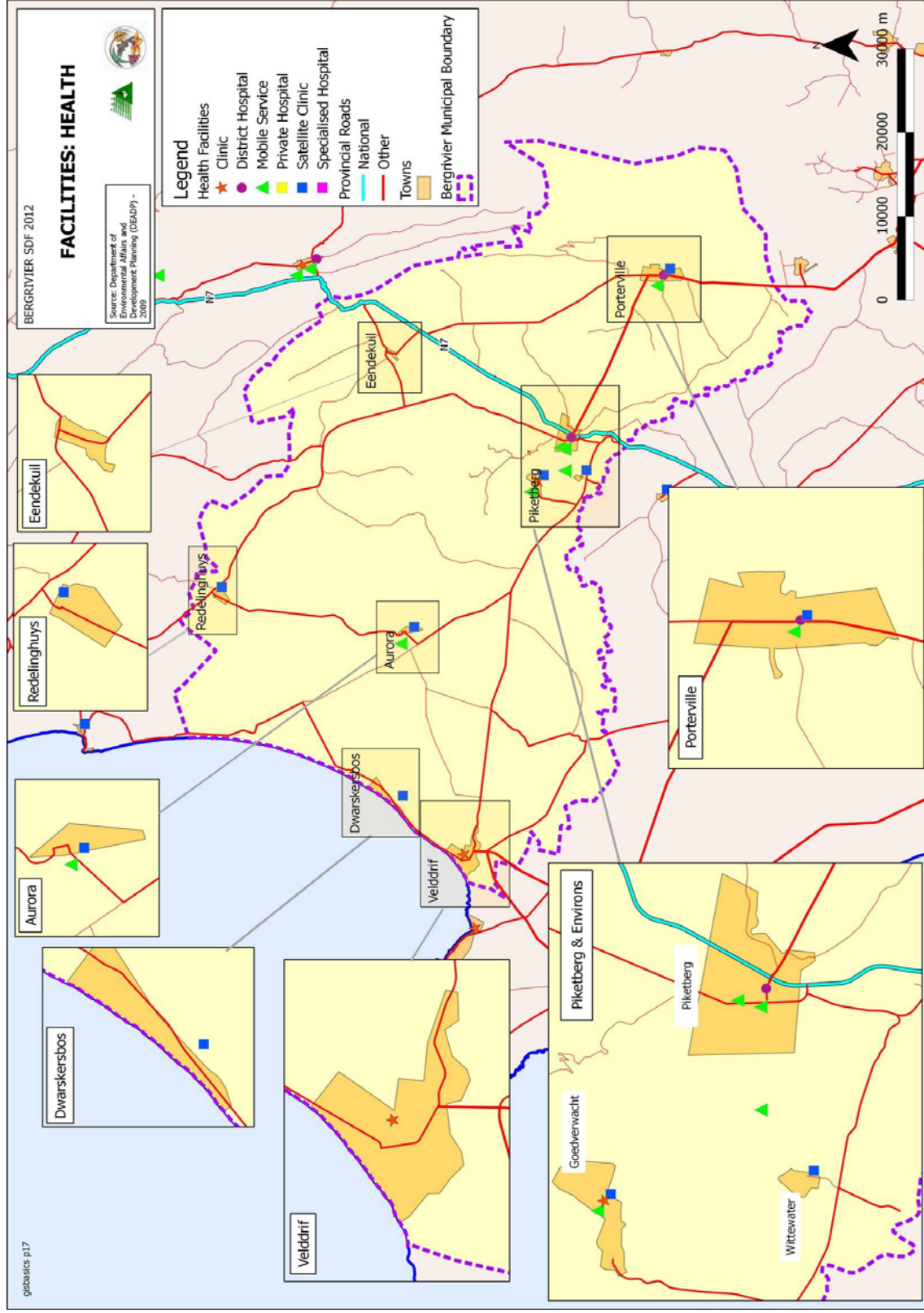
Table 4.1(c): Number of people per age cohort, Bergrivier Municipal Area, Census 2011

People with special needs

Five percent (4.48% or 2076 people) of the population in the Bergrivier Municipal Area have the following special needs:

Disability	Number	Percentage
Sight	274	0.59%
Hearing	347	0.75%
Communication	66	0.14%
Physical	719	1.55%
Intellectual	180	0.39%
Emotional	265	0.57%
Multiple	225	0.49%

Table 4.1(d): Special needs and disabilities in Bergrivier Municipal Area.



Map 4.2 (a): Health facilities, Bergrivier Municipality, 2012.

4.2 Health

Health care provision in the Bergrivier Municipal Area resulted in a professional nurse per health care facility (TB clinics included) for every 1462 persons of which 66 persons have a special need.

Health Facilities

At present there are 14 health facilities in the municipality; consisting of 3 clinics, 5 satellite clinics, 4 mobile clinics and 2 district hospitals. The two district hospitals are located in Porterville and Piketberg.

There is a need for more accessible service delivery facilities, specifically in rural areas (i.e. Velddrif satellite clinic), where people have to walk great distances to access government services. Serious awareness of HIV/AIDS needs to be spread and health policies need to be provided for local context like the sparsely populated rural areas as well as intensive agricultural areas and densely populated areas within the Bergrivier Municipal Area (Bergrivier IDP, p51).

Health Care Staff

Having enough professional healthcare staff working at primary health care facilities and district hospitals is crucial to the delivery of quality healthcare services in any local or district municipality. By end of March 2010, there were no doctors and only 13 professional nurses in the primary healthcare system within the Bergrivier Municipality whilst there were only 4 professional nurses at the district hospitals.

Emergency Services

Two of the West Coast District ambulance stations are found in the Bergrivier Municipality, in Piketberg and Porterville, whilst there are 5 more ambulance stations and 28 ambulances in the West Coast.

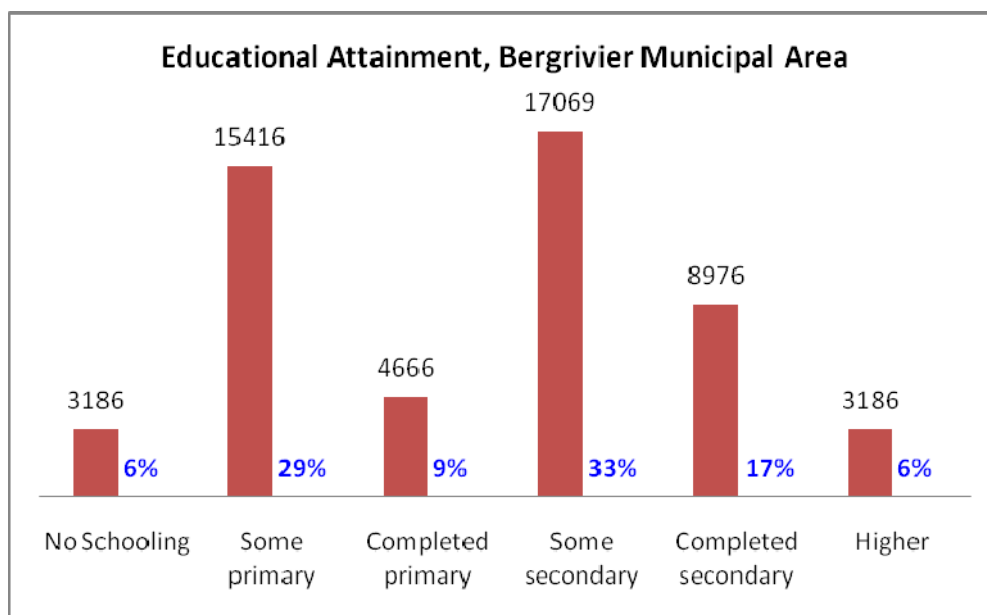
The West Coast District has 2 149 patients using anti-retroviral drugs, with 4 dedicated treatment sites throughout the District. Bergrivier is the only local municipality without an ART (anti-retroviral treatment) site.

There are 16 TB clinics in the Bergrivier Municipality (BergrivierMLB).

4.3 Education

Basic Education and Training

Literacy is a human development indicator. Literate individuals are expected to complete a minimum of 7 years of formal education. Since most pupils embark on their school careers at 7-years-old, the literacy rate is calculated as the proportion of those 14 years and older who have successfully completed a minimum of 7 years of formal education. The literacy rate of the West Coast District is 76.1 per cent compared with an overall provincial rate of 82.4 per cent. The literacy rate for Bergrivier Municipality in 2007 was 70.5 per cent, the lowest in the District. This reveals that approximately 30 per cent of the population older than 14 years still does not have very basic reading and writing skills.



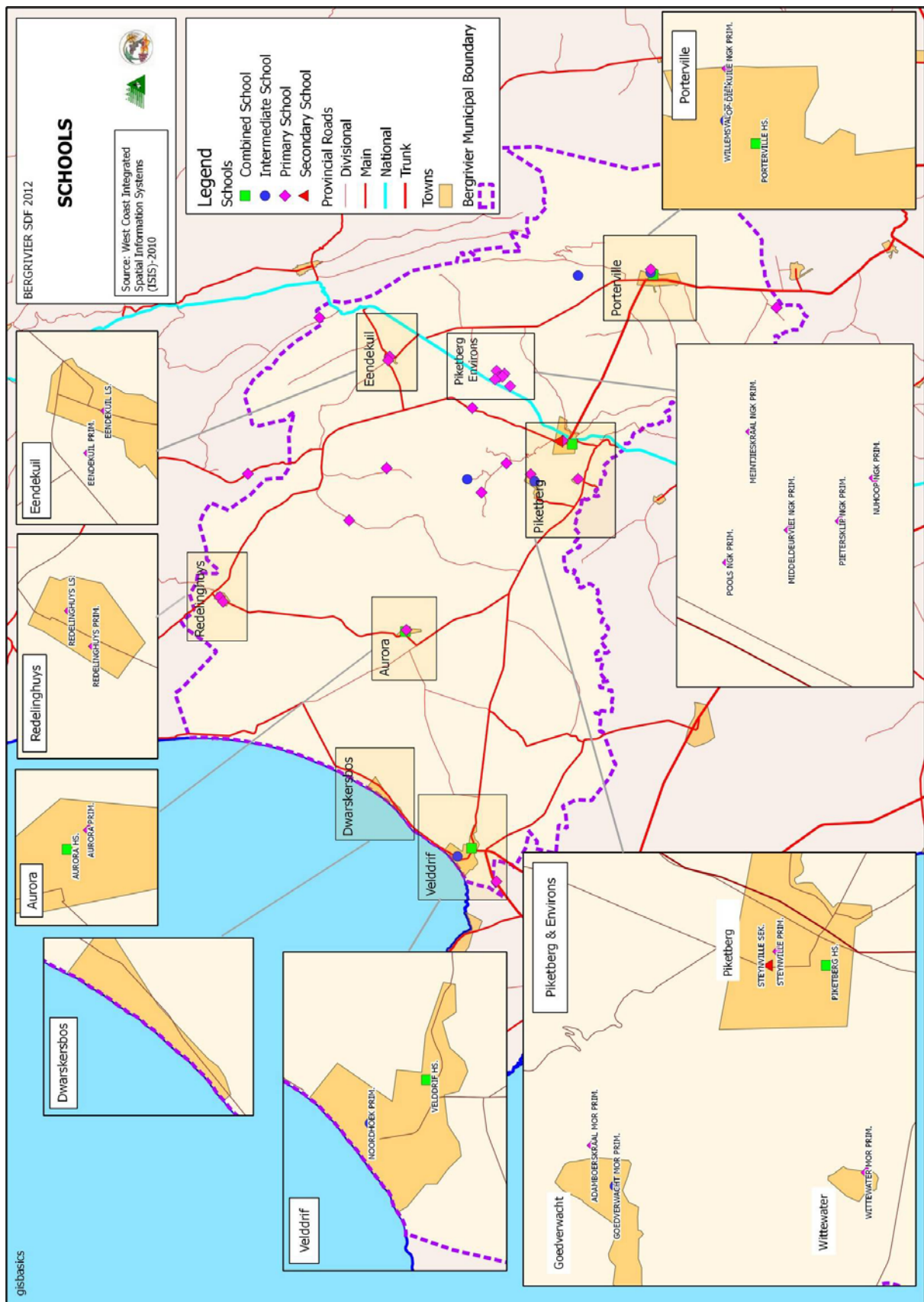
Graph 4.3(a): Educational Attainment, Bergrivier Municipal Area (Statistics South Africa, 2011).

In observing the educational details of Bergrivier's population, most of those who had never attended school were female. On the other end of the education scale, females also dominated with 60 percent post graduate degrees, whilst 62 percent of males had bachelor degrees.

Further Education and Training (FET)

The West Coast Further Education and Training (FET) College is the only public facility in the West Coast District which provides alternative programmes or courses at FET level (grades 8-10) or post-matric. The main office is found in Malmesbury, in the Swartland Municipality. Bergrivier Municipality is the only Local Municipality in the District offering no campus.

Because many learners drop out, the Bergrivier Municipality faces a problem. The Education Department's current data gives an indication of the number of drop outs per grade for 2008. The drop out level may give an indication of issues relating to 2008 in particular, or may show drop outs issues in general. Deeper analysis over a longer period of time would give more precise reasoning. The information cannot confirm whether drop outs have returned in the following year or whether they have permanently left the schooling system. This would require further analysis of tracking individual learners throughout their schooling career. The high drop-out rate is dispersed throughout all grades; it does not stray far from 10%. For many other areas in the District, the drop-out rate is normally higher in the older children in higher grades. Bergrivier should be aware of the school dropout rate and of those learners leaving school at a young age, taking into consideration that it cannot be gauged whether these learners come back into the schooling system or not.



107 Map 4.3 (a): Education facilities, Bergervier Municipality, 2012

Education is a means to discover learners' potential and is also a signifier to employees of ability and skills. Hence, it is crucial for learners to complete their school career. A particular scheme has been established, known as '*No Fee Schools*' to help those in financial turmoil. According to statistics of August 2010, the Education Department database showed that there are 78 'No Fee Schools' in the West Coast district with 19 571 enrolled learners. These 78 schools constitute approximately one third of the total number of learners in the District. Of the '*No Fee Schools*', 11 had 2 204 enrolled learners and were situated in the Bergrivier Municipality (Bergrivier MLB).

4.4 Employment, Unemployment, Income and Expenditure

Sector Employment:

In 2001, most people were employed in Agriculture, followed by Government services, Wholesale & Retail and Manufacturing as the second, third and fourth major employers.

Economic Sector	% People Employed (Census 2001) ⁴
Agriculture, fishing, forestry	55.8%
Mining	1.6%
Manufacturing	7.1%
Electricity and water	0.2%
Construction	3.6%
Wholesale and retail	7.5%
Transport and communication	0.8%
Finance and business services	4.1%
Communication services	5.8%
Government services	13.3%

Table 4.4(a): Percentage of people employed per Economic Sector (Statistics SA, 2001)

At least ten percent (10%) or more people are self-employed in Velddrif and Porterville, whilst twenty four percent (24%) of Dwarskersbos' population is self employed. Eight percent (8.4%) people in Piketberg are self-employed.

⁴ 2011 Census data for number of people employed per Economic Sectors is only available in September 2013

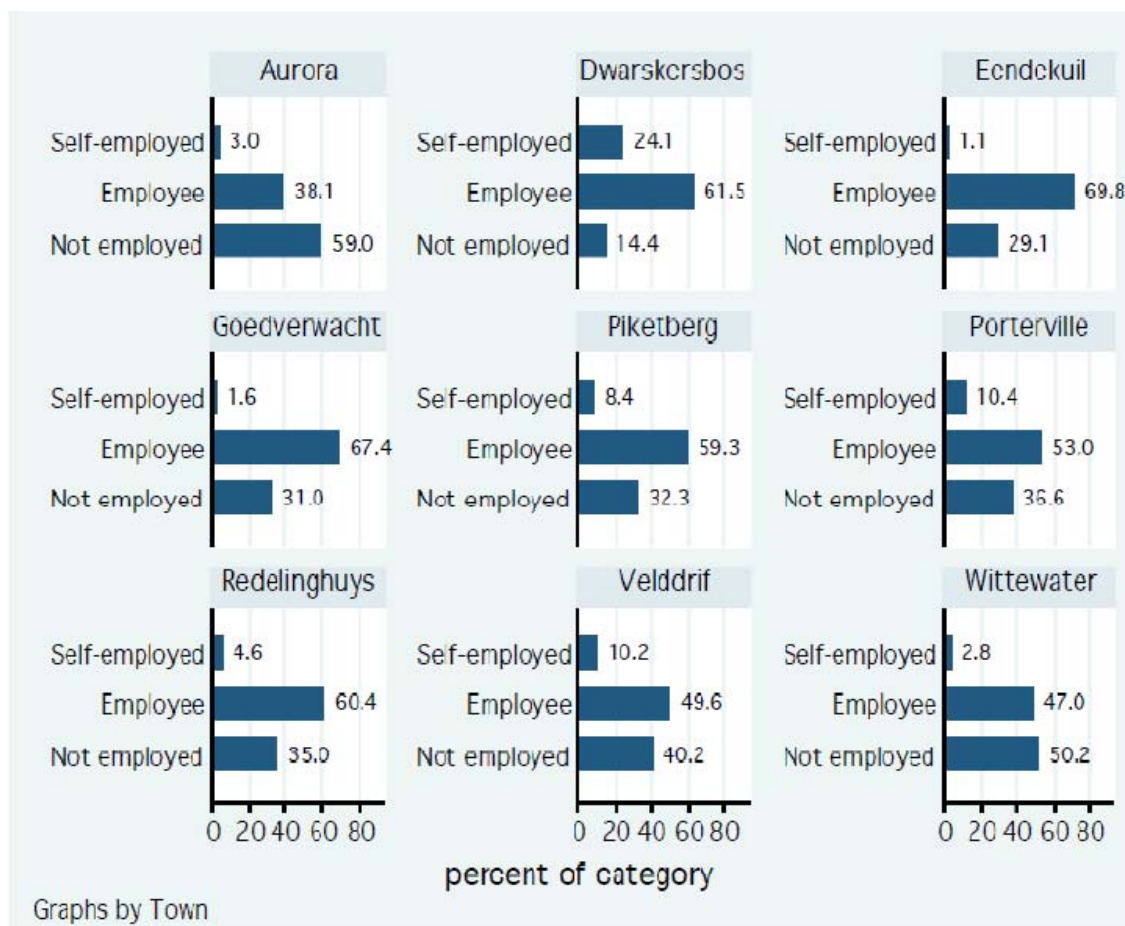


Figure 4.4(a): Employment Status per Town, Bergrivier Municipality.

The IDP identified that economic activity within the Bergrivier Municipal Area flows to and fro between Velddrif, Piketberg and Porterville. These three towns house most of the urban population that form the primary focus for local economic development.

Unemployment

Nearly two thirds of the Bergrivier Municipal Area population is employed, whilst a third is not economically active.

Category	Number of people		Percentage	
	2007	2011	2007	2011
Employed	19804	23235	63	56
Unemployed	1620	1705	5	4
Not economically active	9988	15806	32	39
Discouraged work seeker		444		1

Table 4.4(b): Employment Status, Bergrivier HSP, Annexure B & Census 2011.

From the time period of 2001 to 2011 the number of people wishing to actively take part in the labour market decreased from 69% to 61%. The labour force increased by 3 595, from 21 790 to 25 385 persons whilst the number of employed increased by 3 442 from 19 793 to 23 235 persons. This capitulated whereby the unemployment rate decreased by 0.7% to 8.5% but the number of unemployed individuals increased by from 1 997 to 2 150 people.

Year	Population (15 - 65)	Labour force	% of Population	Employed	Unemployed	Unemployment Rate
2011	42138	25385	61	23235	2150	8.5
2007	29389	19393	66	17332	2061	10.6
2001	31417	21790	69	19793	1997	9.2

Table 4.4(c): Characteristics of Total Working Age Population and Labour Force, 2001 and 2007 (Bergrivier HSP, Statistics SA 2001 & Community Survey 2007 & Census 2011).

Unemployment by Gender:

Unemployment rates in the Bergrivier municipality were fairly evenly distributed between male and female candidates, while negligible changes between male and female unemployment rates differed.

Bergrivier Local Municipality	Unemployment rate within group	Percentage share of the labour force	Percentage share of unemployed
Gender			
Male	10.5	53.3	52.8
Female	10.7	46.7	47.2
Population group			
African	32.2	8.1	24.6
Coloured	10.2	77.3	74.0
Indian or Asian	0.0	0.0	0.0
White	1.1	14.6	1.5
Age			
15 - 19	52.9	4.8	23.7
20 - 24	17.2	13.6	22.1
25 - 34	10.8	28.5	29.1
35 - 44	6.4	31.1	18.7
45 - 54	4.3	15.9	6.5
55 - 65	0.0	6.1	0.0

Source: Statistics South Africa, Community Survey 2007

Unemployment by Age Group:

When looking at the unemployment rates according to age cohort, it is not surprising that the unemployment rate in young people is very high.

Table 4.4(d): Unemployment by Gender, Population Group & Age, 2007.

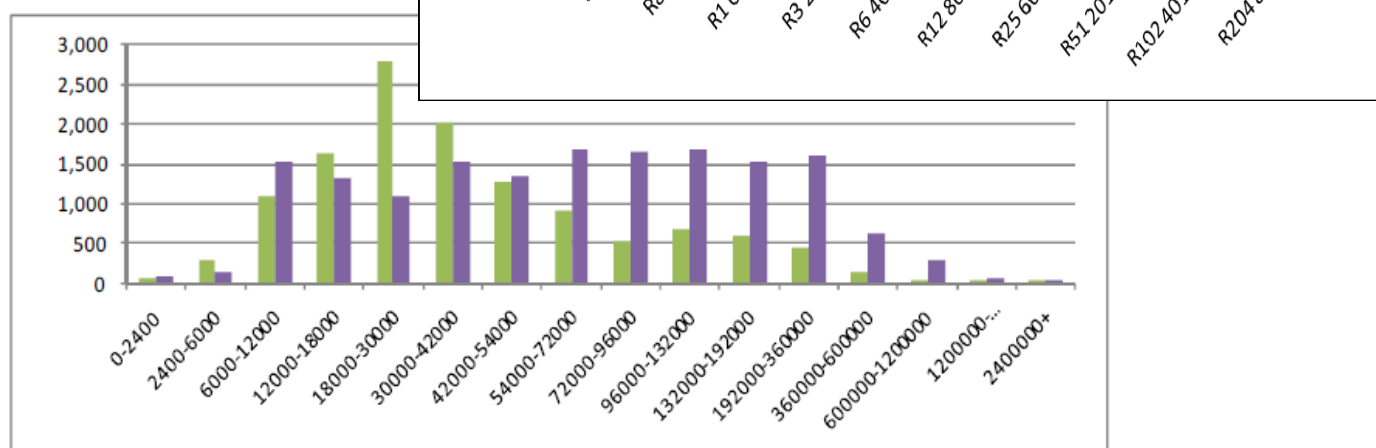
Unemployment for the age cohort 15 to 19 years is the highest at 52.9 per cent with this group representing a mere 4.8 per cent of the total labour force. The group aged 20 to 24 years has an unemployment rate of 17.2 per cent, but represents only 13.6 per cent of the labour force. Together these age cohorts of 15 to 24 years represent approximately 18.4 per cent of the labour force, and 45.8 per cent of the unemployed. Young people are thus over-represented in the unemployed group, in relation to their share of the labour force. These statistics illustrate a disturbing trend of youth that are unemployed in the West Coast District.

Unemployment by Population Group:

In looking into the unemployment rates across population groups, the unemployment rate within the African population group was the highest at 32.2% (percent), followed by the Coloured group (10.2 %), and the White population group at 1.1% (percent).

Income

The total number of poor people in the Bergrivier Local Municipality has decreased over recent years from 46 330 in 2001 to 44 740 in 2007 and to 34 676 in 2011 (Census 2011). In defining 'poverty' one looks at household income relative to the number of people living within that household. These statistics are updated each year to monitor increases in the cost of living. The R30 000 – R40 000 income category for the annual income graph and the R1 601 – R3 200 income category for monthly income are considered as the cut off point for being poor.



Graph 4.4(a): Annual Household Income Categories, 2001(green) & 2009 (purple) (Western Cape Department of Economic Development: Global Insight Data (2010)) and Monthly Household Income 2011 (Census 2011).

Income Categories

The number of households with lower income levels has decreased significantly from the time period of 2001 to 2011, with more (1889 or 24%) households in the lower income category moving into higher income categories. The

same trend can be found in the middle income category. Yet the Bergrivier community is still poor as slightly less than fifty percent (48 %) of households (7881) earn R3 200 or less per month (as per Table 4.4. (e)) and qualify for subsidized housing. The households in the middle income category have increased with 14% (percent) to thirty six percent (36% or 5921) households in the Bergrivier Municipal Area earning a monthly income of between R3 201 and R12 800..

Annual Income in Rand	Number of households		Percentage	
	2001	2011	2001	2011
R0- R 38 400	9 770	7 881	72	48
R38 401 - R 153 600	2 940	5 921	22	36
R153 601-More	646	2 472	5	15
	13 356	16 274		

Table 4.4(e): Annual Household Income, Bergrivier Municipal Area, Census 2001 & 2011

Household Expenditure:

An analysis of household expenditure found that just fewer than 70% of households spend less than R5000 a month, with 51% spending less than R2500. Assuming that a high expenditure is 5000 ZAR or more a month, 16% of Piketberg's population has a high expenditure rate, 36% of Velddrif's population has a high expenditure rate and 25% of Porterville's population has a high expenditure rate. To create

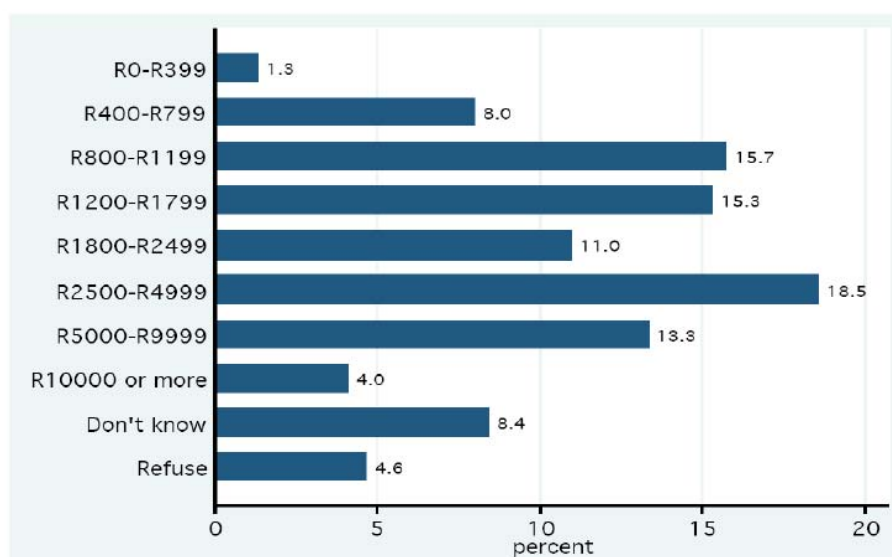


Figure 4.4(b): Income from Grants, Bergrivier Municipality, 2012.

a window for the growth and development of businesses in the area it is critical that expenditure capacity of the Bergrivier community increases and hence household income levels will rise. (Bergrivier LED, p30-40)

Via the household analysis it is evident that households found in urban areas are relatively well developed with all households having basic infrastructure (i.e. electricity and sanitation). While lots of these households also have recognizable moveable assets, household spending is relatively low. This can be associated with a limited earning capacity and a dependence on state grants.

More than half (51%) of households receive one or two government grants. This shows that up to 50% of households are dependent on the state for their monthly income. A town to town based analysis as seen in Graph4.4(c) shows that current dependency on state grants is a reality across all towns in the municipal area. Some

towns have dependency rates of nearly 70% with the lowest being 25% (Bergrivier Municipality, LED, p29-30).

Grants- Indigent and other:

In the towns of Eendekuil, Goedverwacht, Piketberg, Porterville, Redelinghuys and Wittewater more than 50% of the households receive grants, whilst in Dwarskerbos, Velddrif and Aurora fewer than half of the population received grants.

Those households with low levels of income are able to get indigent status in the municipality, allowing these people access to free or discounted services. Municipalities offer extra support through their indigent policy. The indigent policy allows free or discounted rates on basic services like water, electricity, sanitation, refuse removal and the same applies to property rates. The increase in the average household income level should relieve the municipalities' call to support households who are unable to afford basic services.

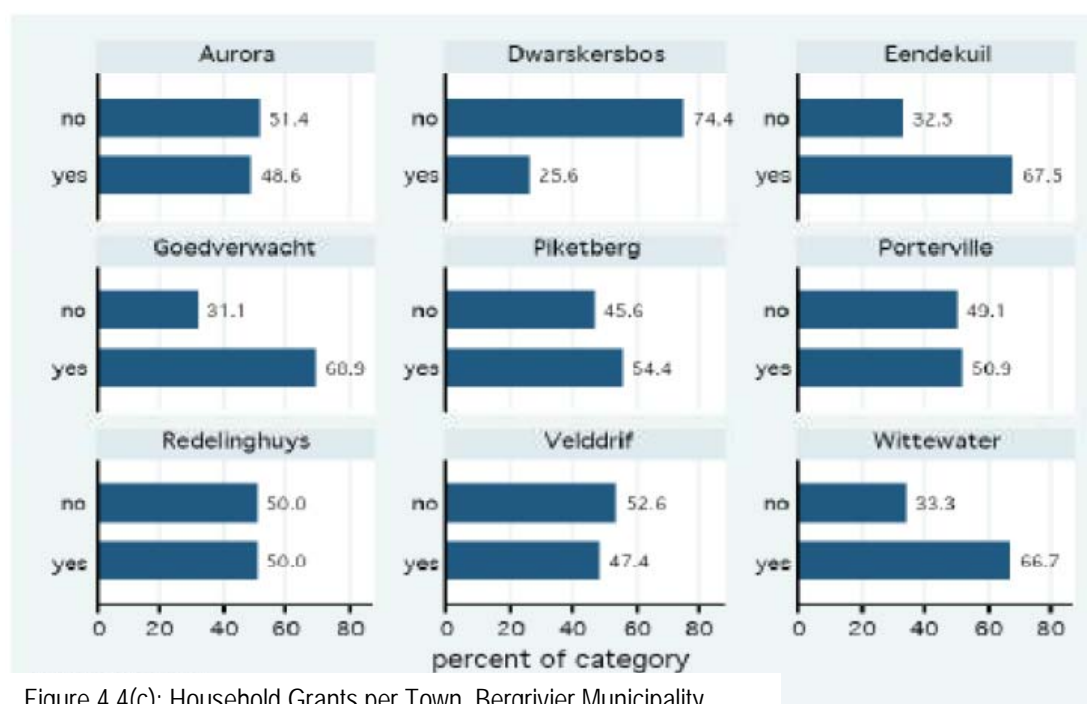
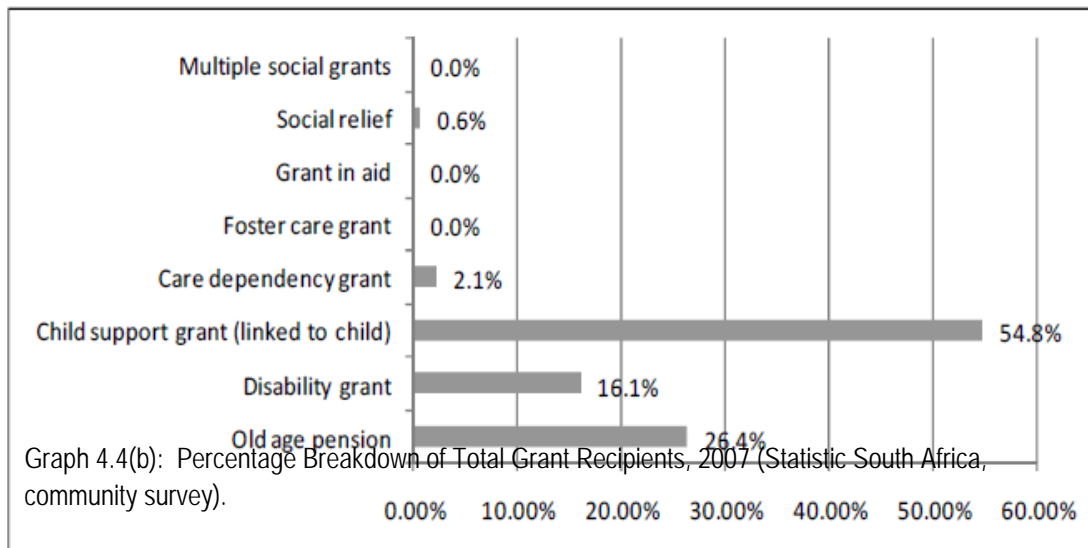


Figure 4.4(c): Household Grants per Town, Bergrivier Municipality.

In September 2010, the number of indigent households in the West Coast District was 15 870. In September 2010, Bergrivier had 2 000 indigent households or 12.6 per cent of the District's total indigent households. The qualifying criteria as possible indigent recipients changes in different municipal areas.

Besides free or discounted services grants, there are 5 166 grant receiving candidates other than those receiving indigent grants (Community Survey, 2007). More than half of the grants (54.8%) allotted to persons in the Bergrivier area were Child support grants; 26.4 per cent of grant recipients were Old age pension recipients and 16.1 per cent

were Disability grant recipients.



4.5 Land Reform

Land Reform Strategies

An Area Based Plan (ABP) is being documented for the West Coast District, which includes the Bergrivier municipal area, by the Department of Land Affairs. A new approach to land reform by the Department is announced by the LASA (Land Acquisition/ Share Acquisition) Program that replaces the SLAG and LRAD programmes. The ABP direct the implementation of the LASA and the PLAS (Potential Land Acquisition Strategy) programmes with land for reform located along nodes where additional development is anticipated and the development potential of areas is high whilst the type of commodities produced is also considered. With regards to the delineation of the urban edge for the towns within the Bergrivier municipal area, it is forecasted that possible land reform would not be negatively affected by any proposal resulting from this intervention (Bergrivier SDF, p60).

Land Restitution and Land Reform projects

An example of a land reform project carried out in the Western Cape is the Mouton's Valley Trust which involved the land that was transferred to the Oak view Village trust. The deciduous fruit farm covers a total of 4.2307 hectares and was transferred to 65 farm workers as beneficiaries residing on the property. (Dept. Rural Development).

Housing for Rural People

Agri-villages for farm workers may be the preferred option particularly in the deciduous fruit industry.

Small Scale Farming Opportunities

The following small scale farming projects exist:

- Goedverwacht/ Wittewater/ Genadenberg: vegetables/ live-stock;
- Porterville commonage: 200ha cattle/ growing medics.

According to the 2008 Bergrivier Spatial Development Framework (p68), there is a demand for agricultural land by small farmers in Redelinghuys.

Food security and Land Reform

Farms were acquired to promote food security in the Bergrivier Municipality.

Land for food gardens can be found in:

- Redelinghuys: Farm Kleinbegin (12ha) Pigs & vegetables;
- Piketberg: AME Church grounds.

Commercial Farming Opportunities are as follows:

- Porterville: Farm Gelukwaarts – Guavas & pigs (Frank Jankovski);
- Porterville: Stoffel du Plessis (20%);
- Aurora: Farms Drommelvlei/ De la Rey/ Rietfontein;
- Aurora: Farm Langrug (Franklin Smith);
- Piket-bo-Berg: Mount Piket;
- Piketberg: Windheuwel (Stefanus Richter);
- Eendekuil: To be confirmed.

4.6 Cemeteries

Only two towns, Eendekuil and Piketberg are in need of land for cemeteries (Bergrivier SDF, p67& town surveys). The location, capacity and potential to integrate each cemetery into the open space system of the town, is described per ward and specifically for each town.

4.7 Crime

Drug related crimes have more than doubled from 99 incidents in 2002/03 to 231 incidents in 2009/10. The increase in drug abuse is attributed to the increased abuse of the substance "Tik". The number of burglaries increased sharply in 2009/10, equalling the 2003/04 year high of 158 incidents (See table below). It is highly likely that the increase in burglaries is related to drug abuse and that drug abuse is a result of the cost of living and the levels of poverty within the Bergrivier Municipality.

Crime Category	April 2003 to March 2004	April 2004 to March 2005	April 2005 to March 2006	April 2006 to March 2007	April 2007 to March 2008	April 2008 to March 2009	April 2009 to March 2010
CONTACT CRIME (CRIMES AGAINST THE PERSON)							
Murder	8	8	11	7	6	4	7
Total sexual crimes	37	23	19	26	17	34	33
PROPERTY RELATED CRIME							
Burglary at residential premises	158	101	118	132	86	119	158
CRIME HEAVILY DEPENDENT ON POLICE ACTION FOR DETECTION							
Drug related crime	66	123	141	257	221	197	204
Driving under the influence of alcohol/drugs	33	47	50	86	65	35	27

Table 4.7(a): Crime in Bergrivier Local Municipality: April to March 2003/2004 to 2009/2010, Western Cape Department of Community Safety, 2010.

Another consequence of drug abuse and in particular alcohol abuse is the prevalence of Fetal Alcohol Syndrome (FAS) found in the municipal area (University of Cape Town) (Bergrivier IDP, p51).

4.8 Property Market patterns and growth pressures

Although the property market has slowed, growth is still experienced in the West Coast of the Western Cape as it is being viewed as a safe place. Hence several developments along the coast have vested or are under consideration. There is a particular demand for holiday and retirement housing Dwarskersbos, Velddrif and Laaiplek. Stock exists for those in the middle to high income range (R650 million+), whilst no stock is available in the GAP market. There is a need for subsidized housing. There is a low demand for long term rental stock.

The property market in the remainder of the municipal area is similar to the rest of the Western Cape with demand picking up slowly. The demand for group housing or town house developments remains somewhat insignificant, with the demand for single-residential units with freehold titles, dominates. The exception to the rule is a demand for retirement villages. There is a demand for rental stock in Piketberg. Stock exists for those in the middle to high income range (R650 million+), whilst no stock is available in the GAP market. There is a need for subsidized housing. (Bergrivier SDF, p72.).

In all other villages (Aurora, Eendekuil and Redelinghuys) the demand for housing is low.

4.9 Municipal Finances

Municipal finances are made up of income generated by the municipality itself i.e. rates and taxes and grant allocations and transfers by Provincial and National Government. Expenditure incurred by the three tiers of government within the Bergvriervier Municipality is briefly outlined below.

Municipal budget

Municipality	2008/09			2009/10			2010/11		
	Audited outcome CAPITAL	Audited outcome OPERATING	Audited outcome TOTAL	Estimated outcome CAPITAL	Estimated outcome OPERATING	Estimated outcome TOTAL	Capex Budget	Opex Budget	TOTAL
	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Bergvriervier	33,153	115,346	148,499	40,617	126,453	167,070	33,943	147,813	181,756
Cederberg	35,490	105,954	141,444	47,786	110,016	157,802	40,813	127,665	168,478
Matzikamma	43,960	124,993	168,953	69,474	126,453	195,927	57,772	144,325	202,097
Saldanha	80,941	340,072	421,013	160,673	451,563	612,236	137,700	541,863	679,563
Swartland	51,696	232,285	283,981	66,264	268,056	334,320	83,603	324,927	408,530
West Coast District	72,374	196,168	268,542	66,377	248,901	315,278	61,395	237,882	299,277
Total	317,614	1,114,818	1,432,432	451,191	1,331,442	1,782,633	415,226	1,524,475	1,939,701

Table 4.9(a): Municipal Budget Figures – 2008/2009 Outcomes, 2009/2010 Estimated Outcomes and 2010.2011 Budget [Audit Outcome Figures for AFS, Appendix E (2)].

The total budget allotted to all local municipalities and the DMA in the West Coast District rose from R1.4 billion in the 2008/09 financial year to R1.9 billion in the 2010/11 year. These budgets comprise of operating and capital costs in the ratio of 80:20. The Bergvriervier municipal budget represents 9% of the total budgets of municipalities in the West Coast district including the West Coast District Municipality, which is 1% less than in the 2008/2009 budget.

However Bergvriervier Municipality's budget increased at 12.5% between financial years 2008/09 and 2009/10 years, and 8.8% between financial years 2009/10 and 2010/11.

Bergvriervier's total budget for the 2010/11 year was R181.8 million, 18.7% of this total was allotted to the capital budget and 81.3% to the operational budget. The capital and operational budgets showed strong increases in 2009/10; even though the operating budget increased again in 2010/11, the capital budget declined compared to the period, but still remained above the 2008/09 amount.

National grants and contributions

Contributions to the budgeted totals came in the form of transfers by National and Provincial Government in the form

of both conditional and non-conditional grant funding. The more substantial part of National Government's transfers is the equitable component which is granted to municipalities to support services available to indigent households. In 2010/11, the National Government's equitable share contribution was 63.2% of its total transfers of R29.6 million to Bergrivier Municipality.

	2008/09	2009/10	2010/11	2011/12	2012/13
Transfers	R'000	R'000	R'000	R'000	R'000
<i>Equitable Share</i>	11 166	14 500	18 735	21 180	23 324
Conditional Grants and Subsidies	5 917	8 818	10 893	11 767	13 877
<i>Local Government Financial Management Grant (Sch 6)</i>	750	1 289	1 000	1 250	1 250
<i>Municipal Systems Improvement Grant (Sch 6)</i>	735	771	750	790	800
<i>Municipal Infrastructure Grant (MIG) (Sch 4 & 6)</i>	4 432	6 758	8 087	9 727	11 827
<i>Integrated National Electrification Programme (Municipal) Grant (Sch 6)</i>			1 056	-	-
TOTAL	17 083	23 318	29 628	32 947	37 201

Table 4.9(b): National Transfers to Bergrivier Municipality, Western Cape Provincial Treasury calculations based on Division of Revenue Act 2010/2011.

Conditional grants and subsidies provided to the Bergrivier Municipality by National Government in 2010/11 year comprise the Local Government Financial Management Grant (R1.0 million), Municipal Systems Improvement Grant (R750 000), the Municipal Infrastructure Grant (R8.1 million) and the Integrated National Electrification Programme Grant (R1.1 million). The Municipal Infrastructure Grant, the largest conditional grant towards Bergrivier, over the period of 2010/11 MTREF amounted to R29.6 million.

Provincial grants and contributions

Table 4.9(d) exemplifies conditional grants transferred by Provincial Sector Departments to the Bergrivier Municipality. Provincial Transfers amounted to R3.1 million in 2010/2011, with R2.4 million coming directly from the Department of Human Settlements, known as the Integrated Human Settlements Development Grant (IHHS). Other provincial departments that give grant funding to Bergrivier Municipality include the Department of Cultural Affairs and Sport (R653 000) of which R553 000 is towards Library Services and R100 000 for the Development of Sport and Recreation Facilities. The Department of Transport and Public Works as well as the Department of Local Government each provide grants of R50 000 each, in the upkeep of Proclaimed Roads and a Community Development Worker Operational Support Grant as well.

Total transfers by Provincial Department's rose in 2011/2012, however decreased prominently in the 2012/2013 financial year as the Library Services Grant became redundant within the same year.

Department and Transfer R'000	Outcome			Main appro- priation	Adjusted appro- priation	Revised estimate	Medium-term estimate			
	Audited 2006/07	Audited 2007/08	Audited 2008/09				2010/11	% Change from Revised estimate 2009/10	2011/12	2012/13
Department of the Premier	40									
zimbizo	40									
Department of Health										
Department of Social Development										
Department of Human Settlements	362	2 959	5 283	2 002	8 052	8 052	2 381	(70.43)	2 758	2 636
Integrated Housing and Human Settlement Development Grant	299	2 902	283	2 002	8 002	8 002	2 381	(70.24)	2 758	2 636
Local Government Master Planning Grant	63	57								
Provincial Contribution towards the Accelerating of Housing Delivery			5 000							
Housing Consumer Education Grant					50	50		(100.00)		
Department of Environmental Affairs and Development Planning	100	150								
Spatial Planning	100	150								
Department of Transport and Public Works		450	80	39	39	39	50	28.21		
Maintenance of Proclaimed Roads			80	39	39	39	50	28.21		
Non-motorised Transport		450								
Department of Agriculture										
Department of Economic Development and Tourism										
Department of Cultural Affairs and Sport	500	223	362	395	523	523	653	24.86	582	
Development of Sport and Recreation Facilities	500						100			
Library Services (Conditional Grant)		223	362	395	523	523	553	5.74	582	
Department of Local Government		54	72	72	48	48	50	4.17	52	54
Community Development Worker Operational Support Grant		54	72	72	48	48	50	4.17	52	54
Total Transfers	1 002	3 836	5 797	2 508	8 662	8 662	3 134	(63.82)	3 392	2 690

Table 4.9(c): Provincial Transfers to Bergrivier Municipality (Provincial Expenditure Estimates 2010, Western Cape Provincial Treasury).

The "Expenditure Estimates 2010", table 4.9 (c) above, show details of Bergrivier Municipality's budget, as in the total budget of the Bergrivier Municipality incorporating the transfer and grant funding received from National and Provincial Government.

The information in table 4.9(d) exemplifies total payments made by Provincial Sector Departments in Bergrivier Municipal. This differs from the expenditure estimates information in that this is not reflected in the budget of the Municipality, although it involves services offered within the Municipality's boundaries.

The total Provincial Spending in Bergrivier Municipality for the 2010/2011 financial year totals R122.2 million and rose

to R132.1 million and R191.6 million in the 2011/2012 and 2012/2013 financial years respectively.

Department R'000	Outcome			Main appro- priation	Adjusted appro- priation	Revised estimate	Medium-term estimate			
	Audited 2006/07	Audited 2007/08	Audited 2008/09				2010/11	% Change from Revised estimate	2011/12	2012/13
Department of the Premier										
Provincial Parliament										
Provincial Treasury										
Department of Community Safety										
Department of Education	54 137	61 117	72 020	80 936	83 422	83 422	92 668	1108	100 315	106 045
Department of Health	945	15 575	19 128	19 972	20 356	23 139	23 271	0.57	24 883	26 380
Department of Social Development										
Department of Human Settlements	299	2 956	5 329	2 074	8 074	2 674	2 381	(10.96)	2 758	2 636
Department of Environmental Affairs and	100	150								
Department of Transport and Public Works			14 142	1658	1658	1658	1554	(6.27)	1618	54 618
Department of Agriculture	80			1470	1470	1470	17 110	16.33	1887	1887
Department of Economic Development and Tourism										
Department of Cultural Affairs and Sport	500	223	362	395	523	523	553	5.74	582	
Department of Local Government				72	48	48	50	4.17	52	54
Total	56 061	80 101	110 981	106 577	115 551	112 934	122 187	8.19	132 095	191 620
Total Transfers to Bergrivier Municipality	1002	3 836	5 797	2 508	8 662	8 662	3 134	(63.82)	3 392	2 690
Transfers as a percentage of Provincial Payment and Estimates	179	4.79	5.22	2.35	7.50	7.67	2.56	(66.56)	2.57	140

Table 4.9(d): Western Cape Provincial Departments' Payments and Medium Term Expenditure Estimates for Bergrivier Municipality (Provincial Expenditure Budget Estimated, 2010).

The departments with the highest amount of total provincial payments, in Bergrivier, in the 2010/11 year were Education (75.8 per cent) and Health (19.1 per cent). These two departments combined were responsible for 94.9 per cent of all payments by Provincial Departments in 2010/11 in the Bergrivier Municipality (Bergrivier MLB). A similar contribution by the departments of Education and Health were made in other municipalities.

Municipal income

Municipal income is approximately R70 million (2008/2009) or approximately 55% of the total municipal revenue. The sources of municipal income are electricity (46%), property rates (30%) and water (13%) whilst sanitation and refuse represents 10%.

Supplying housing should generate additional municipal income, but will do so over time whilst the municipality has to provide bulk infrastructure at once. Alternative sources of income should be investigated.

Chapter 5: Status Quo – Built Environment, Bergrivier Municipality

5.1 Hierarchy and role of settlements

A study, Growth Potential of Towns in the West Cape, 2004 looked into towns in the Western Cape and created an *investment* hierarchy which can be seen in the table below:

Town	Pop '11	Quality Growth	Quantity Development	Human Needs	Investment Priority
Aurora	578	Very low	Low	Low	Minor Social
Dwarskersbos	670	Low	Low	Very low	Minor Infrastructure
Eendekuil	1530	Very low	Low	Medium	Major Social
Goedverwacht	1979	Very low	Low	Medium	Major Social
Piketberg	12075	Medium	Medium	Low	Major Infrastructure
Porterville	7957	Low	Medium	Low	Major Infrastructure
Redelinghuys	574	Very low	Medium	Medium	Major Social
Velddrif	11017	High	Medium	Low	Major Infrastructure

Table 5.1(a): Hierarchy of towns in the West Coast District (Growth potential of towns in the Western Cape 2004).

To add to this, a *town* hierarchy was developed, based on the population figure as the primary indicator (West Coast Urbanization Strategy, 2002).

Towns	Population, 2001	Population 2011
2nd Order		
Piketberg	5370	12075
Velddrif	4560	11017
Porterville	3362	7957
3rd Order (Alphabetically)		
Aurora	674	578
Dwarskersbos	665	670
Eendekuil	675	1530
Redelinghuys	672	574

Table 5.1(b): Urban hierarchy of towns in the Bergrivier Municipality (West Coast Urbanization Strategy, 2002 & Census 2011).

The hierarchy of towns shows the relationship among the different order towns. There are no first order towns in the Bergrivier Municipality. There is a relationship between Piketberg as the central place and the second order towns as well as between Piketberg and the third order towns. .

5.2 Settlement Densities

Provincial Norm

The Provincial Spatial Development Framework notes that the average density of towns in the Western Cape area is 9 to 12 dwelling units per hectare. This spatial policy document subsequently states a gross population density of 100 people per km² as the minimum threshold for sustainable urban development (including infrastructure provisioning) which results into 25du/ha with four people per dwelling. This densification norm then gets applied within urban edges as geographic measurement.

Density per Town

The gross and netto residential density of each town is listed in the table below:

Town	Population		Gross Population Density (per km ²)		Gross du/ha	Netto du/ha
	2008	2011	2008	2011	2011	2011
Velddrif/ Laaiplek	10 700	11017	15,4	16	5.1	10.5
Dwarskersbos	800	670	6,9	5.8	5.8	13.1
Redelinghuys	840	574	12,4	8.6	4.3	10.8
Aurora	420	578	5,9	8.1	4	7.1
Eendekuil	1 000	1530	13,5	20.7	4.8	18
Piketberg	11 900	12075	33.9	34.4	5.9	13, 8
Porterville	7 900	7957	28,4	28.7	5.6	14.3

Table 5.1(c): Population density per Bergrivier Municipal Town (Bergrivier SDF, 2008 & Census 2001).

The densities within different zones differ and the table below provides the average erf size. The towns are distinguished by diverse land-use on areas situated between the respective residential neighbourhoods.

Town	Residential node	Dwelling units/ hectare	Average erf size
Velddrif	Res. zone 1 (Laaiplek)	4,9	1008m ²
	Res. zone 2 ("ou" Velddrif)	5,3	1066m ²
	Res. zone 3 (Noordhoek)	20,1	472m ²
	Res. zone 4 (Port Owen)	8,6	817m ²
Piketberg	Res. zone 1 (subsidized housing)	10,6	463m ²
	Res. zone 2 (remainder)	3,9	1199m ²
Porterville	Res. zone 1 (remainder)	4,2	1265m ²

	Res. zone 2 (subsidized housing)	18,4	317m ²
Dwarskersbos	Res. zone 1 (old town)	12,3	807m ²
	Res. zone 2 (Kersbosstrand)	14,6	680m ²
Eendekuil	Res. zone 1 (remainder)	2,7	1659m ²
	Res. zone 2 (subsidized housing)	12,7	269m ²
Redelinghuys	Res. zone 1 (remainder)	4,3	1199m ²
	Res. zone 2 (subsidized housing)	11,7	320m ²
Aurora	Res. zone 1 (remainder)	4	1696m ²
	Res. zone 2 (subsidized housing)	13,3	501m ²

Table 5.1(d): Residential density as per residential node with average erf size, Bergrivier SDF, p72.

Towns also contain vacant areas as passive and active open space. Usually passive open space restricts development potential due to their conservation or risk nature.

5.3 Land Use Management Issues

Growth Model

The urban structure of the major towns does not resemble the centric form having a dense urban structure at the centre (normally the Central Business District) and less dense areas on the periphery. Instead, the sectorised and multi-nuclei form characterizes the land-use model in Bergrivier towns.

Densification

Densification norms should be established to preserve the sense of place of towns and villages in Bergrivier. Densification should be enhanced within nuclei and sectors and as link between sectors. Mixed uses should also promote densification. The demand for group housing or town house developments remains somewhat insignificant, with the demand for single-residential units with freehold titles as the dominant trend. The phenomenon within the housing market where single-residential units are preferred, limits densification where the solution is to create an environment with smaller erven and more units. The exception to the rule is a demand for retirement villages (Bergrivier SDF, p72).

Minimum erf sizes (500m² in Velddrif & Dwarskersbos and 480m² in all other towns) may prohibit densification by means of subdivision.

The table below provides an overview of the various densities that exist versus what can be obtained through different zonings.

Town	Gross du/ha	Nett du/ha	Residential 2/ General residential: u/ha (4:1) ⁵	Residential 3: u/ha	Residential 4 & 5: u/ha	Minimum Erf size
Velddrif/ Laaiplek	5.1	10.5	30 (group housing); 40 with council consent	50	Determined by surrounding land use restrictions	500
Dwarskersbos	5.8	13.1				
Redelinghuys	4.3	10.8	20 (3:1)			480
Aurora	4	7.1				
Eendekuil	4.8	18				
Porterville	5.6	14.3				
Piketberg	5.9	13, 8	35 – 40 (open space & roads included)	Not applicable	Not applicable	480

Table 5.1(e): Gross and Nett densities per hectare, Bergrivier Municipality.

The estimated coverage (in hectares) of the dominant land-use categories in each of the towns is as follows:

Town	Total extent	Residential (ha)	Business (ha)	Industrial (ha)	Open Space (ha)	
					Active	Passive
Piketberg	351	180.42	31.2	1.45	15.66	14.65
		51%	8.8%	-	4.5%	4%
Porterville	277	197.8	12.5	10.5	7	29.9
		71.4%	4.5%	3.7%	2.5%	10.7%
Velddrif/ Laaiplek	690	355.3	21.6	43.2	59.3	63.8
		51.4%	3.1%	6.2%	8.5%	9.2%
Dwarskersbos		51.3	0.7	0	0	22.3
	116	43.9%	0.6%	0	0	18.9%
Redelinghuys		30	2.1	1.22	2.7	2.26
	67	44.7%	2.9%	1.4%	2.9%	2.9%
Aurora		41.5	0.7	0.52	5.3	1.5
	71	57.7	0.9	0.7	7	1.4
Eendekuil		19.4	3.0	8.1	5.3	12.93
	74	25.6%	4%	10.8%	6.7%	16.2%
SA average		49.7%	4.6%	6.3%	7.5%	

Table 5.1(f): Coverage of land-use categories as per land-use maps, not zoning maps (Bergrivier SDF, p50 & 89 – 93).

5.4 Transportation

Because of the outstretched nature of the jurisdiction area vehicle use is the preferred mode of travel. Therefore, maintenance as well as the upgrade of existing roads on an on-going basis is very important for the functioning of the region.

⁵Ratio of 4:1 in relation to the adjacent single-residential densities

National and Main Roads

The N7 Main Road and R27 are in good condition. The N7 national road falls under the jurisdiction of the South African Roads Agency Limited (SANRAL). With the upgrading of the intersection at Piketberg completed and the upgrading of Piekenierskloof, the northern gateway of Bergrivier municipality has been completed.

The R27 is managed by the District Roads Engineer and runs through Velddrif and Dwarskersbos to Elands Bay and is currently being resurfaced. The urban road networks are considered sufficient to accommodate expected urban growth within a five year planning timeframe.

The N7 and R27 dissect the Bergrivier Municipal Area in two precincts with the R399 and R366 connecting the two main roads between Piketberg and Velddrif and Eendekuil (from N7) and Elands Bay. The R399 is in desperate need of being upgraded.

Internal road network

The internal road network found in each of the towns is adequate and does not require additional capacity. The maintenance of the gravel road surface in some towns requires constant attention whereby the municipality will give funds for road maintenance. The most expense was however used in the construction of pedestrian pavements and speed bumps, in keeping with community needs.

Road Surfaces

In Bergrivier, a total of 1 099 km of roads were recorded, with 28.7% (percent) being surfaced and 71.3% (percent) with a gravel surface. The percentage of roads surfaced in Bergrivier is nearly 10% more than in the West Coast District where 19.6% roads is surfaced (Bergrivier MLB).

Category	Surfaced	Gravel	Total	Surfaced	Gravel
	Kilometres			Proportional Distribution	
National	47.84	0.00	47.84	100.0%	0.0%
Trunk	51.28	0.00	51.28	100.0%	0.0%
Main	282.79	54.17	336.96	83.9%	16.1%
Divisional	43.85	298.09	341.94	12.8%	87.2%
Minor	16.78	746.83	763.61	2.2%	97.8%
Total	442.54	1099.09	1541.63	28.7%	71.3%

Table 5.4(a): Bergrivier Municipality Roads by Type of Road, Western Cape Department of Transport, 2010.

In Bergrivier Municipality, all national and trunk roads are surfaced, main roads are mostly surfaced (83.9%), whilst divisional and minor roads are mainly gravel-topped (Bergrivier MLB).

Public Transport Infrastructure

The transport infrastructure in the municipal area can be used for public transport but there are limited modes of transport. Minibus taxis transport people based on demand while bus and minibus services travelling inland and to the Metropole operate on a regular schedule. The long distance passenger train can only be boarded in Cape Town.

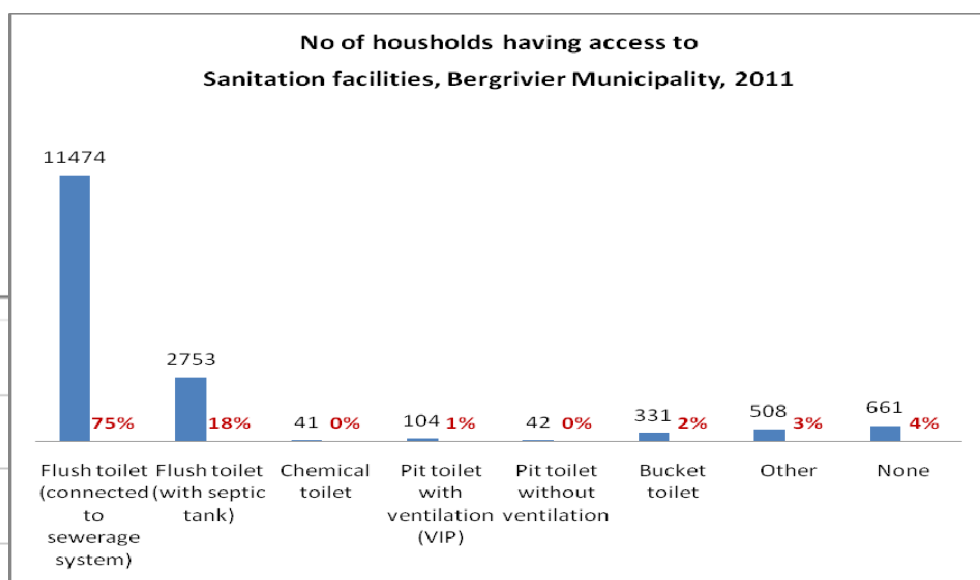
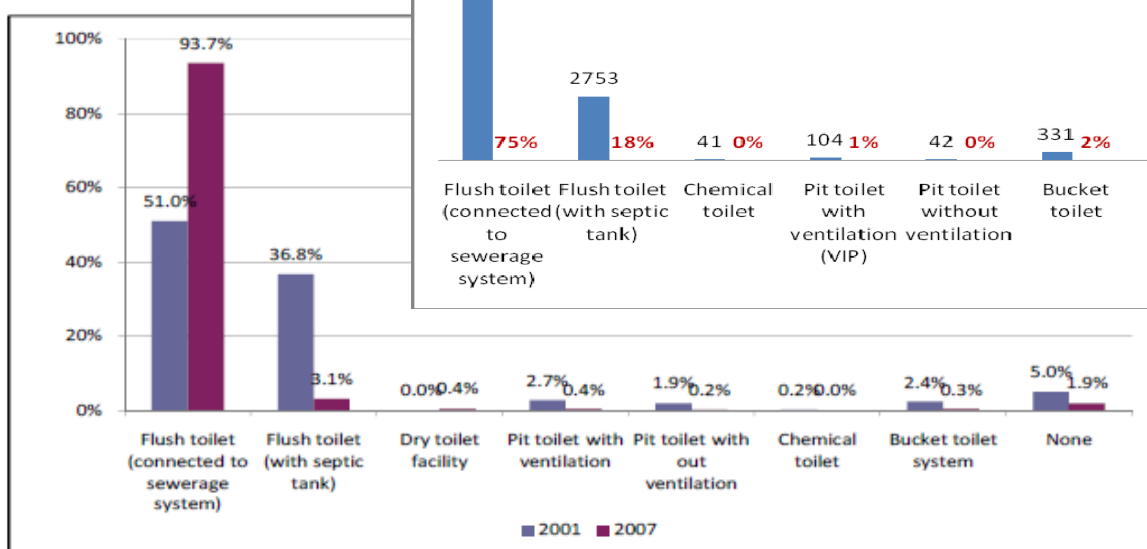
5.5 Water/infrastructure

The percentage of residents that have access to piped water inside their homes equals 88% (percent). This shows an increase from the 73% (percent) apparent in 2001 (Bergrivier IDP, p55). The most significant improvement in water services is that the proportion of total households in Bergrivier with easy and convenient access to clean potable water inside dwellings, has increased from 75.0% (percent) in 2001 to 87.8%(percent) in 2007 (Bergrivier MLB).

There are limited available water sources although they are diverse. The bulk water supply to the Velddrif/ Dwarskersbos area is provided by the West Coast District Municipality and the local municipality is responsible for distributing the water. Sixty three percent (63%) of households obtain water from the municipal water scheme whilst twenty two percent (22%) of households obtain water from boreholes or springs (Census 2011). The Department of Water Affairs and Forestry provides for a combined 2 - 3% growth in water demand per annum per municipality. The source of the water supply to the Velddrif/ Dwarskersbos area comes from the Voëlvei Dam, Misverstand and Langebaan Aquifer. This allocation amounts to a total of 11% of the total supply to the Saldanha/ Vredenburg area. All other towns are self-reliant in the sourcing, purification and distribution of water (Bergrivier SDF, p55 & p56). Alternative water sources are investigated i.e. decentralized solutions like desalination. It should be noted that rain water stored in tanks is the water source of only 1% of households in the Bergrivier Municipal Area.

5.6 Waste Water Treatment (Sanitation)

Between 2001 and 2011 there has been a noticeable rise in the number of households in



Bergvriër with access to a flush toilet, either connected to a sewerage system or with a septic tank, increasing from 87.8% to 99%.

Recent investigation into waste water services has shown that the national standards and international best practice is often not administered to. The Green Drop Regulatory Report Card of 2009 considers the following criteria for waste water treatment:

- Process control, maintenance and management skills;
- Monitoring programme efficiency;
- Credibility of waste water sample analysis;
- Regular submission of waste water quality results sent to the Department of Water Affairs;
- Waste water quality compliance;
- Waste water failures response management;
- Waste water treatment works capacity.

The Western Cape has 156 of the 852 waste water treatment facilities of the total found in the country. Nearly seventy percent (69% or 20 of 29) of all Water Service Authorities were assessed. The provincial average Green Drop score was 47% (percent).

In total, 3 waste water treatment plants were evaluated in Bergvriër Municipality. Bergvriër scored an average of 11% (percent). The regulatory impression indicated that the performance of Bergvriër Municipality as a whole was very poor. This means that general improvement is needed in all areas for waste water treatment. The waste water treatment facilities of Piketberg, Porterville and Velddrif were assessed, each scoring at 11% (percent), 16.5% (percent) and 5% (percent), respectively (Bergvriër MLB).

The cost to address the critical infrastructure service backlog is listed below (Bergvriër IDP, p55).

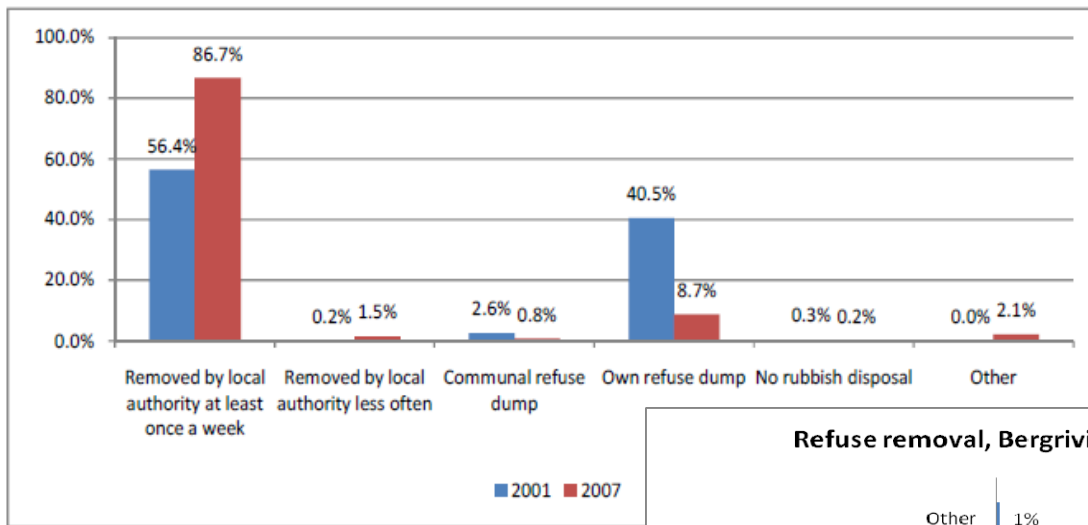
Sewerage Infrastructure Project	Area	Cost to company
Sewer treatment plant (Upgrade)	Velddrif	R 25 million
	Piketberg	R 16 million
Oxidation ponds	Aurora	R 6 million
	Redelinghuys	R 5.5 million
	Eendekuil	R 4.5 million
Sewer Network	Velddrif	R 35 million

Table 5.6(a): Waste Water Treatment Infrastructure Costs, Bergvriër Municipality, 2011.

5.7 Solid Waste Management

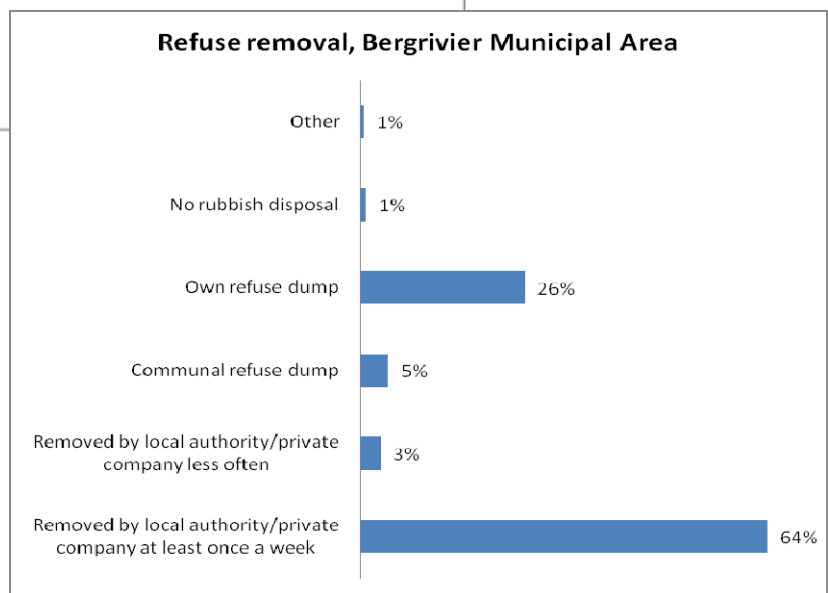
In 2001, only 56.4% (percent) of households had their refuse removed weekly and in 2007, this had increased to 86.7% (percent) but decreased to 64% (percent) in 2011; reducing the proportion of households with their own refuse dump to 26% (percent). In 2011, 5% (percent) of households still had to make use of a communal refuse dump facility or had to make use of their own dumping storage space. One percent (1%) of households had no access to a

rubbish disposal facility (Bergrivier MLB).



Graph 5.7(a): Solid waste removal, Bergrivier Municipality (Statistics SA, Census 2001, Community Survey, 2007 & Census 2011).

Bergrivier Municipality does not use a licensed waste disposal site. All municipal waste that is collected from the residents is dropped off at the Piketberg or Velddrif Refuse Transfer Stations. Here it awaits transport and final disposal at the Highlands landfill near Malmesbury according to an agreement with Swartland Municipality.



Public Drop-off facilities are part of the public service provided in the towns of Aurora and Porterville.

There are a number of waste disposal sites within the Bergrivier Municipal area that have been closed down after the commissioning of the two Refuse Transfer Stations. These are situated near Velddrif, Piketberg, Porterville and Aurora. Unfortunately these sites, although closed, are still being used by the public for garden waste and builder's rubble. The Velddrif site has appealed for a waste license for closure. All of these sites should be properly closed, even for garden waste and builder's rubble, and applications for waste licenses for closure should be submitted to the licensing authority. Stopping illegal dumping is a challenge for the municipality (Bergrivier IDP, p55).

There are numerous private disposal and/or treatment facilities used by Bergrivier Industries and Health Care Waste Generators. The facilities are discussed in more detail below:

- **Hazardous Waste:**

The Vissershok Waste Management Facility (VWMF), owned by an Enviroserv/Wasteman partnership and operated by Dispose-Tech, has an H: H operating permit from DWAF. The site is found about 800m west of the N7, at Vissershok and is operated and audited in terms of its permit conditions. All hazardous waste accumulated in the Bergrivier municipality are disposed at this facility.

- **Oil Disposal/Recycling:**

Used Oil is mainly collected by Oilkol and brought to the Fuel Firing Systems (FFS) oil recovery plant located alongside the N7 at Vissershok. The facility is supported by the Rose Foundation and operates as a scheduled process under the Air Pollution Control Act (Act 45 of 1965) and has ISO 14001 accreditation. All waste lubrication oils collected by Oilkol have first been transported to the specialized Rose Foundation depot in Brackenfell. The oil is sold to Fuel Firing System Refiners for reprocessing.

- **Solvent Recycling:**

Very little solvent recycling was carried out.

- **Silver and photographic heavy metal solution:**

Cape Precious Metals (CPM) is based in Cape Town and recovers silver as well as other precious heavy metals from photographic labs in the printing industry, private local photographic labs and waste radiology fluids from the Health Care Industry. Silver is recovered by electrolytic methods for photographic fixers and developers while passive recovery is used for radiology effluents.

- **Health Care Waste:**

The two most well-known private incinerators used are the Solid Waste Technologies facility in Milnerton and the BCL facility at the Medical Research Council in Delft. These two facilities operate as scheduled processes under the Air Pollution Act (Act 45 of 1965). (Bergrivier IWMP, p46-49).

Seven landfill sites are located in Bergrivier, including Aurora, Redelingshuys, Piketberg, Velddrift, Porterville, Eendekuil and Goedverwacht (Bergrivier MLB).

5.8 Energy

The majority of residents, i.e. 74%(percent), have access to electricity in 2011 (Census 2011). The long-term trend shows that this scenario has worsen as in 2001 90.6% (percent) of residents had access to electricity (Bergrivier IWMP, p55).

In Bergrivier, the amount of households using electricity for lighting increased from 91.6% to 94%(percent) between 2001 and 2011, while the usage of other types of energy which present potential fire and possible health hazards, such as paraffin and candles, has been reduced. The number of households using candles decreased significantly from 7.2%(percent) to 3.6%(percent) (Census 2011).

Several land use applications for wind and some solar farms are currently under consideration.

5.9 Telecommunications

For each household a measure of household assets was taken. It was found that while only 27% of households had a landline, 82% (percent) of them had cell-phones (2011). In addition, 81% (percent) had radios while nearly all had Televisions (Bergrivier LED, p49).

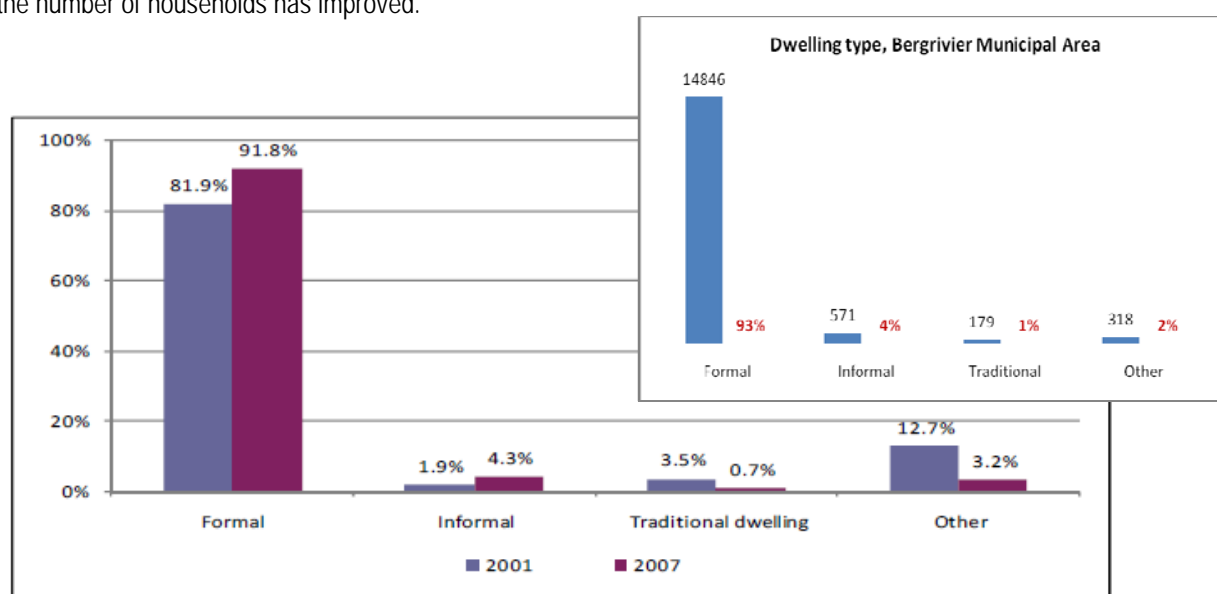
5.10 Human settlements

The demand for subsidized housing is illustrated in the housing waiting list compiled for each town in the municipal area.

TOWN	Number of households: 2010 waiting list	Number of households: 2011 waiting list
Aurora	70	66
Eendekuil	90	194
Goedverwacht	0	13
Piketberg	1 500	1675
Porterville	800 (Currently)	939
Wittewater	0	11
Velddrif	500	710
Redelinghuys	120	136
GRAND TOTAL	3 780	3744

Table 5.10(a): Number of persons on the housing waiting list, 2010.

In looking at the information obtained from Statistics South Africa in 2001 and 2007, the housing situation relative to the number of households has improved.



Graph 5.10(a): Dwelling type occupied by Household, 2001 and 2007 (Statistics SA, Census 2001 & Community Survey, 2007, Census 2011).

A larger proportion of the population has now got access to formal housing, increasing from 81.9% in 2001 to 93%(percent) in 2011. Even though the percentage of households in formal housing increased, over the same period, the proportion of households in informal households also increased, from 1.9% (percent) in 2001 to 4% (percent) in 2011. This is reflected in the proportional decrease in households living in traditional or other housing. The likes of which include ships, boats, caravans, tents, workers' quarters, hostel/room and other forms of housing (Bergrivier MLB).

5.11 Land

The entire Bergrivier area covers a range of around 405 668 hectare. In total, 0.4%(percent) or 1 766ha of this geographic land is urban land and 99.6% (percent) rural land. Overall Bergrivier takes up 14.2% (percent) of the entire West Coast geographic land, hence it being named one of the smaller municipalities in the district.

Velddrif

The town of Velddrif has vacant land strategically positioned to accommodate infill development. These land units are surrounding the golf course that forms the "centre" of the town.

Erf No	Erf size	Owner	Title deed No	Proposed Development
192	4.88ha	Velddrif Municipality	T44730/1996	Mid value housing
383	2.7156ha	Educational Trust	T7227/1973	Mid value housing
188	8000m ²	Educational Trust	T6879/1953	Mid value housing
Near sports field, adjacent to subsidized housing	7.4ha			Affordable housing
1283 (southern portion)	26.5ha	Bergrivier Municipality		Affordable housing/ Industrial
1099 (Open Space)	5.13ha		Not registered	Mid Value housing
1098 (Open Space)	1.8ha		Not registered	Mid Value housing
Erf 471 (portions)	223, 29ha	Velddrif Municipality	T28103/1970	
Erf 472	856ha, 2ha	Velddrif Municipality	T11910/1957;	Affordable housing
Erf 764	2ha	Velddrif Municipality	T3755/1983	Affordable housing

Table 5.11(a): Vacant Erven, Velddrif, Bergrivier Municipality.

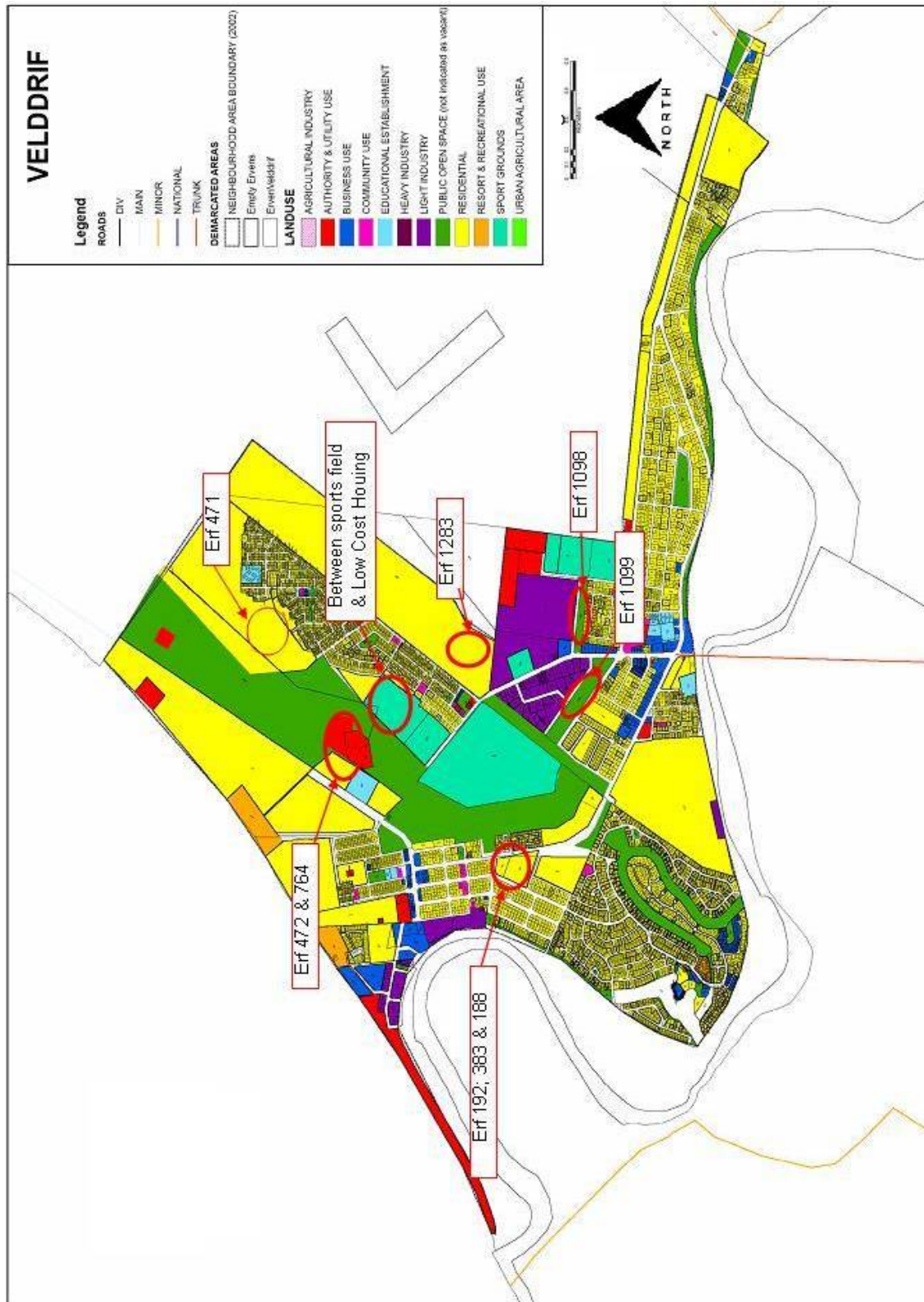
Piketberg

The town of Piketberg has limited opportunities for infill development on vacant land to increase densification and ensure the restructuring of the *apartheid* layout.

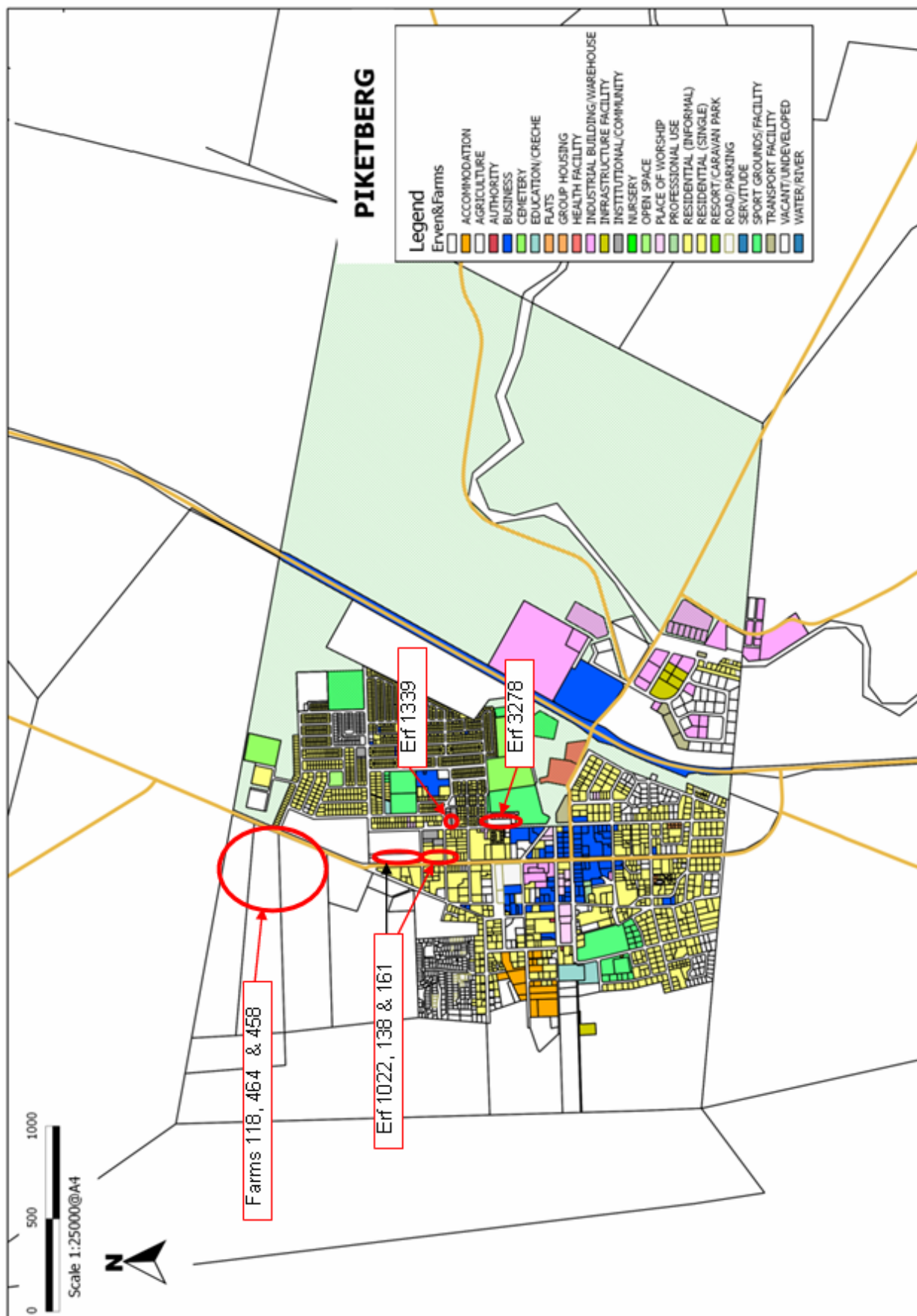
Erf No	Erf size	Owner	Title deed No	Proposed Development
3278	1.03ha	Piketberg Municipality	T 89352/1999	Affordable/ Mid value housing
1339	3400m ²	Swartland Div Council	T15853/1984	Affordable/ Mid value housing
1002 (portion), 138 (portion) & 161				Mid value housing/ Business

Farm 118	25ha	Sweet Africa Prop Pty	T99409/2003	Affordable housing
Farms 464 & 458				Affordable housing

Table 5.11(b): Vacant Erven, Piketberg, Bergrivier Municipality.



Map 5.11(a): Vacant erven, Velddrif, Bergrivier Municipality



The area north of the main entrance of Piketberg from the N7 national road should be focused upon in a comprehensive urban development proposal. This area includes amongst others, the hospital, cricket field, caravan park, show grounds and some municipal (traffic) offices. The respective erf numbers are as follows: 3327, 1769, 3326, 3324, 3325, 1008 and 2218. It furthermore accommodates a vacant land area of around 3.82 hectares that has the potential to add immense value to the present urban configuration and densification targets, if the existing land-use is intensified.

Porterville

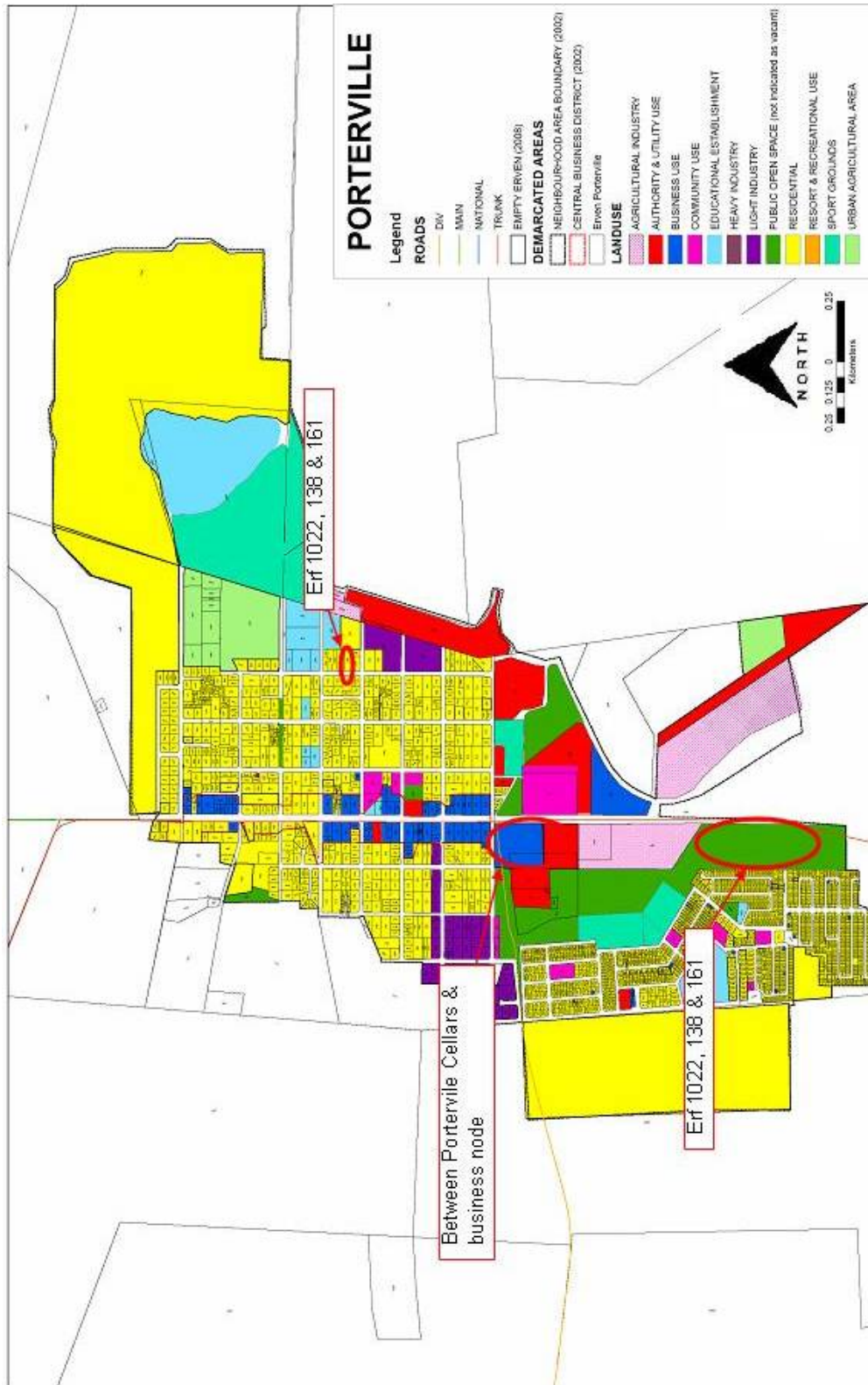
Erf No	Erf size	Owner	Title deed No	Proposed Development
Between Porterville Cellars & business node	5.37ha			Affordable/ Mid value housing
Area between existing built edge & Main Road 526				Affordable/ Mid value housing
Erf 1227	1ha	Gov Western Cape	T7492/2003	Mid value housing

Table 5.11(c): Vacant Erven, Porterville, Bergrivier Municipality.

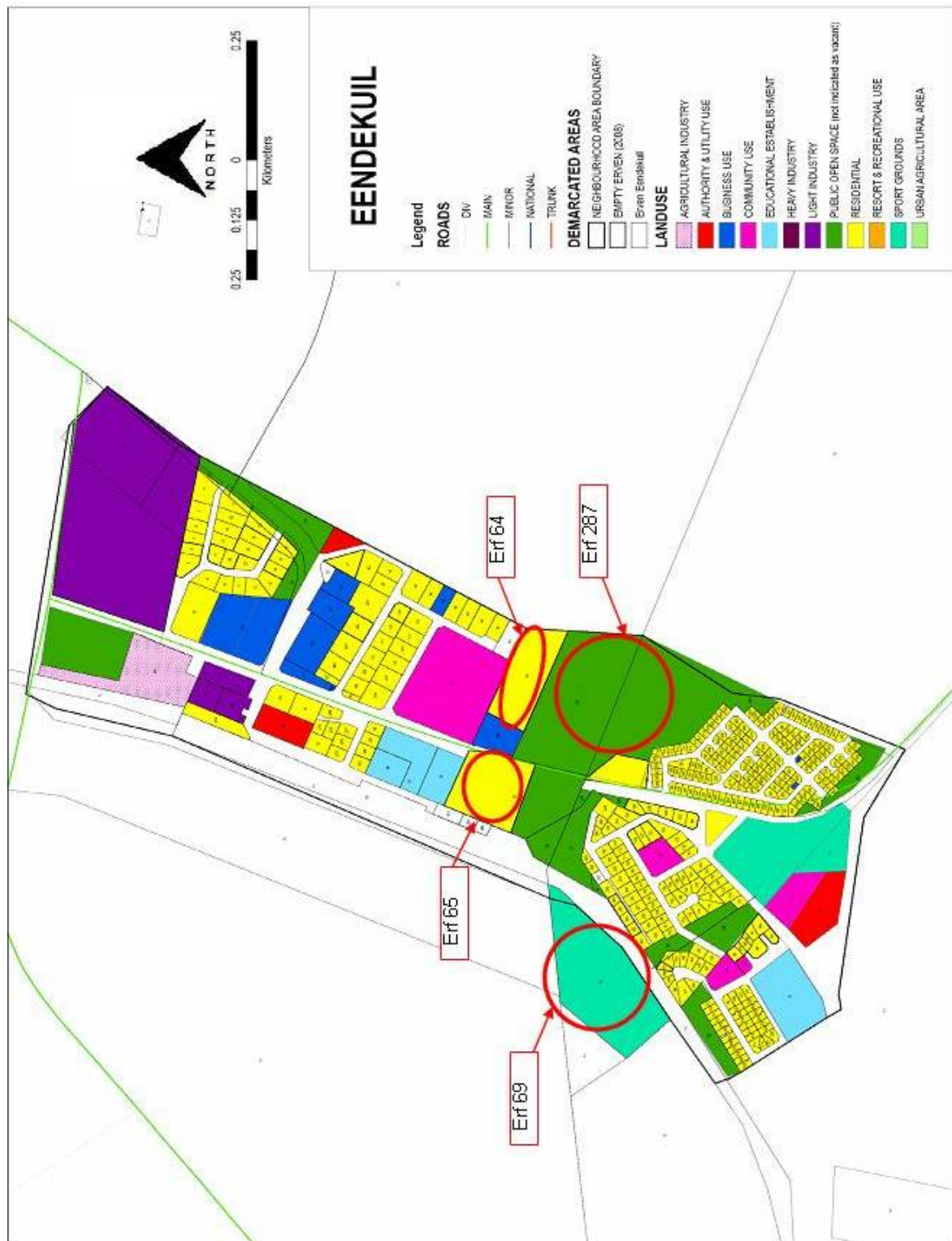
Eendekuil

Erf No	Erf size	Owner	Title deed No	Proposed Development
Erf 65 (a portion)	2.38	Bergrivier Municipality	T123373/1997; T31002/2004	Affordable housing/ Cemetery
Erf 64	1.7ha	P Matthee	T19126/1997	Affordable housing/ Cemetery
Erf 287	3.1746 ha	A. J. Liebenberg	T31008/2004	Affordable housing/ Cemetery
69	3.2ha	Bergrivier Municipality	T33878/1985	Affordable housing

Table 5.11(d): Vacant Erven, Eendekuil, Bergrivier Municipality.



Map 5.11(c): Vacant erven, Porterville Bergrivier Municipality



Map 5.11(d): Vacant erven, Eendekuil, Bergrivier Municipality

Aurora

Erf No	Erf size	Owner	Title deed No	Proposed Development
Erf 279	1.86ha	E.M. Leeuwen	T101998/2004	Affordable housing
Erf 225	66ha (or 0.66ha)	Bergvriër Municipality	T12078/1998	Affordable housing
206	1.41ha	Bergvriër Municipality	T21714/1952	Mid value housing

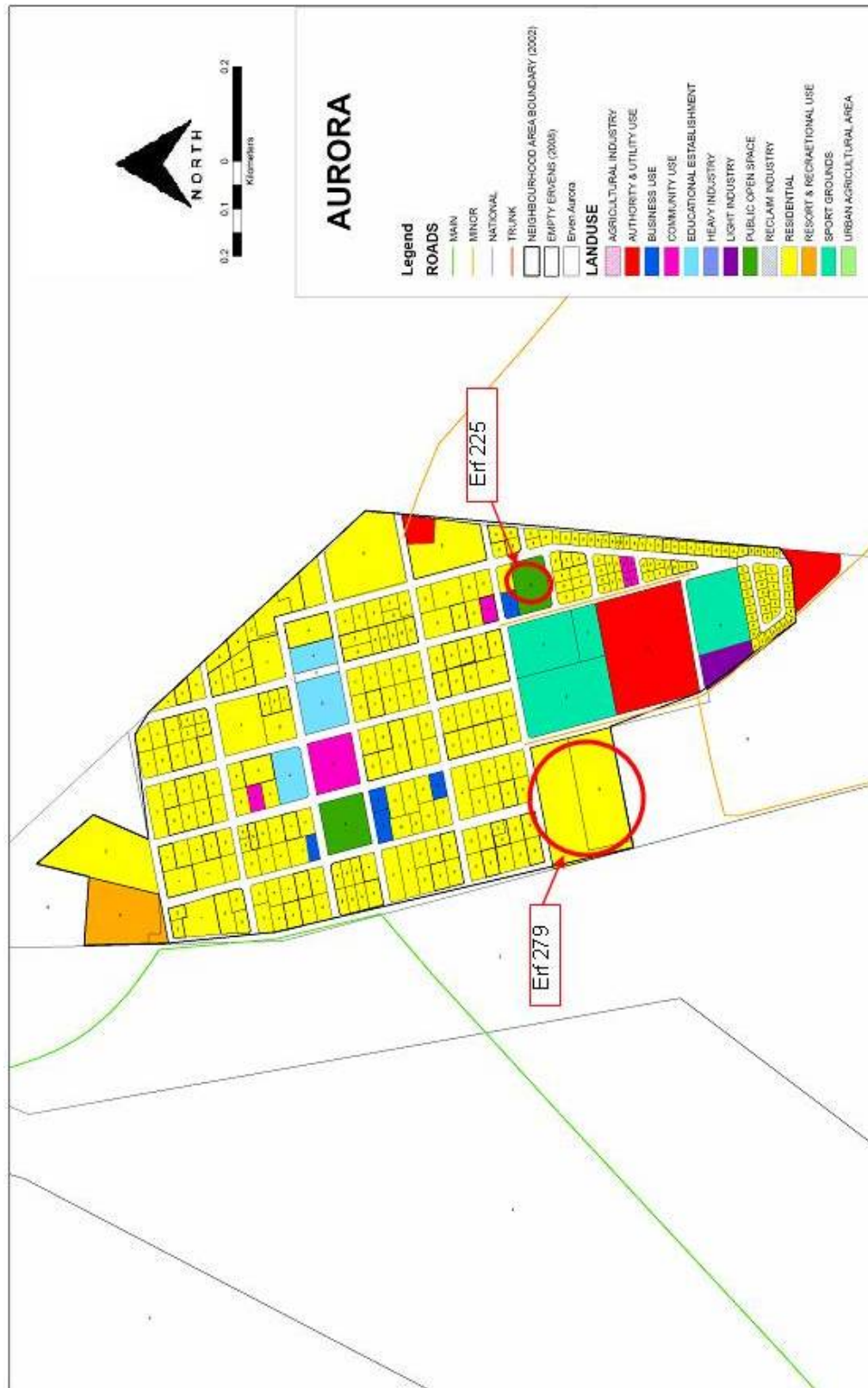
Table 5.11(e): Vacant Erven, Aurora, Bergvriër Municipality.

Redelinghuys

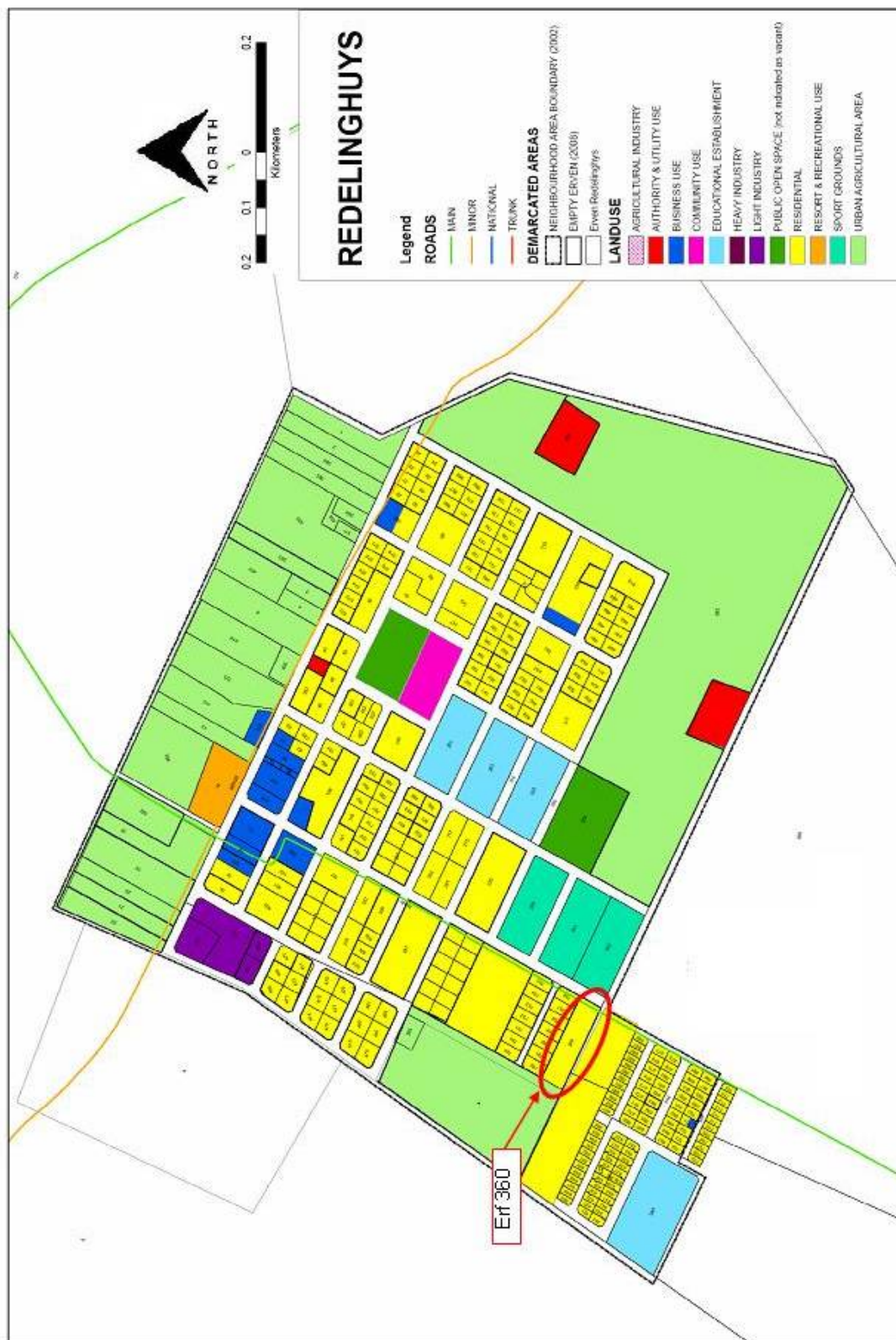
In Redelinghuys there is not a high demand for housing and Erf 360 has been identified for this purpose.

Erf No	Erf size	Owner	Title deed No	Proposed Development
Erf 360	1.7ha	C. Halgryn	T71344/2003	Affordable housing

Table 5.11(f): Vacant Erven, Redelinghuys, Bergvriër Municipality.



Map 5.11(e): Vacant even, Aurora, Bergvriër Municipality

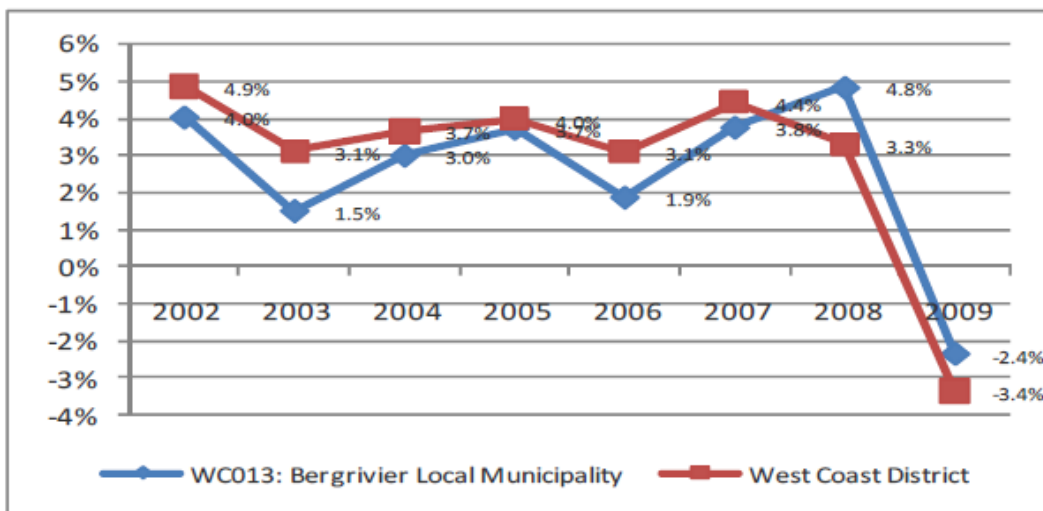


5.12 Secondary Economic Sectors: Manufacturing, Construction, Transport

Regional Gross Value Added Contribution and Economic Growth

Over the past ten years, Bergrivier has generally shown relatively good year-on-year growth of between 1.5 and 4.8% (percent), except for the drop in 2009. This created a decline in total Regional Gross Value Added (GVA-R) of Bergrivier, 2.4% (percent) compared to the 2008 totals; a decline from approximately R1.21 billion in 2008 to approximately R 1.18 billion in 2009.

Real economic growth would differ greatly between the projected 4, 8% per year in the coastal areas, a slightly lower 3, 8% p.a. in the central towns and a definite stagnation in the isolated places.



Graph5.12 (a): Growth in GVA-R, 2001 to 2009 (Constant 2005 prices).

Sector Growth

When looking at sector contributions to GVA-R in 2009, Agriculture contributed 27.4%, followed by Finance (19.7%), Manufacturing (17.8%), Community Services (14.8%) and Trade(11.5%).

WC013: Bergrivier Local Municipality	GVA-R Constant 2005 prices (R '000), 2001	Percentage share 2001	GVA-R Constant 2005 prices (R '000), 2009	Percentage share 2009	Average Annual Growth Rate: 2001-2009
1 Agriculture	271,652	28.1	324,154	27.4	2.23%
2 Mining	297	0.0	126	0.0	-10.21%
3 Manufacturing	224,769	23.2	210,467	17.8	-0.82%
4 Electricity	8,392	0.9	10,525	0.9	2.87%
5 Construction	16,915	1.7	32,467	2.7	8.49%
6 Trade	134,393	13.9	136,177	11.5	0.17%
7 Transport	48,007	5.0	59,277	5.0	2.67%
8 Finance	129,469	13.4	233,242	19.7	7.64%
9 Community services	134,540	13.9	175,434	14.8	3.37%

Table 5.12(a): Average Annual Growth by Sector between 2001 & 2009 (Western Cape Department of Economic Development: Global Insight Data, 2010).

Between 2001 and 2009 the Finance sector grew at an average yearly rate of 7.6% (percent), increasing its contribution to the total economy from 13.4% (percent) in 2001 to 19.7% (percent) in 2007. The manufacturing sector declined at an average annual rate of 0.8% (percent) over the same time period, but its total share of Bergrivier's economy decreased from 23.2% (percent) to 17.8% (percent).

The fastest growing sector over this period was the Construction sector, increasing at yearly average rate of 8.5% (percent) between 2001 and 2009. The repercussions of which resulted in its share of the total economy increasing by 1.0 percentage point from 1.7% (percent) in 2001 to 2.7% (percent) in 2009.

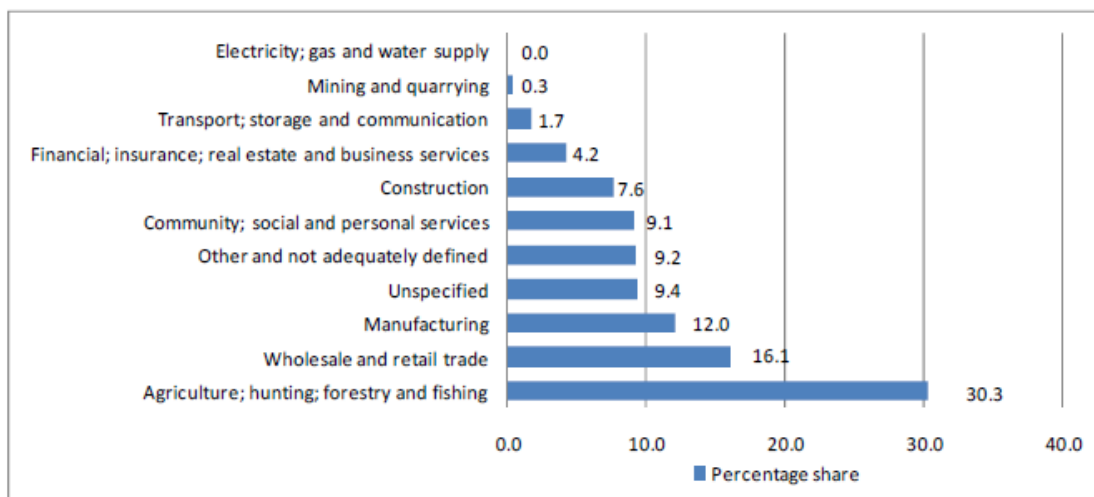
The lesser contributors to Bergrivier's economy in 2009 were mining (0.0%), electricity (0.9%) and construction (2.7%)(Bergrivier MLP).

Sector Employment

The Agriculture, Forestry and Fishing sector, a primary economic sector, employed the largest number of people i.e. 30.3% of employed persons, in Bergrivier in 2007⁶. The percentage of employed persons employed in Agriculture decreased with 25.5% since 2001 when 55.8% persons were employed in the sector. Following this are secondary economic sectors, Wholesale and Retail Trade, Manufacturing, and Community & Social and Personal Services, with a 16.1%, 12.0% and 9.1% (percent) respectively. The percentage of employed persons increased in all the latter sectors with 8.6%, 4.9% and 3.3% respectively. Government as sector was not reflected but represented 13.3% in

⁶ 2011 Census data for number of people employed per Economic Sectors is only available in September 2013

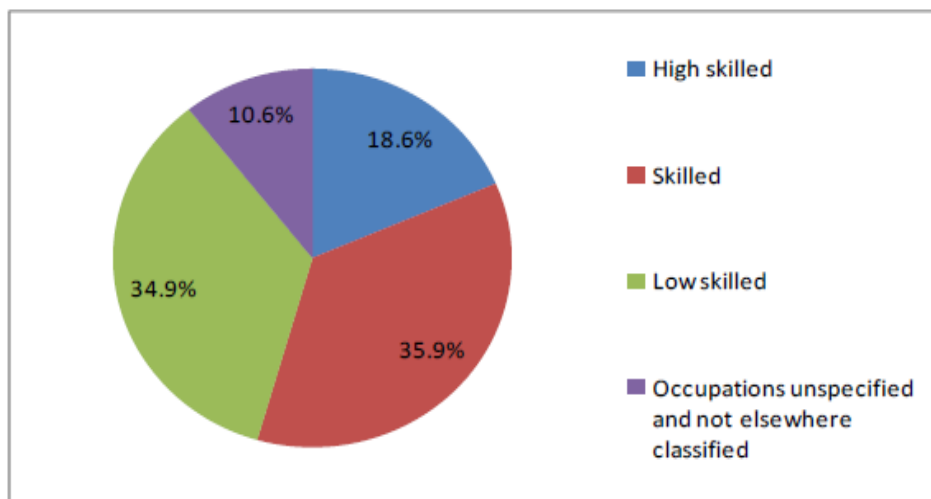
2001. Categories *Other not adequately defined* and *Unspecified* constituting 18.6% may reflect Government as sector in 2007 Community Sector, but this is not confirmed.



Graph 5.12(b): Employment by Sector, 2007, Statistics SA, Community Survey, 2007.

Skills levels

Within Bergvriër, 19% of those employed are in highly skilled positions, whilst 36% and 35% (percent) were in skilled and low-skilled positions.



Graph 5.12(c): Skills Level of Employed, 2007, Bergvriër Municipality (Statistics SA, Community Survey 2007).

5.13 Tourism

The West Coast is becoming ever more popular as a domestic and tourist destination, recording 30% of all visitors to the Western Cape in the third quarter of 2006 (footnote). The Regional Economic Development Strategy also promotes the strategic aim to provide an enabling environment in which to maximize property development in the key tourist sites of the West Coast region. The tourism sector with attributes unique to this municipal area with its diverse landscape and environment has been identified as an economic sector with growth potential. Subsequently the area has been earmarked as a priority for tourism development.

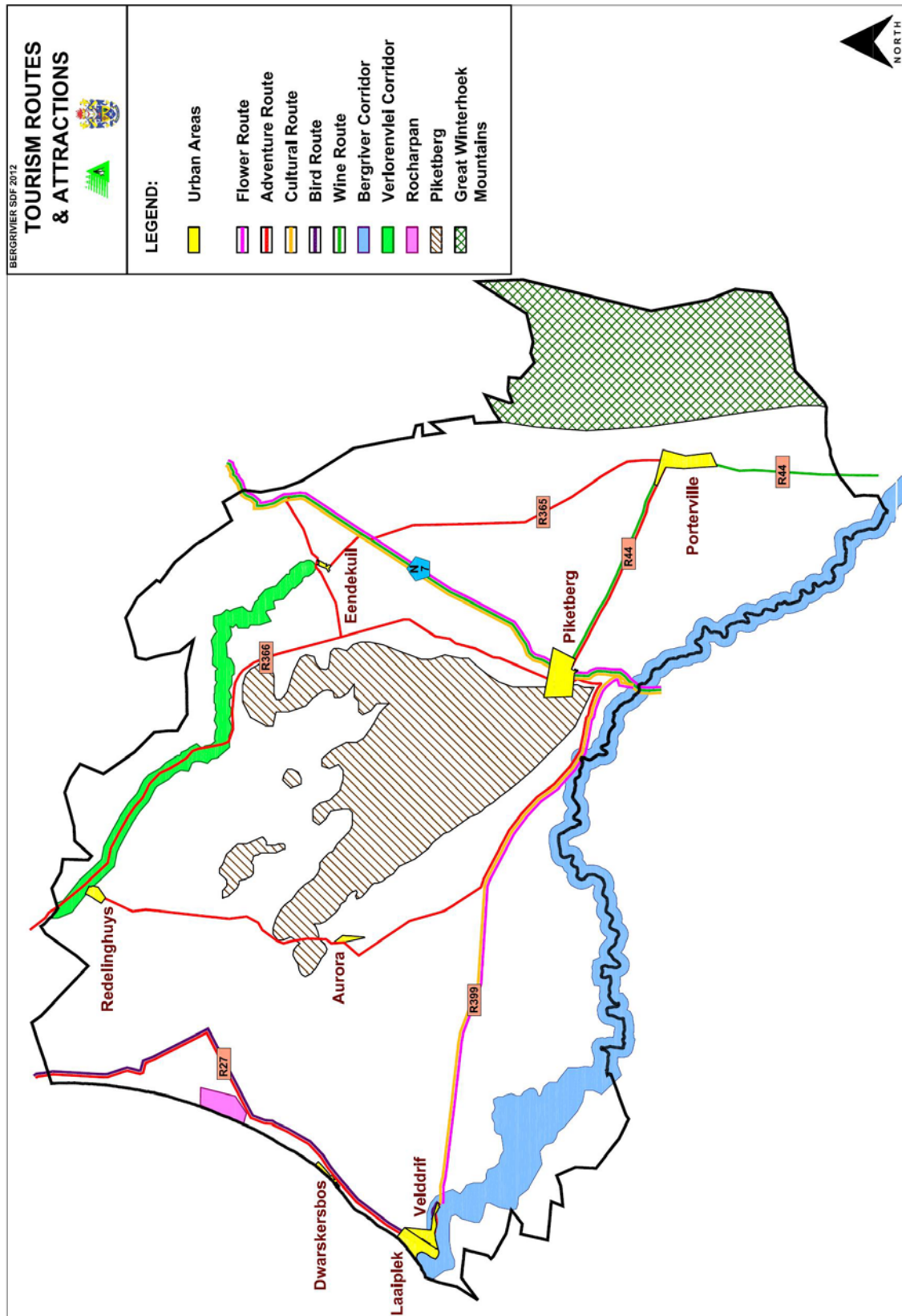
Given the rather small population of the area (approximately 56000 inhabitants in 2007) and the constraints in agriculture and fishing, tourism should be seen as the only significant growth trigger for the Bergrivier towns. Activities within tourism would stimulate local investment, employment and economic growth. However, with this region attracting tourists on a seasonal basis, the seasonal, temporary or part-time nature of jobs and activities significantly dampens the overall positivity of a tourism boom in the area. The same issue applies to seasonal employment in agriculture and fishing.

Although the bulk of future growth in the Bergrivier municipal area is likely to centre around Velddrif / Laaiplek / Dwarskersbos and the Piketberg-Porterville axis, opportunities in and around the smaller places and along the transit routes should not be overlooked.

The following tourism attractions within the region were identified: unique flora locations (Sandvlakte fynbos, West Coast Renosterveld and Berg-fynbos), Fauna locations, particularly wetland birdlife in the two RAMSAR territories located in and around Velddrif, Archaeological and Paleontological sites, culturally-rich historic sites and pristine conservation areas.

Several tourism routes exist characterize the Bergrivier towns:

- The flower route between Velddrif and Piketberg and along the N7. The same route serves as the culture route;
- The adventure route which includes all minor and dirt roads and having Aurora, Redelinghuys, Dwarskersbos (R27), Eendekuil and Porterville as destinations;
- The bird route along the coast (R27);
- The wine route (R44) connecting Piketberg and Porterville.



Map 5.13(a): Tourism routes and attractions, Bergervier Municipality

The potential of tourism can be further developed and opportunities were identified during the compilation of the IDP.

What follows is a sample of the tourism based opportunities as per Local Economic Development Plan and the Integrated Development Plan (IDP).

Central Places	
Piketberg	Porterville
<ul style="list-style-type: none"> Forming of private sector partners with regards to marketing and product development; Film crews and advertisements; Development of hand crafts and ornaments to sell in order to promote local entrepreneurship; Picnic and braai (barbeque) facilities; Gravel roads to be developed. 	<ul style="list-style-type: none"> Agriculture, eco and adventure tourism points; Development of underprivileged areas; Development of golf resort.
Coastal Towns	
Velddrif	
<ul style="list-style-type: none"> Entrepreneurship opportunities in whale and bird watching areas; Holiday resort development; The development of church and schools; Marina and waterfront development. 	<ul style="list-style-type: none">
Isolated Villages	
Redelinghuys	Aurora
<ul style="list-style-type: none"> Game parks; Opening of the Old Goldmine; Production of Rooibos Tea; Fynbos/Flora attractions; Hiking trails; Exhibition of Archaeological findings. 	<ul style="list-style-type: none"> Bed and Breakfast opportunities; Upgrading of air field; Local entertainment and restaurants; Agricultural tourism; Development of botanical garden.
Mission Stations	
Goedverwacht	
<ul style="list-style-type: none"> Potential development of a small scale holiday resort; Development of bird watching attraction points; Restaurants/coffee shops; Art and craft centre; Water wheel development in process. 	

Table 5.13(a): Examples of Tourism Based Activities (Bergrivier LED, p11-12).

Chapter 6: Status Quo – Wards 1& 2 - Porterville

Wards 1 and 2 consist mainly of the agricultural and rural landscape and where Porterville is regarded as the only settlement.

6.1 Historical Overview

Porterville was established in 1863 on the farm Pomona, previously known as the farm WillemsVallei and became a municipality in 1903. Porterville was named after William Porter, Attorney-General of the Cape Colony from 1839 to 1866.

6.2 Locality

Porterville is situated at the foot of the Groot Winterhoek Mountains, 27 km south-east of Piketberg and 155 km north-east of Cape Town on the R44 provincial route.

6.3 Demography

The projected population growth for Porterville is as follows:

Year	2001	2005	2008	2011	2012	2020
Source	(Census)	Growth Potential Study	(Bergrivier SDF – 2008)	(Census)	(Growth based on 2008 estimate)	(Municipal projection)
No of people	6400	5867	7900	7057	8809	10600
Percentage Growth				1% (‘01-‘11)	3% (‘08-‘12)	2.50% (‘12-‘20)

Table 6.3(a): Projected population growth for Porterville.

6.4 Town Hierarchy

The main road runs straight through the town. The opposite end of the town is easily visible when entering the town from either of the two entrances. . Businesses can be found on both sides of this axis with almost no vacant land in between. An overview of the spatial identity of the urban area of Porterville follows in the table below:

Town	Economic base		Place Identity	Investment Priorities	SDF Classification	
Porterville	Residential with social infrastructure	Town supporting	Rural town	Major infrastructure	Medium agricultural centre	order service

Table 6.4(a): Spatial classification of Porterville.

6.5 Economic Base

Porterville is one of the three main towns within the Bergrivier municipal area and the town's economic base is founded on Agriculture. As a residential town it provides a social infrastructure (church, school, library, clinic, police station and sporting facilities) for the town and the surrounding agricultural areas. The town also functions as the hub of service provisions and central point to the agricultural segment of the region. Kaap-Agri's head office is located in Porterville. Porterville also boasts a wine cellar.

Porterville has a railway station and although linked to the national railway network it only transports goods. The existing gravel airstrip is used by small airplanes used in crop spraying.

The economic base is supplemented by recreational and tourism activities. Paragliding on Dasklip Mountain Pass it on the top of the list, whilst the Groot Winterhoek Wilderness area and the Waterfall Resort directly north of Porterville is also very popular.

Development Potential

The developmental potential of the town as provider of higher order services and as a tourism destination is rooted in the flourishing agriculture within the area.

The municipal housing waiting list reflects 959 applications within Porterville whilst the demand in 2007 was 613 households. At a gross density of 25 units per hectare this represents 38,4 hectares of land.

6.6 Spatial Structuring Elements

Mountain

The town is situated on the lower slopes of the Groot Winterhoek Mountains and functions as the gateway to the Groot Winterhoek Wilderness, area drawing visitors from all over.

Vegetation

The natural vegetation which is conserved in the wilderness areas in the mountain is one of the main assets of the region.

Manmade structuring elements are described in the section to follow.

6.7 Urban Structure

(i) Town layout and uses

The following table provides an overview of the existing land uses in Porterville:

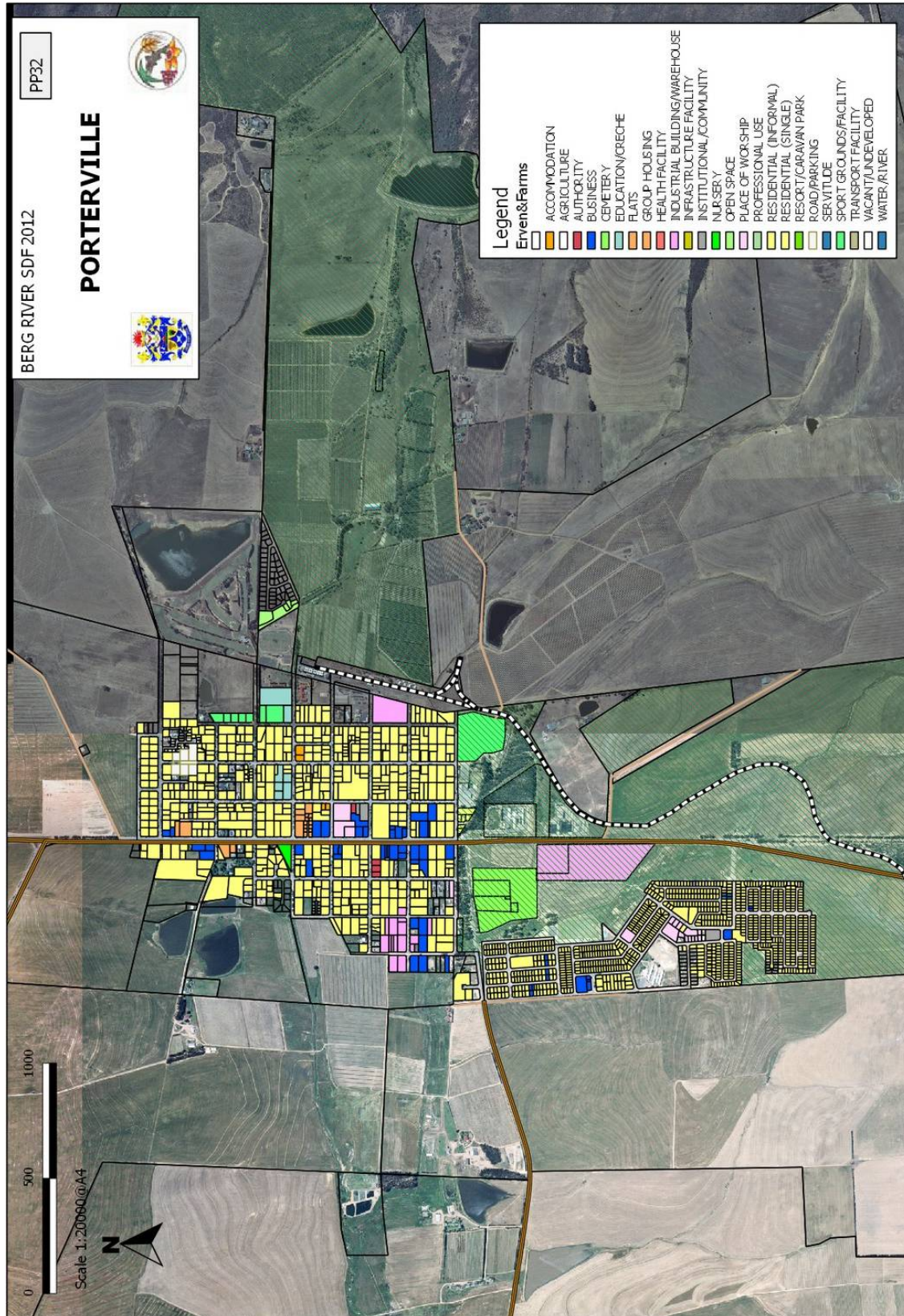
Porterville Land Uses		
Land Use	Number	Description
Residential	1570	Mainly single residential dwellings with different densities.
Business	±60	Sites found mainly alongside main road through town
Hospital	1	Regional hospital
Clinic	1	
School	2	Porterville High School Gr 1- 12 , 508 learners Willemsvallei Primary School Gr R – 9, 1071 learners
Library	2	
Community hall	1	
Show grounds	1	Also used as sports grounds for the public
Sports grounds	1	
Golf course	1	
Railway station	1	
Air strip	1	Gravel surface used as airstrip by small airplanes for crop spraying

Cemetery

1

Cemetery has room for expansion to the south

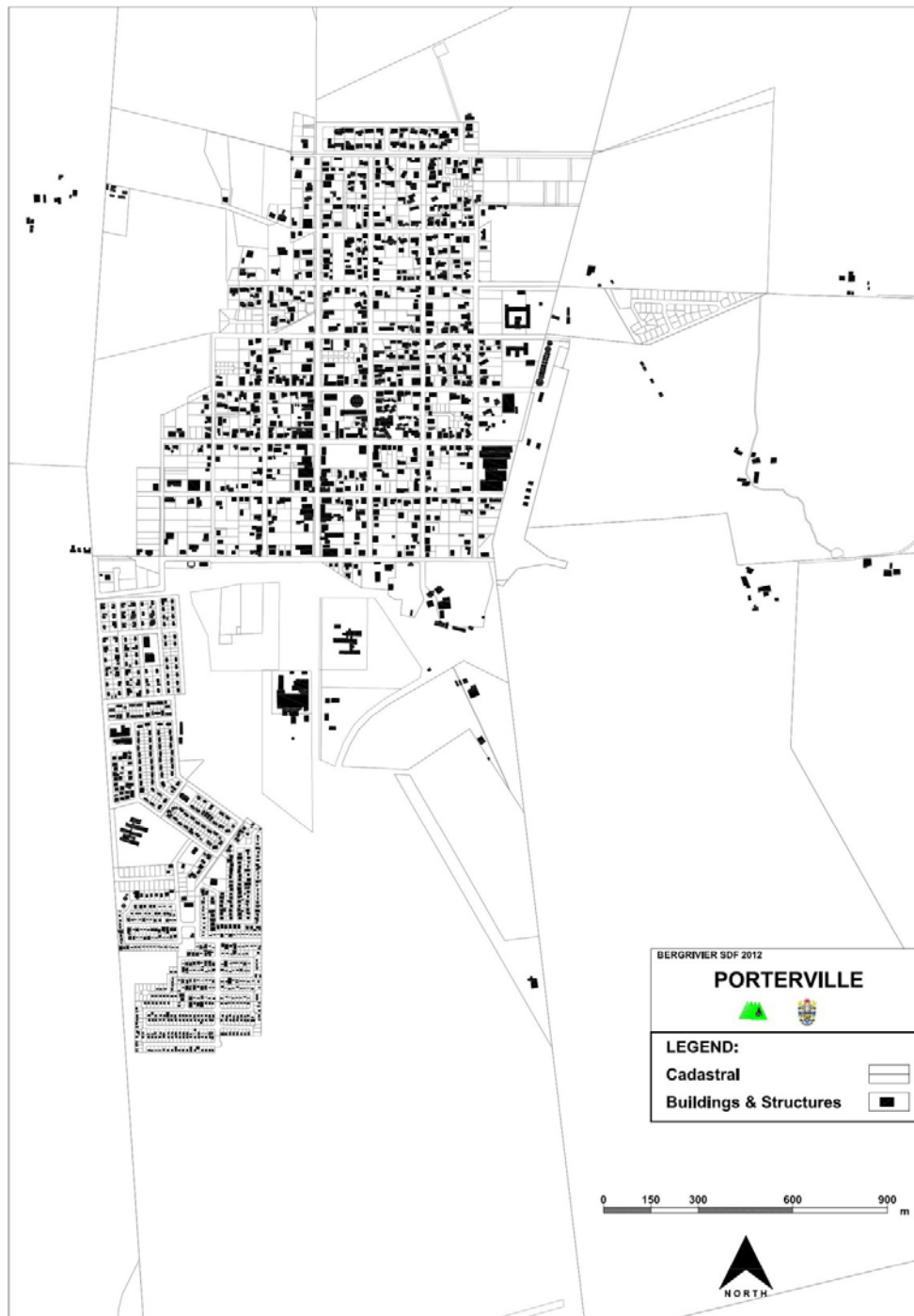
Table 6.7(a): Existing land uses in Porterville.



Map 6.7 (a): Land uses, Porterville, BergvlietMunicipality

(ii) Density

The current gross density for Porterville is 4,3 dwelling units per hectare (du/ha) indicating a very low urban density. The anticipated future increased density of the town will be subject to private owner's willingness to alienate their land for development purposes.



(iii) Vacant land

Total area (built edge)	Vacant erven within urban area	Ownership
±277ha	54	Private owned land as well as municipal land

Table 6.7(b): Vacant land in Porterville.

A vacant land audit was done for all the towns in the Bergervier Municipal area with the vacant land Audit maps included in the annexure to this report.

(iv) Built form

The town functions as a central place and service providing hub within an area that is agriculture rich. The built segment of this area consists of low density single residential dwellings with a variety of architectural styles including Victorian, Edwardian, Art Deco, and that of the 50's-60's.



Map 6.7(b): Structuring Elements, Porterville, Bergervier Municipality.

(v) Functionality

The town reflects a rectangular shape with a 3 km diameter on the north south axis and a 1,4 km diameter on the east west axis. The services provided by the town are therefore not within walking distance of all the residents. These services are of a high quality calibre and include social infrastructure such as schools, churches, business premises, a wine cellar, municipal office, hospital, police station, library, sports grounds and show grounds.

(vi) Movement Network

Porterville is not found on one of the main tourist routes, but it is conveniently accessible from the north, the south and Piketberg in the west. The main road through Porterville forms the spine of the town with all the main services (municipal office, clinic, shops and police station) situated on this road. Porterville is also linked by railroad to the national network and rail is mainly used to transport grain from the silos in town.

6.8 Services and Infrastructure

(i) Water

Porterville's water supply is stemmed from three fountains in the mountain to the east of the town. From here it is transported via pipeline to the water purification works. Surplus water is directed to the dam on the northeastern side of the town. The water supply is currently being divided between the municipality and the farmers where twenty three forty eighths (23/48's) is going to the municipality and twenty five forty eighths (25/48's) to the farmers. The municipality is in the process of negotiating a more feasible divide to secure more water for the town and if such an agreement can be reached the dam can be enlarged. The current dam capacity is not of a size large enough to cater for further housing development.

(ii) Sewerage

Porterville has a waterborne system and the waste-water treatment works is of a quality that is suitable to accommodate further development.

(iii) Electricity

The municipality is the supplier of electricity to Porterville and is currently running on near to full capacity. Hydro electricity to be generated from the water in the mountain is an option for the future.

(iv) Refuse

The former dumping site to the south of the town is in the process of being closed. Currently, refuse bags are collected from all houses by the municipality and are then delivered to the collection station in Porterville from where they are transported to Piketberg.

(v) Storm water

The storm water system in place for Porterville is sufficient to deal with storm water run-off for the whole town.

(vi) Roads/ Rail

Roads connect all of the erven in Porterville and the roads in the town are tarred. Access roads to other centers are also tarred. The town is linked by railroad.

(vii) Traffic/ Safety

The grid-style layout of Porterville ensures smooth traffic flow throughout the town as well as creating a safe environment for drivers. The erven and facilities are easily reached.



Chapter 7: Status Quo – Wards 3& 4–Eendekuil and Piketberg

Wards 3 and 4 include the mountain, agricultural and rural landscape and have Eendekuil and Piketberg as settlements.

7.1 Eendekuil

Eendekuil is a rural settlement north of Piketberg and forms a part of Ward 3.

7.1.1 Historical Overview

The name Eendekuil or 'duck pond' is derived from the wild ducks found by hunters in the area. Eendekuil began as a settlement on the railway line where grain was (and still is) collected via railroad. This included additional infrastructure such as the railway station, houses and silos. Other social services such as a church, hotel and cheese factory were built thereafter. During the 1960s a number of Dutch Reformed churches were erected. Typically they were rectangular in shape, with the pulpit and permanent liturgical furniture as the focal point inside of the building. Eendekuil's Dutch Reformed Church was built within this period and was designed by the architect, P. le Roux.

7.1.2 Locality

Eendekuil is located on Main Road 537 which is linked to the N7 to the south.

7.1.3 Demography

The projected population growth for Eendekuil is as follows:

Year	2001	2005	2008	2011	2012	2020
Source	(Census)	Growth Potential Study	(Bergrivier SDF – 2008)	(Census)	(Growth based on 2008 estimate)	(Municipal projection)
No of people	600	841	1000	1530	1115	1050
Percentage Growth				16% ('01-'11)	3% ('08-'12)	0.00% ('12-'20)

Table 7.1.3(a): Projected population growth for Eendekuil.

7.1.4 The Hierarchy within the town

Two nodes of development are visible in Eendekuil with a southern residential component (including the primary school) and a northern component providing other services such as the Kaap-Agri store, the train station and grain silos. An overview of the spatial identity of the urban area of Eendekuil follows in the table below:

Town	Economic base		Place Identity	Investment Priorities	SDF Classification
Eendekuil	Residential with social infrastructure	Town supporting	Rural town	Major social	Low order rural settlement

Table 7.1.4(a): Spatial classification of Eendekuil.

7.1.5 Economic Base

Eendekuil functions as a lower-order agricultural centre and residential town providing social infrastructure (church, school, library, clinic, agri-store and sporting facilities) for both the town and surrounding agricultural areas. As a rural residential village it is home to current inhabitants, surrounding farm workers and retirees. Grain is collected and stored in the silos at the station and is then sent by train to other destinations. The cheese factory used to be one of the main enterprises offering locals jobs, but has since closed to be replaced by an orange packing shed.

Development Potential

The town has limited growth potential as it centres on agricultural activities.

The municipal housing waiting list reflects 205 applications for Eendekuil whilst the demand in 2007 was only 70 households. At a gross density of 25 units per hectare this represents 8,2 hectares of land.

7.1.6 Spatial Structuring Elements

River

A small river forges a boundary on the western side of the town while a tributary off this river subdivides the southern portion of the town. The tributaries serve as open spaces within the town.

Vegetation

Very little natural vegetation is left in the vicinity of Eendekuil due to extensive agricultural practices. The banks of the tributary and river are depleted of almost all original vegetation and alien vegetation has infiltrated these areas.

Manmade structuring elements are described in the section to follow.

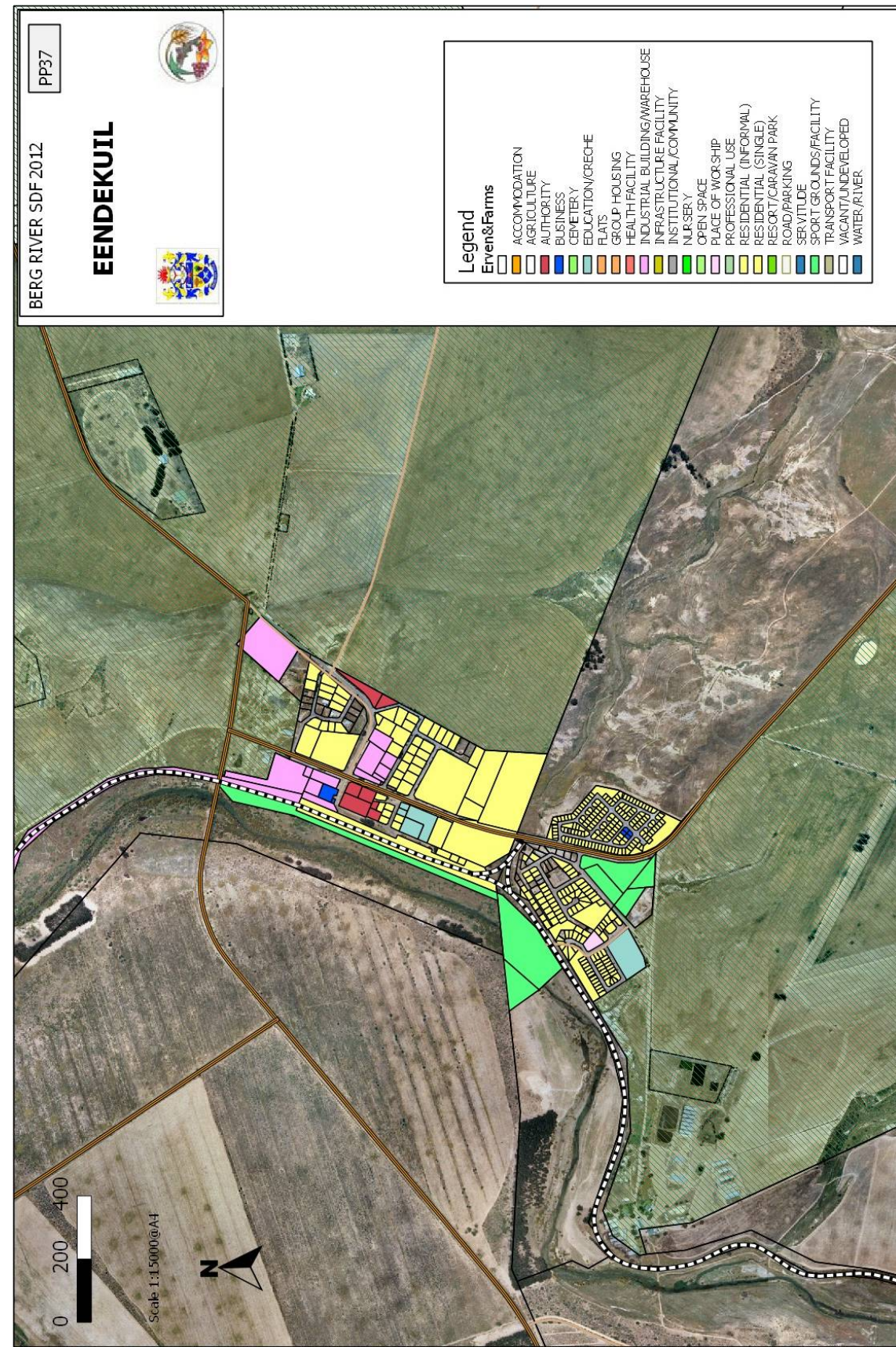
7.1.7 Urban Structure

(i) *Town layout and uses*

The following table provide an overview of the existing land uses in Eendekuil:

Eendekuil Land Uses		
Use	Number	Description
Residential	358	3 distinctive areas because of topography of town
Business	9	Sites next to the main road through the town and also north of the town
Clinic	1	Forms part of municipal building and is available 3 days per week
School	1	1 School (Found on main road) recently closed. Eendekuil Primary Gr R- 7; 326 learners
Library	1	
Community hall	1	
Railway station	1	Combined with grain silos
Cemetery	2	Cemetery to southwest of town has room for expansion while the one to the northeast of town also shows enough vacant land for future expansion.
Horse racing (Gymkhana) track and hall	1	Outside town to the northern side and next to the cemetery

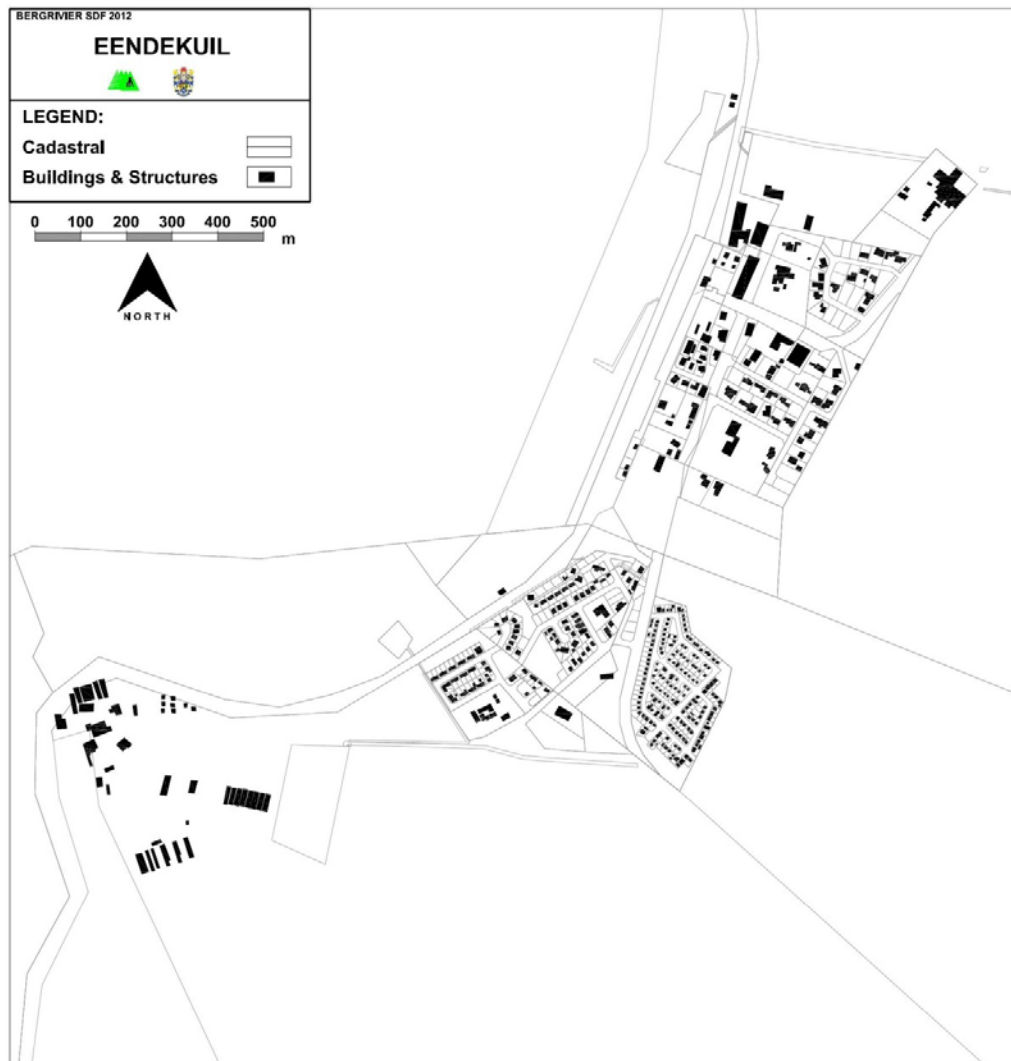
Table 7.1.7(a): Existing land uses in Eendekuil.



Map 7.1.7(a): Land uses, Eendekuil, BerggrivierMunicipality

(ii) Density

The current gross density for Eendekuil is 4,8 du/ha indicating a very low urban density. Future increase in density of the town will be subject to private owner's willingness to set aside their land for development purposes.



(iii) Vacant land

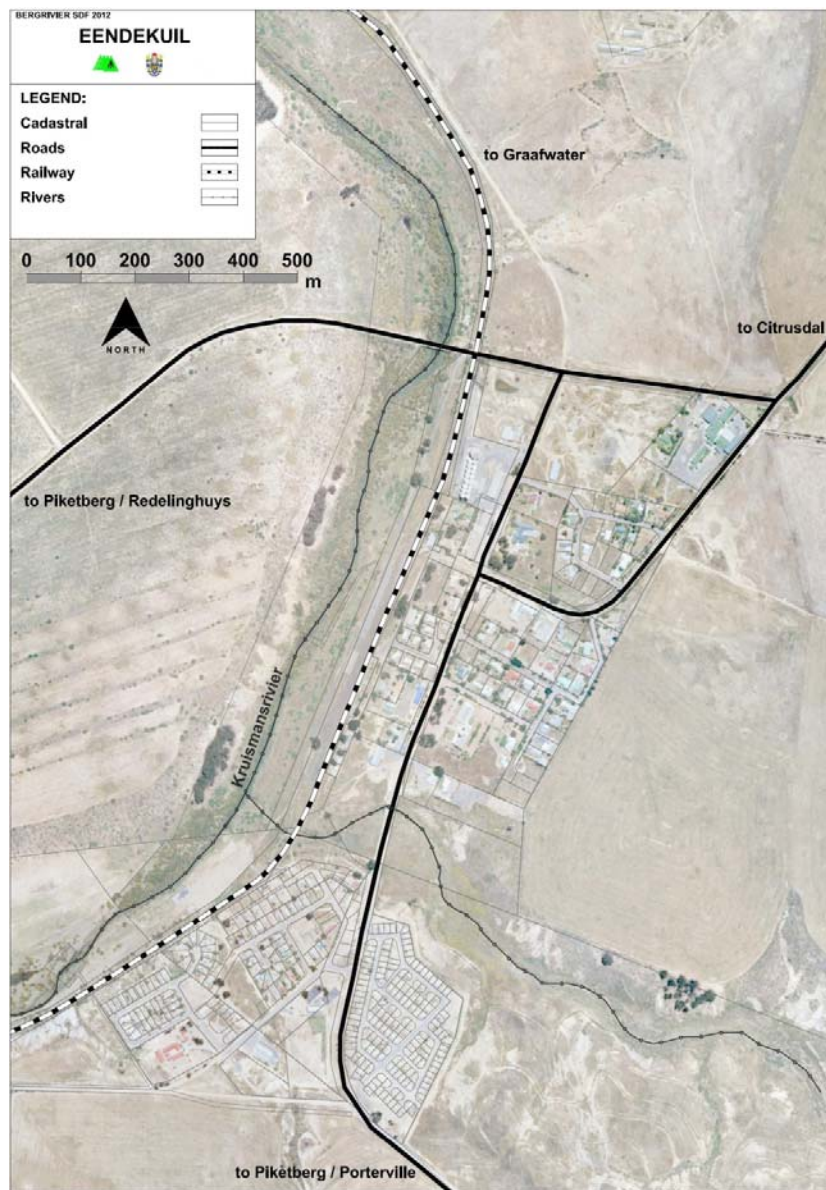
Eendekuil		
Total area (built edge)	Vacant erven within urban area	Ownership
±74ha	35	Private owned land

Table 7.1.7(b): Vacant land in Eendekuil

A vacant land audit was done for all the towns in the Bergrivier Municipal area with the vacant land Audit maps included in the annexure to this report.

(iv) Built form

The town's rural charm is epitomised in the immense amount of wheat growing in the area. The built form consists of low density single residential dwellings with no apparent architectural style. The low density residential areas are built around the central square which houses the Dutch Reformed church..This low density areas adds to the rural charm of the town.



Map 7.1.7(b): Structuring elements, Eendekuil, BergrivierMunicipality.

(v) Functionality

The town is rectangular in shape with a 1.4 kilometre diameter on the north south axis and a 450 meter diameter on the east west axis due to the town developing along the railway line and a small river. The services in the southern portion and centre of town are within walking distance of all residents. The services concentrate on social infrastructure such as a community hall, churches, a municipal office, a clinic, a library and a sports ground interspersed with business premises all located along Main Street.

(vi) Movement Network

Eendekuil is located on the Main Road 537 linking up with the N7 to the south. Easy tarred road access is available to Citrusdal in the north as well as the main town in Piketberg. The town is also connected to the national rail network via railroad.

The main road through Eendekuil forms the spine of the town with all the main services (municipal office, clinic, church, shops, etc.) situated on this road.

7.1.8 Services and Infrastructure

(i) Water

The water source for Eendekuil is a borehole on a farm a fair distance away from the town. Upgrading is in the planning stage for the town's network to increase the volume of water supply.

(ii) Sewerage

Two systems currently exist for Eendekuil and that is a waterborne system for the southern portion of the town and a soak away/ septic tank system for the northern portion. The Waste Water Treatment Works are situated to the south of the town with a pump station in the southern section to pump sewage to the treatment works.

(iii) Electricity

ESKOM is the supplier to the town although the one section to the southeast is supplied by the municipality.

(iv) Refuse

Refuse bags are collected from all houses by the municipality and then transported to the transfer station in Piketberg from where it is transported to the dump site in Malmesbury.

(v) Storm water

An adequate system to control storm water run-off is in place for the whole town.

(vi) Roads

All roads throughout the town are tarred and in most cases with pavement stones in-built on the sides to control storm water run-off.

(vii) Traffic/ Safety

Traffic flow is smooth flowing throughout the town with easy and tarred access, also to all erven.

7.2 Piketberg

Piketberg is the main town of the Bergrivier Municipality and is divided between Ward 3 and 4.

7.2.1 Historical Overview

Piketberg was originally spelled as "Piquetberg" with piquet referring to the military guard post that was stationed on the mountain between 1672 and 1676. The town sprawled the governmental farm Grootfontein donated by Sir Benjamin D'Urban in 1835. Piketberg boasts an impressive neo-Gothic style Dutch Reformed Church designed by the architect Carl Otto Hager. The area was originally inhabited by the Khoi khoi and the San before the arrival of settlers from Europe. Well-preserved San rock art can be found in the mountains. The town also accommodated a small military post to protect the livestock of farmers against onslaughts by the Khoi khoi.

7.2.2 Locality

Piketberg forms the administrative seat of the Bergrivier Municipality and is centrally situated within the jurisdiction area. The town is situated 175km from Cape Town on the N7 national route to the Northern Cape and Namibia and on the foothills of the Piketberg Mountains, a range of low mountains formed from Table Mountain Sandstone. The areas around the mountains are conducive to the farming of wheat, while the area on top of the mountains, being cooler and generally frost-free, is suited to the farming of fruit and Rooibos Tea.

7.2.3 Demography

The projected population growth for Piketberg is as follows:

Year	2001	2005	2008	2011	2012	2020
Source	(Census)	Growth Potential Study	(Bergrivier SDF – 2008)	(Census)	(Growth based on 2008 estimate)	(Municipal projection)
No of people	9600	9271	11900	12405	13269	15800
Percentage Growth				3% ('01-'11)	3% ('08-'12)	2% ('12-'20)

Table 7.2.3(a): Projected population growth for Piketberg.

7.2.4 Town Hierarchy

Piketberg functions not only as administrative seat to the municipal area, but also as service and commercial centre to the surrounding agricultural region. Piketberg is a residential town and provides

supporting social infrastructure (hospital, churches, schools, library, police station and sporting facilities) for the inhabitants of the town and the surrounding agricultural areas. An overview of the spatial identity of the urban area of Piketberg follows in the table below:

Town	Economic base	Place Identity	Investment Priorities	SDF Classification
Piketberg	Service and commercial centre to agriculture	Administrative seat	Major Infrastructure	High order main centre

Table 7.2.4(a): Spatial classification of Piketberg.

7.2.5 Economic Base

Piketberg as the administrative seat to the municipal area serves as a service and commercial centre to the surrounding region and is the economic base orientated towards agriculture. Piketberg also accommodates public sector services. To expand the services offered, a multi-purpose Thusong Centre is planned. Piketberg is linked by railroad to the national network. Tourist attractions include the Neo-Gothic church, Dunn's Castle just outside town and a museum. PPC's De Hoek cement plant contributes largely to capital inflow into the area and is also one of the main job creators.

Development Potential

The developmental potential of the town is based on agriculture, public sector involvement as the main seat of the municipality together with tourism.

The municipal housing waiting list reflects 1928 applications for Piketberg whilst the demand in 2007 was 1162 households. At a gross density of 25 units per hectare this represents 77 hectares of land.

7.2.6 Spatial Structuring Elements

Mountain

The town is situated on the foothills of the Piketberg mountain range lending a unique setting to the town. The Piket-bo-berg agricultural area also contributes positively to the economy of the area including tourism facilities.

Vegetation

The natural vegetation which forms part of Piketberg Mountain is one of the main assets of the area.

Manmade structuring elements are described in the section to follow.

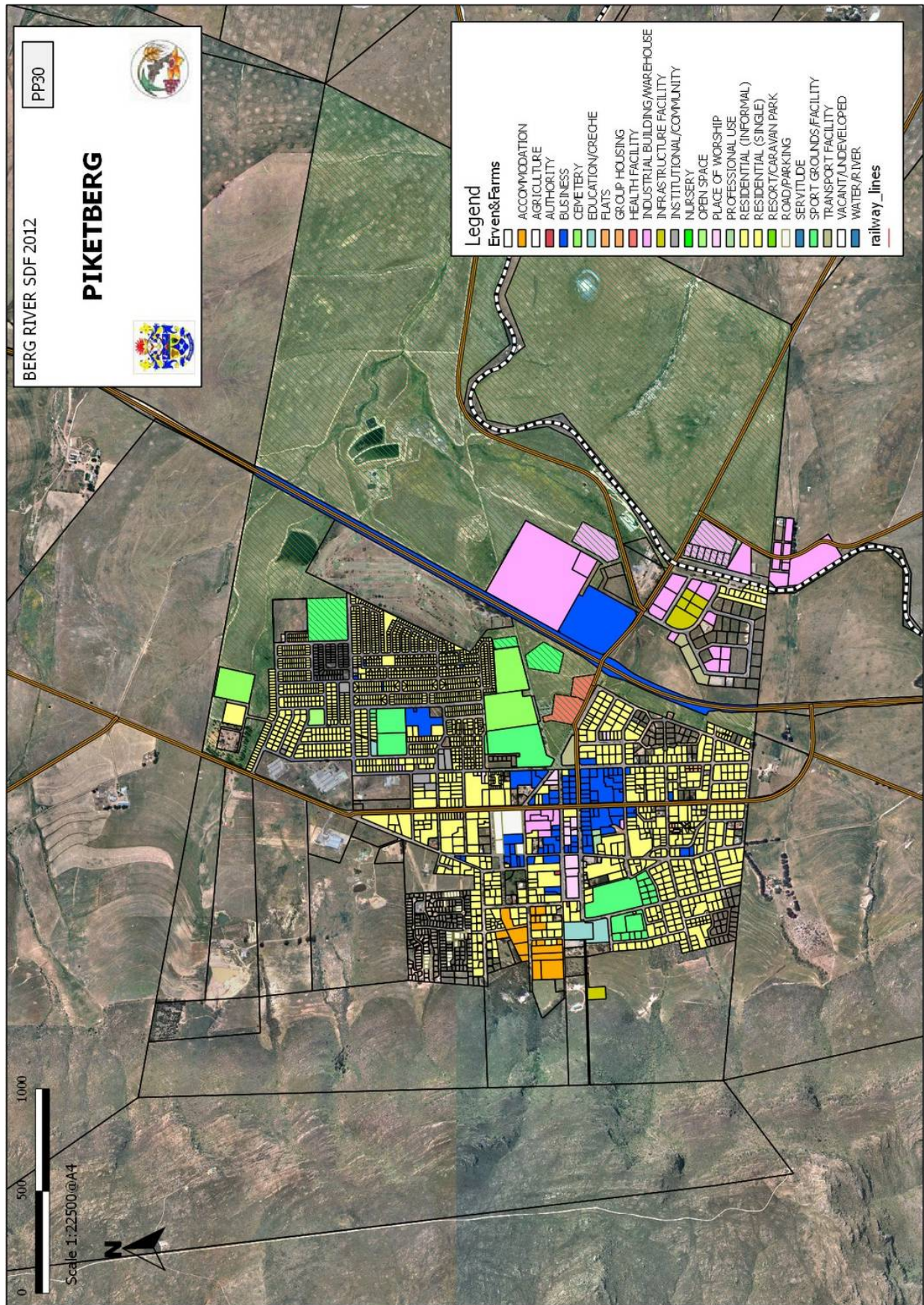
7.2.7 Urban Structure

(i) Town layout and uses

The following table provides an overview of the existing land uses in Piketberg:

Piketberg Land Uses		
Land Use	Number	Description
Residential	2101	
Business	±140	Central Business District
Hospital	1	Regional hospital to be combined with ambulance service
Clinic	1	
School	3	Piketberg High School Gr R – 12; 647 learners Steynville Secondary School Gr 8 -12; 1175 learners Steynville Primary School Gr R- 7; 1398 learners
Library	2	
Community hall	1	
Railway station	1	
Sports grounds	2	Also smaller cricket grounds, target shooting range, bowling green
Golf course	1	Next to the N7
Show grounds	1	
Caravan park	1	
Cemetery	2	Cemeteries almost at full capacity; new site has to be allocated with enough space for future expansion.

Table 7.2.7(a): Existing land use in Piketberg.



(ii) Density

The current gross density for Piketberg is 5,9 du/ha indicating a very low urban density. Future densification of the town will be subject to private owner's willingness to set aside their land for development purposes.



(iii) Vacant land

Piketberg		
Total area (built edge)	Vacant erven within urban area	Ownership
±351ha	314	Private owned land as well as municipal land

Table 7.2.7(b): Vacant land in Piketberg.

A vacant land audit was done for all the towns in the Bergrivier Municipal area with the vacant land Audit maps included in the annexure to this report.

(iv) Built form

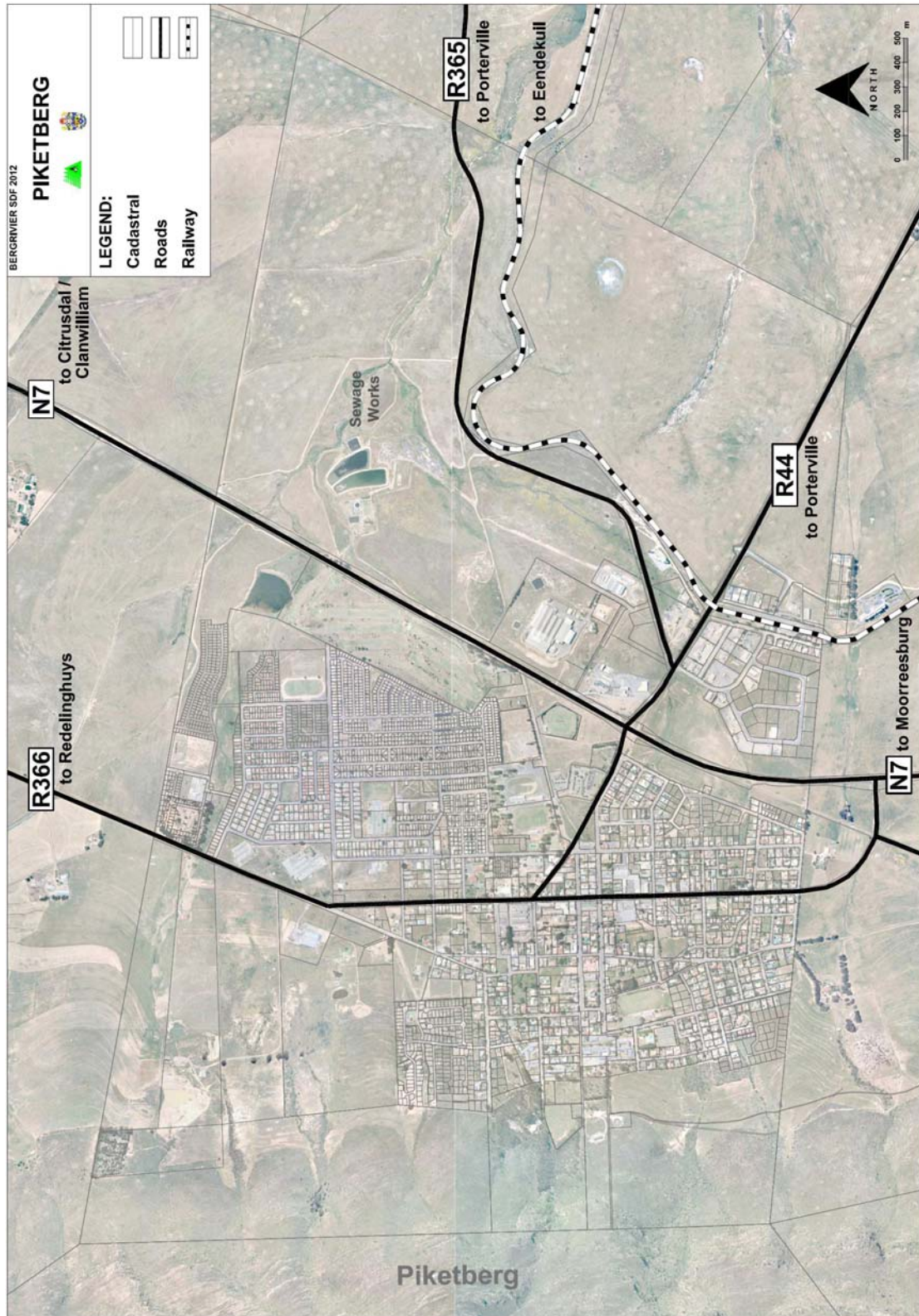
In spite of being the administrative seat and central service centre the town still has a rural charm set within a predominantly agricultural area. The built form consists of low density single residential dwellings with different architectural styles. The low density footprints and Piketberg being located at the foot of the mountain, provides for the existing rural character of the town.

(v) Functionality

The town is almost square in shape with a 2,7 km diameter on the north south axis and a 2,6 km diameter on the east west axis. The services provided in the town are therefore within easy reach. These include higher order services and also public-sector services together with a social infrastructure such as a hospital, schools, churches, police station, library, sports grounds and show grounds.

(vi) Movement Network

Piketberg is conveniently located on the N7 and therefore easily accessible. The N7 divides the residential component from the industrial/ railway area on the east thereof. Movement within the town itself occurs mainly in a north/ south direction, but the east/ west traffic has also been improved with the construction of the traffic circle on the N7.



Map 7.2.7 (b): Structuring elements, Piketberg, BergirvierMunicipality

7.2.8 Services and Infrastructure

(i) Water

The water sources for Piketberg include a fountain on Farm Magdalena and a drawing point in the Berg River south of the town. The fountain water is piped to a reservoir above the town on the slope of the mountain and only chlorine is added. The water from the river is pumped from a pump station at the river to the purification plant near De Hoek and then via a booster pump to a reservoir also above the town. The upgrade of the purification plant is currently taking place.

(ii) Sewerage

The WWTW on the eastern side of the N7 is currently being upgraded to almost double the current capacity and will be completed this year. This will leave additional capacity for extension of the town.

(iii) Electricity

ESKOM is supplying electricity to a substation at De Hoek where the municipality buys it from ESKOM and then distributes it to Piketberg. Currently an additional capacity of 25% is available.

(iv) Refuse

Piketberg currently runs a two (2) bag system where refuse is split to be recycled at a sub contracted plant east of the N7. Other refuse is collected in three (3) bins on a collection site also east of the N7 from where it is transported by the Bergrivier Municipality to Malmesbury.

(v) Storm water

A master plan was drawn up for Piketberg to manage storm water run-off properly and this plan involves diverting storm water coming from the mountain side in a northeasterly direction. The master plan is currently being implemented according to funds being made available.

(vi) Roads/ railway

All roads throughout the town are tarred with pavement stones on the sides where the only problem is maintenance of surfaces. Piketberg is also linked to the railway network.

(vii) Traffic/ Safety

Traffic flow is smooth flowing throughout the town with easy, tarred roads which also connect to all erven. An issue to be addressed is accommodation for overnight trucks.



Chapter 8: Status Quo – Ward 5–Wittewater and Goedverwacht

Ward 5 consists of the mountainous, agricultural and rural landscape where Wittewater and Goedverwacht make up the settlements.

8.1 Goedverwacht

Goedverwacht, established as a Moravian Mission Station in 1889, is nestled between the Piketberg Mountains to the west of Piketberg. Goedverwacht village is located on private property owned by the Moravian Church with the three farms that constitute the Mission Station covering a total area of 8 450ha. The three farms are identified as Farm Goedverwacht 146, Wolfkloof 141 and Ezelsfontein 147. The village of Goedverwacht is located along the Rietrivier on the farm Goedverwacht with Wolfkloof to the north and Ezelsfontein to the south of the village.

8.1.1 Historical Overview

The land originally belonged to a widowed farmer, HendrikSchalk Burger and was known as the farm Burgershoek. With the emancipation of the slaves, he asked his slave, Maniesa (originally from Bengal, India), and her five children and son-in-law to stay on the farm with him and care for him until his death. In his will, he left the farm to Maniesa and her children with the instructions that when all her children had died; their descendants should sell the farm and divide the proceeds. The farm remained in Maniesa's family until 1888 when her last child, Hester, died. Her grave can still be seen in the graveyard of Goedverwacht. Their descendants then decided that instead of selling the farm on open auction, they would sell it to the Moravian Missionaries for 750 Pounds. Owing to its close proximity, it was run as a unit with the older Wittewater Mission Station until 1964. Today these two mission stations are however run as two separate entities.

The church and parsonage at Goedverwacht were built by the villagers, constructed from local stone. (Goedverwachts.com)

8.1.2 Locality

Goedverwacht is located in the Platkloof valley, just off the MR 529 between Piketberg and Velddrif, on the western side of the majestic Piketberg Mountains, approximately 25 kilometres from Piketberg. The Goedverwacht hamlet, which functions as a Mission Station, is a beautiful rural settlement located at the

foot of the mountain, with the Platkloof River running through it. The village is surrounded by the larger farm of approximately 815 hectares.

8.1.3 Demography

The projected population of Goedverwacht is as follows:

Year	2001	2005	2008	2011	2012	2020
Source	(Census)	<u>Growth Potential Study</u>	<i>(Bergrivier SDF – 2008)</i>	(Census)	(Growth based on 2008 estimate)	<i>(Municipal projection)</i>
No of people		1407		1979	1500	1596
Percentage Growth				8% (‘01-‘11)	1% (‘08-‘12)	1% (‘12-‘20)

Table 8.1.3(a): Projected population growth for Goedverwacht, Bergrivier Municipality.

The majority of the residents of Goedverwacht work in the surrounding area and other towns.

8.1.4 Town Hierarchy

Goedverwacht functions as a Moravian Mission Station providing accommodation to the members of the church as well as opportunity for farming. There was no formal township established as the village growing informally as members obtain occupancy rights. There is also no private ownership of land in Goedverwacht, with the Moravian Church owning the farm. The farm is managed by the Overseers Board (*“Opsienersraad”*) members. This board is not only responsible for the day to day running of the village but are also form a link with the Moravian Church office in Cape Town. The head of a household, and a member of the church, may apply for occupancy rights to the board, after which they are afforded an “erf” with dimensions of approximately 20 x 30 metres, which is informally indicated on the land. This “erf” is provided to the residents for free. The Church does charge a monthly fee to cover costs of infrastructure, services and municipal rates. This occupancy right for a portion of property can be inherited by the next of kin of the residents.

Goedverwacht functions as a little rural village providing mainly residential capacity with limited social and commercial services available.

Although the majority of the local residents work in areas outside of Goedverwacht, mainly as artisans, some of the residents use the opportunities to farm. Goedverwacht is a place of livestock farming as well

as gardens which are nurtured along the fertile river bed which are awarded to residents.

An overview of the spatial identity of the urban area of Goedverwacht follows in the table below.

Town	Economic base		Place Identity	Investment Priorities			SDF Classification			
Goedverwacht	Residential settlement	rural	Mission station village	Low infrastructure	–	minor	Low settlement	Order	-	Rural

Table 8.1.4(a): Spatial classification of Goedverwacht.

8.1.5 Economic Base

The town functions as a rural settlement on a Moravian Mission Station farm. The residents only have occupancy rights with no formal property rights. Services provided in the town are limited with the larger centres of Piketberg, located 25 kilometres to the east, providing further services to residents. The residents have access to the farm for the production of fruit and vegetables in the fertile community gardens that are seen along the river banks. There is also limited livestock farming on the larger farm. A local coffee shop as well as self-catering guesthouse accommodation is found within the village, providing limited opportunities for the tourism industry. There are various hiking trails on the farm for tourists.

Development Potential

The development potential of the town is limited and is largely dependent on the development of its tourism potential. The annual *Snoek & Pataat* Festival during June attracts various visitors to the village.

The "*Geïntegreerde Landbouontwikkelingsplan vir Goedverwacht*" that was compiled by BKS Consulting Engineers on behalf of the Western Cape Department of Agriculture in March 2006, provides a comprehensive background study of the farms and their agricultural potential. This document should be used as a guideline for development and indicators of the agricultural potential of the farms. There are various recommendations made in the report indicating how agricultural development should take place on the farm and which areas are suited to this.

The municipal housing waiting list reflects 20 applications for Goedverwacht. At a gross density of 25 units per hectare this represents 0.8 hectares of land.

8.1.6 Spatial Structuring Elements

Mountain

The town's structure is dominated by the fertile Rietkloof valley bordering the river which in turn is set against a mountain backdrop with steep and rocky valley walls. The town is hidden within the valley and is surrounded by the majestic Piketberg Mountains.

River

The Platkloof River runs through the town and provides the ideal setting for the community gardens as well as an important source of water to the community. The river forms a narrow fertile valley when meeting with the wider section of the alluvial river bed north of the centre of town where the community gardens are located.

Vegetation

The farm surrounding the rural settlement offers vast areas of natural vegetation. This rugged mountainous terrain also provides a habitat for various indigenous vegetation types.

Manmade structural elements are described in the section to follow.

8.1.7 Urban Structure

(i) Town layout and uses

The village's informal layout is dominated by the linear development along the access road that follows the bends of the river within the valley.

There are eight distinct residential areas within the rural settlement of Goedverwacht identified as: **1.**Happy Valley, **2.** Rooinoupoort, **3.** Noupoort, **4.** Ou Kraal, **5.** Kerkstraat, **6.** Sandstraat, **7.** Bowerf en **8.**Remler's Park.

The Kerkstraat area is the oldest area within the settlement and forms the central node which

accommodates all social and somewhat limited business services in the village. This area is the narrowest section of the village, overlooking the community gardens along the river to the north with a steep mountain backdrop to the south.

The dominant land use within the village is that of single residential dwellings which are supported by limited social and commercial uses. These include a primary school, business premises, coffee shop, Moravian church, church hall, community hall (that also includes a crèche), a library, post office, elderly service centre as well as limited self-catering holiday accommodation.

The town is accessed via a tar road, off the MR 529 which links Piketberg with Velddrif/Laaipek. The main access road through town is known as Church Street.

The following table provides an overview of the existing land uses in Goedverwacht.

Goedverwacht Land uses		
Land Use	Number	Description
Residential	±460	<p>The main land use within the village of Goedverwacht is single residential dwellings surrounded by farm land</p> <p>The dwellings are located in eight distinct areas within the linear village layout. There are no formal erven created within the settlement.</p> <p>The dwellings also include a self-catering guesthouse.</p>
Business	2	Business uses in Goedverwacht are limited, with a general dealer and a cafe/coffee shop located within the Church Street section of the town.
Post Office	1	Located in the central node immediately west of the church office along Church Street.
Primary School	1	The Goedverwacht Moravian Primary School from Gr R to Gr 8 has a total of 194 learners. Secondary School learners travel by bus to the Secondary schools in Piketberg, on a daily basis.
Crèche	1	The crèche (" <i>Klein Kliitsies</i> ") is located in the community hall, which neighbours the next sports grounds found to the north of Church Street.
Clinic	1	Mobile clinic visits town.
Library	1	Located next to the school in Church street.

Cemetery	1	The cemetery is found in a central area, west of the river and north of Church Street. There is adequate space for expansion; however the potential impact on the river to the west needs to be considered, particularly in terms of expansion direction.
Community Hall	1	The community hall is located next to the new sports ground.
Open Space		There is no formal open space system in Goedverwacht. The rural setting means there is ample open space within the village and its surrounds.
Sports Grounds	1	A new sports ground is located immediately south of Church Street. The new premises replace the two previous sports grounds which were located on the eastern and western side of the town.

Table 8.1.7(a): Existing land uses in Goedverwacht.

(ii) Built form

Goedverwacht village has a linear structure that follows the flow of the river within the valley setting. The town consists mostly of low density single residential dwellings which are seen along the main access route as well as various other gravel roads within the village. The steep slopes of the valley force the linear development to take place along the flatter areas next to the river. The older homes and buildings within the village are constructed of local stone with thatched roofs. Many of these older homes are however in need of repair. Due to the historical significance of these older buildings it is important that they are restored and protected as important cultural heritage sites. Various historical significant buildings can be found in Goedverwacht and these include the Church and parsonage, the old Water Mill, which houses the museum and the Mission Store.

The Church and parsonage were built around 1890 by the well-known Cape Town architect, E. Seeliger.

The newly built houses embody a modern style and use building materials with no particular style in mind.

(iii) Functionality

Due to the valley setting and linear development of the village the town has a length of approximately 3.8 kilometres along the river. The services within the town are limited within the Church Street section, which forms the central node within the town, providing for the basic social and commercial infrastructure. The residents are privy to using the larger services available in Piketberg.

(iv) Movement Network

The access route to the village off the MR 529 (R399) is a tar road which is in good condition. This access

route also forms the main activity route in the village and is identified as Church Street.

8.1.8 Services and Infrastructure

Services in Goedverwacht are mainly provided and managed by the Moravian Mission Church.

(i) Water

The piped potable water area is available to many of the houses in Goedverwacht, which is either directly connected to the houses, via connection tap on individual erven or from communal taps.

Water is extracted from the river by way of a stilling chamber, which sometimes results in leaves and other impurities also entering the water supply. From this intake of water, the water then gravitates to the first of the three reservoirs. The water is then gravitated through filters to the other two reservoirs. Finally, the water is gravitated through internal pipes to the dwellings.

Due to steep slopes the water does not gravitate to some of the houses found on the higher lying areas.

Issues such as the quality of the water, inadequate storing capacity of the water, the aging pipe system and inadequate provision of water to higher lying area have been identified by the community.

(ii) Sewerage

Sanitation systems used in Goedverwacht include the old bucket system, pit toilets and septic tanks. Due to the houses being situated close to each other, the septic tanks do not always work properly. The other two systems pose a potential health risk to the community as well as the potential pollution of ground water as well as the river system.

(iii) Electricity

Bulk Electricity is supplied to the town by Eskom to the local Board which is responsible for the collection of fees from residents. The new houses all have prepaid meters installed. Not all the houses have access to electricity with many of the older houses still making use of alternative forms of energy for cooking, heat and lighting such as gas, paraffin, wood and candles.

In a recent agreement between Eskom and the local Board it was decided that Eskom will be responsible for the individual delivery of electricity to the residents from April 2013. Pre-paid meters will be installed in

the dwellings as part of an on-going provision of electricity to individual residents.

(iv) Refuse

Refuse is collected from all the houses by a contractor appointed by the Moravian Church. The refuse is transported to the Highlands Refuse site in Malmesbury.

(v) Storm water

There are no formal storm water system is in place in Goedverwacht. This uncontrolled storm water runoff results in damage to roads as well as to dwellings from time to time.

(vi) Roads

The main access road to Goedverwacht is tarred and in good condition. Internal roads within the village are gravel surfaced. These gravel roads were not officially designed to handle storm water flow and concentrated traffic, which has resulted in deterioration and a general poor condition of the roads.

8.2 Wittewater

Wittewater, established as a Moravian Mission Station around 1859, nestles on the slopes of the Piketberg Mountain.

8.2.1 Historical Overview

Wittewater together with the Goedverwacht Mission Station was run as a single entity for many years. Since 1964 these two Mission Stations have been run as separate entities. The original whitewashed and thatched houses had fallen into disrepair but have recently being restored as part of an initiative by various private companies and state departments. The older buildings together with the history of the Mission Station provide an important cultural and historic entity that needs to be conserved.

8.2.2 Locality

Wittewater is a beautiful rural village, located against the backdrop of the southern foot slopes of the majestic Piketberg Mountains, just off the MR 529 (R399) between Piketberg and Velddrif. The village is

located approximately 11 kilometres to the west of Piketberg. Wittewater village is surrounded by the larger farm of approximately 676 hectares. The farm and village is owned by the Moravian Church.

8.2.3 Demography

There are no formal statistics available on the population of Wittewater.

The majority of the residents of Wittewater work in the surrounding area and towns.

8.2.4 Town Hierarchy

Wittewater functions as a Moravian Mission Station providing accommodation to the members of the church as well as opportunity for farming. There has been no formal township establishment with the Moravian Church owning the farm. The farm is managed by the Overseers Board (*Opsienersraad*) members. This board is not only responsible for the day to day running of the village but act as the link with the Moravian Church office in Cape Town. The head of a household, and member of the church, may apply for the rights of occupancy to the Board, after which they are afforded an "erf" with dimensions of approximately 20 x 30 metres, which is informally indicated on the land. This "erf" is provided to the residents for free. The Church charges a monthly fee to cover cost of infrastructure, services and municipal rates. This occupancy right to the property can be inherited by the next of kin of the residents.

Wittewater functions as a little rural village providing mainly residential uses with limited social infrastructure.

Although the majority of the local residents work in areas outside of Wittewater, some of the residents use the opportunity to farm. An overview of the spatial identity of the urban area of Wittewater follows in the table below.

Town	Economic base		Place Identity	Investment Priorities			SDF Classification
Wittewater	Residential settlement	rural	Mission station village	Low infrastructure	–	minor	Rural settlement

Table 8.2.4(a): Spatial classification of Wittewater.

8.2.5 Economic Base

The village functions as a rural settlement on a Moravian Mission Station farm. The residents only have occupancy right with no formal property rights. Services provided in the town are limited with the larger centres of Piketberg 11 kilometres to the east providing more specialised social and commercial services to

the residents. The residents have access to the farm for the production of vegetables in the centrally located community gardens that are set along the river. The mountain drainage sustains the perennial river.

The larger farm also provides opportunity for gardens and livestock farming.

Development Potential

The development potential of the village is limited and is mainly dependent on the development of its tourism.

The municipal housing waiting list reflects 15 applications for Wittewater. At a gross density of 25 units per hectare this represents 0.6 hectares of land.

8.2.6 Spatial Structuring Elements

Mountain

The village is dominated by the majestic mountain backdrop provided by the Piketberg Mountains.

River

The settlement is set on the banks of a river that drains from the Piketberg Mountain. Limited communal gardens are located along the river bed. The river provides for a broad alluvial bed on the northern part of the village with a narrow river bed south of the access route.

Vegetation

The farm surrounding the rural settlement provides for vast areas of extensive natural vegetation. This rugged mountainous terrain also provides a habitat for various indigenous vegetation types.

Manmade structuring elements are described in the section to follow.

8.2.7 Urban Structure

(i) Town layout and uses

The village's informal layout is dominated by a linear development along the north eastern bank of the river

and a grid layout on the western bank and south eastern bank of the river. The topography of the mountain provides for a southern facing slope with the river providing for steeper eastern and western slopes draining towards the river. There are three distinct residential areas within the rural settlement of Wittewater, which can be identified as: **1.** the older linear settlement on the north eastern side of the river, **2.** the central node surrounding the church and school surrounding the entry road to Wittewater in the south eastern section of the town and **3.** the western section of the town on the western bank of the river.

The dominant land use within the village is single residential dwellings which are supported by limited social and commercial uses which include a primary school, crèche, business premises, funeral parlour, Moravian church, church hall, a library, post office and a small composting plant.

The town is accessed via a tar road, off the MR 529, between Piketberg and Velddrif/Laaiplek. The main access road to town is known as Church Street.

The following table provide an overview of the existing land uses in Wittewater.

Wittewater Land uses		
Land Use	Number	Description
Residential	±183	<p>The main land use within the village of Wittewater is single residential dwellings surrounded by farm land.</p> <p>There are no formally created erven in the settlement.</p> <p>The dwellings are located in three distinct areas within the village along the banks of the river.</p> <p>The older houses are typically white washed dwellings with thatched roofs.</p>
Business	4	Business uses in Wittewater are limited, only consisting of a general dealer (Mission store) and a house shop. A small funeral parlour and composting plant is also located around the central node.
Post Office	1	The post office is located in the north eastern section of town in one of the older homes.
Primary School	1	The Carl Schreve Moravian Primary School Gr R to Gr 7 with 303 learners. Older learners are transported on a daily basis by bus to the Secondary schools in Piketberg.
Crèche	1	The crèche is located on the site of the Moravian store in the western part of town.
Clinic	1	Mobile clinic visits town.

Cemetery	1	The cemetery is located on the larger farm to the left of the entry road to Wittewater – there is adequate room for expansion.
Church Hall	1	The church hall is located next to the church directly to the east of the entry road and used for public meetings.
Open Space		There is no formal developed open space system in Wittewater. The rural setting provides for ample open space around and within the village.
Sports Ground		A new sports ground is proposed to be established on the western periphery of the built area. An informal sport ground area already exists at this location.
Formal Bus stop/Taxi rank		A formal bus stop/Taxi rank with ablution facilities and enclosed waiting areas was established in the central part of town next to the river crossing.

Table 8.2.7(a): Spatial classification of Wittewater.

(ii) Built form

Wittewater village has a linear form along the banks of the river. The town consists mainly of low density single residential dwellings which are set within three distinct areas. The older homes and buildings within the village are typical whitewashed houses with thatched roofs. Many of these older homes have been renovated as part of a joint venture between private companies and various state departments. Due to the historical significance of these older buildings it is important that they are restored and protected as important cultural heritage sites. Various historical significant buildings occur in Wittewater, which include the Church and church hall and some houses.

The recently build houses have more modern styles and modern building materials were used. No distinct building style is noticeable.

(iii) Functionality

The town has a linear setting on both sides of the river with the length of the village being approximately 900 metres in a north south direction and a width of 560 meters in an east west direction. The services within the town are limited with the location of most of the social infrastructure along Church Street, which forms an important social node within the town. A formal bus stop was created on the eastern side of the river just before the river crossing. This facility also includes a formal enclosed waiting area as well as ablution facilities. There is however no formal bus service to and from Wittewater, with local residents making use of a taxi service from Piketberg.

(iv) Movement Network

The access route to the village off the MR 529 (R399) is a tar road in good condition.

The access road also extends across the river, forming the main activity route in Wittewater. The section of road before the river crossing was recently upgraded and formalised with pavements. The formal bus stop with related facilities is also located within this section of the access route.

8.2.8 Services and Infrastructure

Services in Wittewater are mainly provided by the Moravian Mission Church.

(i) Water

Piped potable water is available to the majority of the houses in Wittewater either with direct connection to the houses or from communal taps in the older areas.

Water is piped from the mountain catchment area to the reservoirs and then distributed through gravitation to the houses.

(ii) Sewerage

Sanitation systems that are currently used in Wittewater include the old bucket system, pit toilets and septic tanks. Due to the houses being close to each other it does not always allow for the adequate functioning of the septic tank systems, with the other two systems providing a potential health risk to the community as well as the potential pollution of ground water and the river system.

(iii) Electricity

Bulk Electricity is supplied to the town by Eskom while the local Overseers board is responsible for the collection of fees from the residents. The new houses all have prepaid meters installed. Not all the houses have access to electricity with many of the older houses still make use of alternative forms of energy for cooking, heat and lighting such as gas, paraffin, wood and candles.

A recent agreement between Eskom and the local board determines that Eskom will be responsible for the individual delivery of electricity to the residence from April 2013. Pre-paid meters will be installed to the dwellings as part of an on-going provision of electricity to the individual residents.

(iv) Refuse

Refuse is collected from all the houses by a contractor that was appointed by the Moravian Church. The refuse is transported to the Highlands Refuse site at Malmesbury.

(v) Storm water

There are very limited formal storm water systems in place in Wittewater resulting in damage to roads through continued runoff along the steeper slopes.

(vi) Roads

The main access road to Wittewater is tarred and paved and in a good condition. Internal roads within the village are gravel surfaced that were not designed to be suited for steep slopes, storm water runoff and increased traffic movement, resulting in deterioration and general poor conditions of the roads.



Chapter 9: Status Quo – Wards 6–Aurora, Dwarskersbos and Redelinghuys

Ward 6 includes the three settlements of Aurora, Dwarskersbos and Redelinghuys.

9.1 Aurora

Aurora is located on the agricultural plains of the Sandveld, south of the Piketberg Mountain range.

9.1.1 Historical Overview

Aurora was establishment in 1906 around the Dutch Reformed Church and was named after Ceylonia Aurora Perreira, the daughter of the first Dutch Reformed minister in the area. It was here that the French astronomer-geodesist, Abbé Nicolas de le Caille set up an observatory. De le Caille's concluded that the world was shaped like a pear, a result that confused the astronomical world for decades until they proved otherwise.

9.1.2 Locality

Aurora is located in the West Coast region 43 kilometres North West of Piketberg. The town is located centrally in the Bergrivier Municipal area within the Sandveld region. The latter is renowned for potato production. The town has rural character and is located on the western foot slopes of the Aurora Mountain. Aurora originally developed as a church settlement within the surrounding rural landscape. Today the town functions as a rural settlement that houses mainly farm workers from the surrounding areas, retirees as well as people owning weekend retreat centres in this quaint little village.

9.1.3 Demography

The projected population growth for Aurora is as follows:

Year	2001	2005	2008	2011	2012	2020
Source	(Census)	<u>Growth Potential Study</u>	<i>(Bergrivier SDF – 2008)</i>	(Census)	(Growth based on 2008 estimate)	<i>(Municipal projection)</i>
No of people	342	342	420	578 (‘01-‘11)	433 (‘08-‘12)	470 (‘12-‘20)
Percentage Growth				7%	1%	1%

Table 9.1.3(a): Projected population growth for Aurora.

9.1.4 Town Hierarchy

Aurora functions mainly as a residential town whilst it provides supporting social infrastructure (church, school, library, clinic and sporting facilities) to the town and the surrounding rural areas. As a rural residential village it provides residential uses for local inhabitants, surrounding farm workers, retirees and people from the cities with holiday homes in the town. An overview of the spatial identity of the urban area of Aurora follows in the table below.

Town	Economic base			Place Identity	Investment Priorities			SDF Classification		
Aurora	Residential	Town	with supporting social infrastructure	Sandveld town	Low social	–	minor	Low order settlement		rural

Table 9.1.4(a): Spatial classification of Aurora.

9.1.5 Economic Base

The economic base of the town revolves mainly around the residential uses and the town's role as a low order service centre for the local inhabitants and the surrounding rural population.

Development Potential

The development potential of the town is limited and is mainly based on social infrastructure as well as development of tourism potential. The various vacant erven provide opportunities for infill residential development as well as opportunities for limited extension of business opportunities.

The municipal housing waiting list reflects 60 applications for Aurora. At a gross density of 25 units per hectare this represents 2.4 hectares of land.

9.1.6 Spatial Structuring Elements

Mountains

The towns picturesque topographical setting against the mountain backdrop provide for extensive views and an attractive townscape.

Vegetation

Although the immediate surrounding setting of Aurora provides for extensive cultivated farmland the mountainous backdrop provides for areas of natural vegetation.

9.1.7 Urban Structure

(i) Town layout and uses

The town has been created on a typical grid pattern surrounding the church and central plain area. The strong rural character of the town is supported by the large plots that are serviced by dirt roads. The focal point of the town is the Dutch Reformed Church located in the central area of town just north of the entry road to the town.

The dominant land use within the town is single residential dwellings which are supported by various social uses which include a school and school hostel, community hall, clinic, municipal offices including a library, sports grounds, a single business premises, a cemetery and a small airstrip.

The town has an integrated urban form with lower density residential erven in the central and northern section of town and higher density residential uses on the south eastern section of the town. There are various vacant erven distributed throughout the town, which provide for infill opportunities.

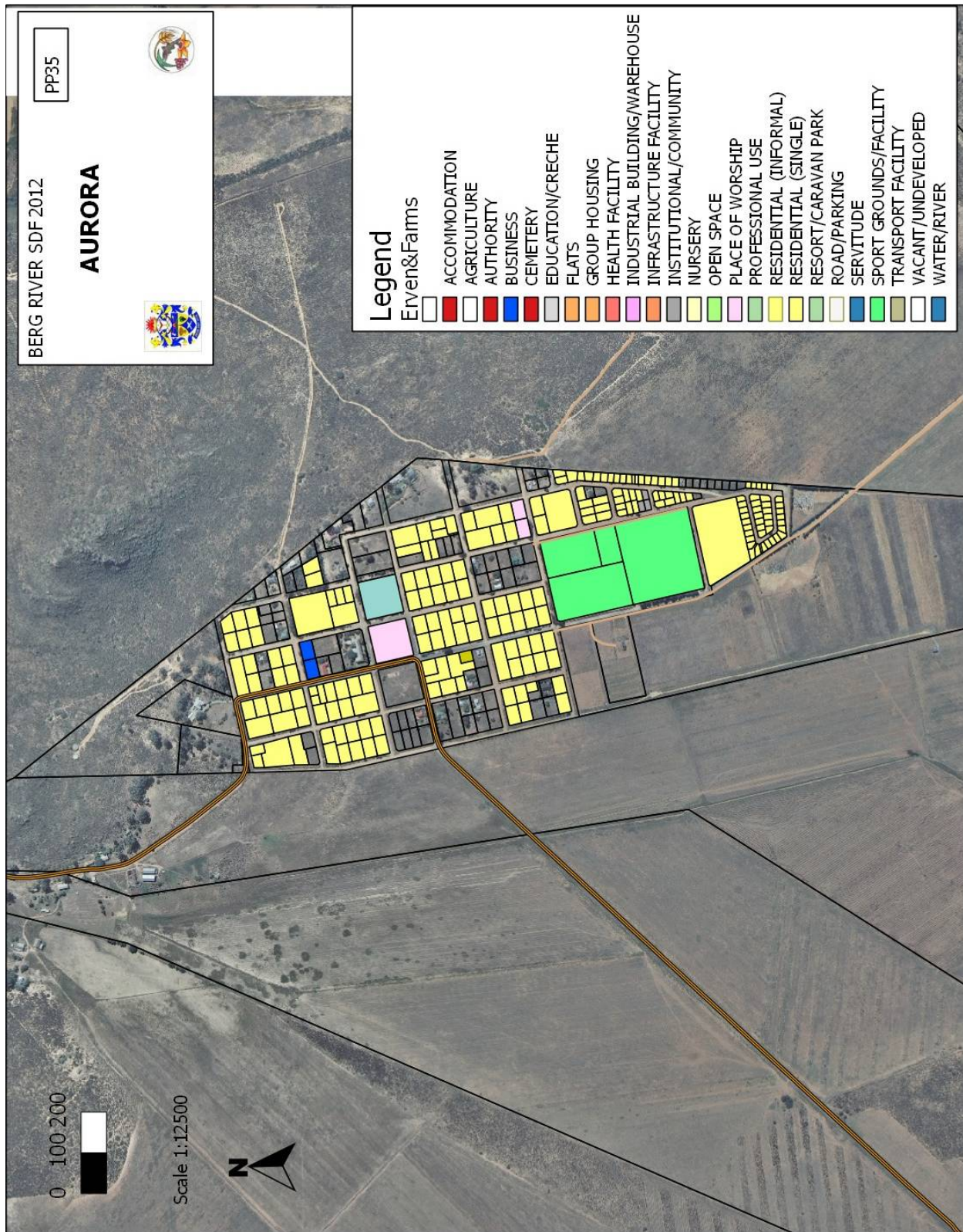
The setting of the town against the foot slopes of the Piketberg Mountain provides extensive views of the surrounding area. These visual elements of the town need to be protected in future development.

The town is accessed via a tar road linking to the MR45 between Piketberg and Elands bay.

The following table provides an overview of the existing land uses in Aurora.

Aurora Land uses		
Land Use	Number	Description
Residential	283	The main land use within Aurora is residential with 80 residential erven still vacant.
Business	2	Business sites in Aurora are limited, only consisting of a general dealer and a restaurant located around the central park.
Clinic	1	Located in Main Street.
School	2	Aurora High School from Gr.1 to 9; with 215 learners located between School Street and Church Street in the central part of town. The second school located in the southern part of Aurora is no longer in use.
School Hostel	1	School hostel opposite school.
Library	1	Located in the municipal offices in Main Street
Cemetery	1	Located on the southern periphery of town – limited area available – need to identify area for future expansion
Community Hall	2	Two community halls with one located in Main Street next to the school hostel and the second one located in the southern part of town between Hof Street and high Street.
Airstrip	1	Informal airstrip on the western boundary of town.
Open Space	1	Only one formally developed open space is in the form of the central park in front of the church.
Sports ground	1	Adequately developed sports grounds in good condition, includes tennis courts and rugby field with floodlights.
Authority	2	Electrical Substation and a Refuse collection area

Table 9.1.7(a): Existing land uses in Aurora.



Map 9.1.7(a): Land uses, Aurora, BerggrivierMunicipality

(ii) Density

The current gross density in Aurora is 4du/ha indicating a very low urban density. Future densification of the town will be subject to private owner's willingness to subdivide.



(iii) Vacant land

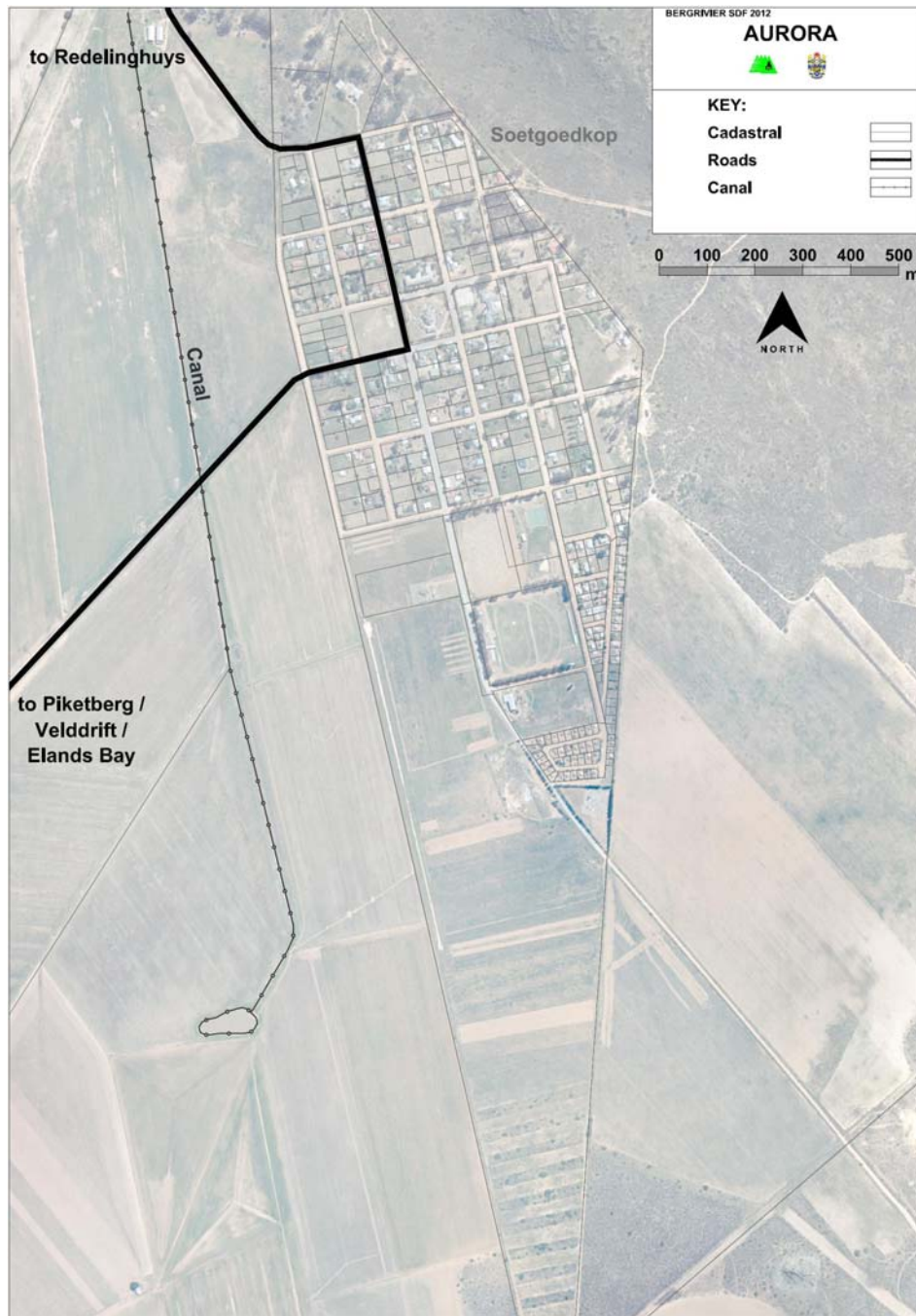
Total area (built edge)	Vacant erven within edge	Ownership
±73ha	80	Mostly privately owned land

Table 9.1.7(b): Vacant land in Aurora.

A vacant land audit was done for all the towns in the Bergrivier Municipal area with the Vacant Land Audit maps included in the annexure of this report.

(iv) Built form

The town has a rural character set against a picturesque topographical setting in the form of the Piketberg Mountain backdrop. The built form consists of low density single residential dwellings with no particular architectural style. The low density footprints and the existing dirt roads provide for the rural character of the town which is set around the central square hosting the Dutch Reformed church and park.



Map 9.1.7(b): Structuring Elements, Aurora, Bergrivier Municipality.

(v)

Functionality

The town is relatively compact with a 1.5 kilometre diameter on the north south axis and a 680 meter diameter on the east west axis. The services within the town are therefore within walking distance of all the residents. The services in the town are limited to mainly social infrastructure such as a community hall,

Dutch Reformed Church, clinic, library and sports ground together with one business premises, all located along Main Street.

(vi) Movement Network

Direct access to Aurora is via a tar road off the MR 529, which is the connecting road between Piketberg and Elands bay.

The main **activity road** within Aurora is on the Main Street and Church Street, with Church Street being the main entry into town. Both of these roads are tarred with most of the other roads within Aurora being dirt roads in a good condition.

9.1.8 Services and Infrastructure

Bergvriër Municipality provides the services within Aurora town.

(i) Water

The water source for Aurora is five (5) boreholes in the mountain to the west of the town from where it gravitates to the Water Treatment Plant.

(ii) Sewerage

Two systems currently exist in Aurora, most residents make use of a French drain system with a few septic tanks also occurring in town. The septic tanks are pumped out by the municipality.

(iii) Electricity

The municipality supply electricity to the town.

(iv) Refuse

Refuse bags are collected from all the houses by the municipality and then transported to the collection point in Aurora from where it goes to the transfer station in Velddrif to eventually be dumped in Malmesbury.

(v) Storm water

No formal storm water system are in place in Aurora and storm water run-off accumulates on a farmer's land to the southwest of the town creating problems for the farmer in that the soil gets too wet during the winter months. A master plan has to be commissioned to address the whole town's storm water run-off.

(vi) Roads

The majority of roads in Aurora are tarred.

(vii) Traffic/ Safety

Traffic flow is smooth flowing throughout the town with easy access points, also to all erven.

9.2 Dwarskersbos

9.2.1 Historical Overview

Dwarskersbos was established as a coastal holiday village 11 kilometres north of Laaiplek on the West Coast. The name is said to be derived from the Afrikaans word "*Kersbos*", a plant species that occurs in the surroundings. On 7 November 1497 Vasco da Gama landed somewhere between Dwarskersbos and Laaiplek. The town was struck on 27 August 1969 by a tidal wave almost 7 meters high that swept more than 300 meters inland.

9.2.2 Locality

Dwarskersbos is a linear coastal town located along the West Coast approximately 15 kilometres north of Velddrif. The town is a popular holiday destination with its pristine and unspoiled beaches and is home to natural dune vegetation forming a definite attraction.

9.2.3 Demography

The projected population growth for Dwarskersbos is as follows:

Year Source	2001 (Census)	2005 <u>Growth Potential Study</u>	2008 (<i>Bergvriër SDF – 2008</i>)	2011 (Census)	2012 (Growth based on 2008 estimate)	2020 (<i>Municipal projection</i>)
No of people	341	335	800	670	944	1600
Seasonal increase			8000			16000
Percentage Growth		0%	69%	10% (‘01-‘11)	5% (‘08-‘12)	9% (‘12-‘20)
Seasonal Percentage Growth			1144%			199%

Table 9.2.3(a): Projected population growth for Dwarskersbos.

Due to the town's popularity as a holiday destination it experiences a large influx of people over the holiday periods, with the population numbers increasing up to 8000 people during these periods.

9.2.4 Town Hierarchy

Dwarskersbos functions mainly as a coastal holiday town with other services very limited within the town. As a coastal holiday village it provides mainly residential uses for local inhabitants, retirees and national and international visitors. An overview of the spatial identity of the urban area of Dwarskersbos follows in the table below.

Town	Economic base	Place Identity	Investment Priorities	SDF Classification
Aurora	Residential holiday destination	Coastal town	Low – minor infrastructure	Low order coastal settlement

Table 9.2.4(a): Spatial classification of Dwarskersbos.

9.2.5 Economic Base

The economic base of the town revolves mainly around the residential uses (part time and permanent), and the town's role as a coastal holiday destination for local and international visitors. Services provided in the town are limited. Hence the larger centres such as Laaiplek and Velddrif, located 11 kilometres south of Dwarskersbos, provide most economic and social services to residents of Dwarskersbos. The fluctuating population numbers does not support the provision of many services in the town.

Development Potential

The development potential of the town is limited and is mainly based on infrastructure as well as development of its tourism potential. The various vacant erven provide opportunities for infill residential development as well as opportunities for the limited extension of business opportunities.

There is no formal waiting list for subsidised housing in Dwarskersbos nor any future need as subsidised housing will be provided within Velddrif.

9.2.6 Spatial Structuring Elements

Coastline

The town's structure is dominated by the form of the coastline. The wide long beach dominates the spatial element of the coastal town. The sea and coastal area with its dune vegetation are the most important natural resources due to the town's location.

Vegetation

The immediate surrounding area of Dwarskersbos provides for extensive areas of natural vegetation along the coastline. Fynbos vegetation is the dominant vegetation type found on sandy coastal plains around the town. Access across the natural area between the residential development and the beach should be limited to existing footpaths. Boardwalks at major access points, to limit potential impact on the natural systems, should be considered.

9.2.7 Urban Structure

(i) Town layout and uses

The town's layout is dominated by the linear design along the form of the coastline. Most of the development within the town is located between the access road, the R 27, and the coastline. The town consists of a southern and northern residential section and a central caravan park and holiday accommodation area. Kersbosstrand, located north of the central holiday accommodation area, is a newly developed area on the northern periphery of town.

The southern section of the town is narrow (only between the road and coastline) and is dominated by cul de sac access roads towards the coast, while the residential area north of the caravan park provides for a more conventional layout. There is no definite nodal development within the town.

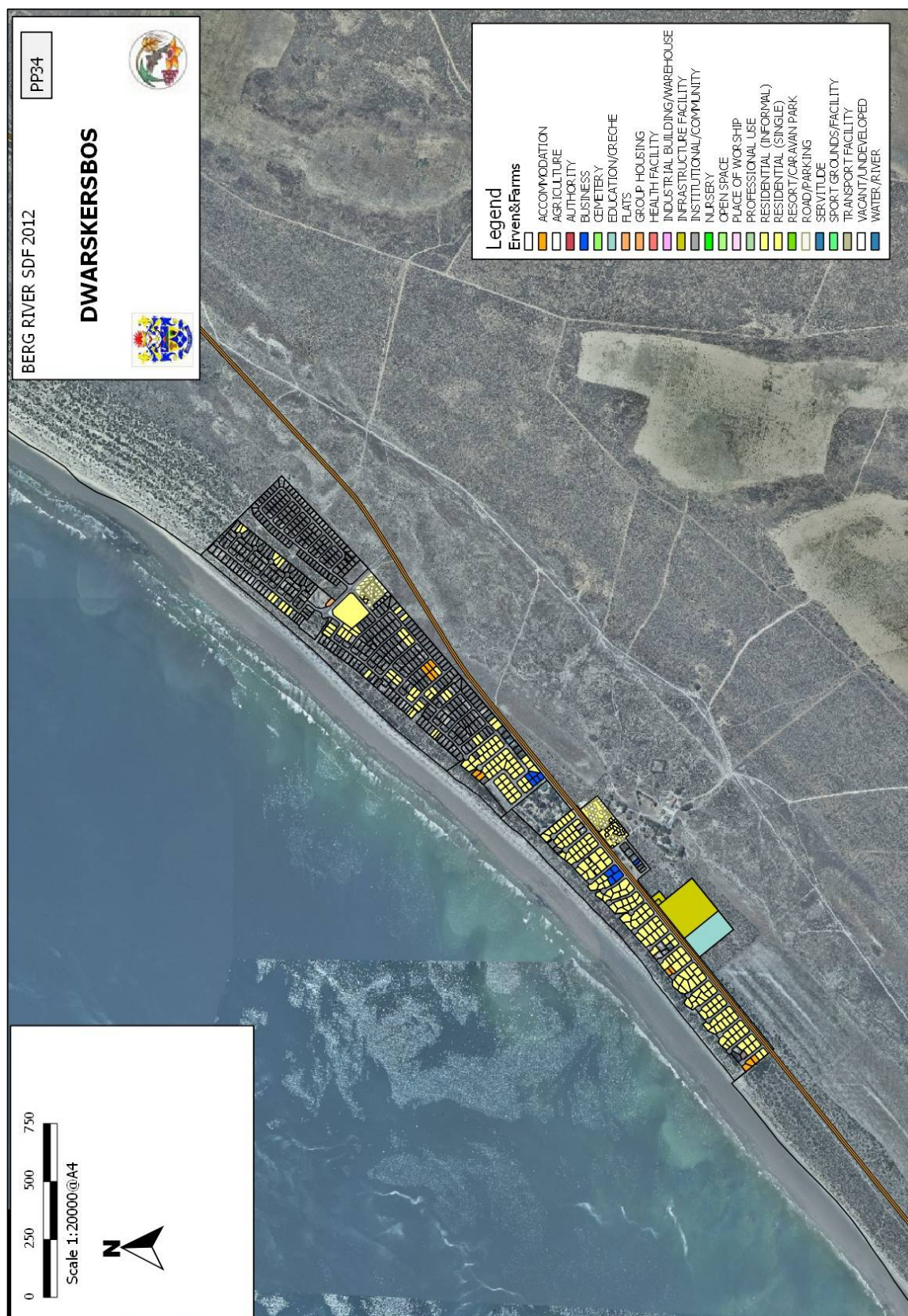
The dominant land use within the town is single residential dwellings which are supported by limited social uses which include a pre-school, a single business premises, a community hall and a caravan park which also include holiday cottages. Group housing developments are located on the north eastern side of the R27 as well as within the Kersbosstrand development.

The town is accessed via a tar road, the R27, linking Velddrif/Laaipek to the south with Elands bay in the north.

The following table provide an overview of the existing land uses in Dwarskersbos.

Dwarskersbos Land uses		
Land Use	Number	Description
Residential	860	<p>The main land use within Dwarskersbos is single residential dwellings, mostly only occupied during weekends and holidays.</p> <p>Two higher density group housing developments occur in Dwarskersbos, with one east of the access road with 64 units and the other next to the access road to the Kersbosstrand development towards the north, with a total of 36 erven.</p> <p>The holiday cottages within the caravan park are also located on individual erven (23)</p>
Business	1	Business sites in Dwarskersbos are limited, only consisting of one cafe located to the east of the access road.
Pre-School	1	The " <i>Slimkoppies Akademie</i> " pre-school is located east of the access road.
Cemetery	0	<p>There is no cemetery in Dwarskersbos – residents make use of the cemetery in Velddrif.</p> <p>A private cemetery is located on the farm immediately east of the town.</p>
Community Hall	1	A community hall is located on the grounds of the caravan park.
Open Space	2	<p>There is no formal developed open space system in Dwarskersbos.</p> <p>The natural setting along the coast provides for a vegetation corridor between the developed area and the beach.</p>

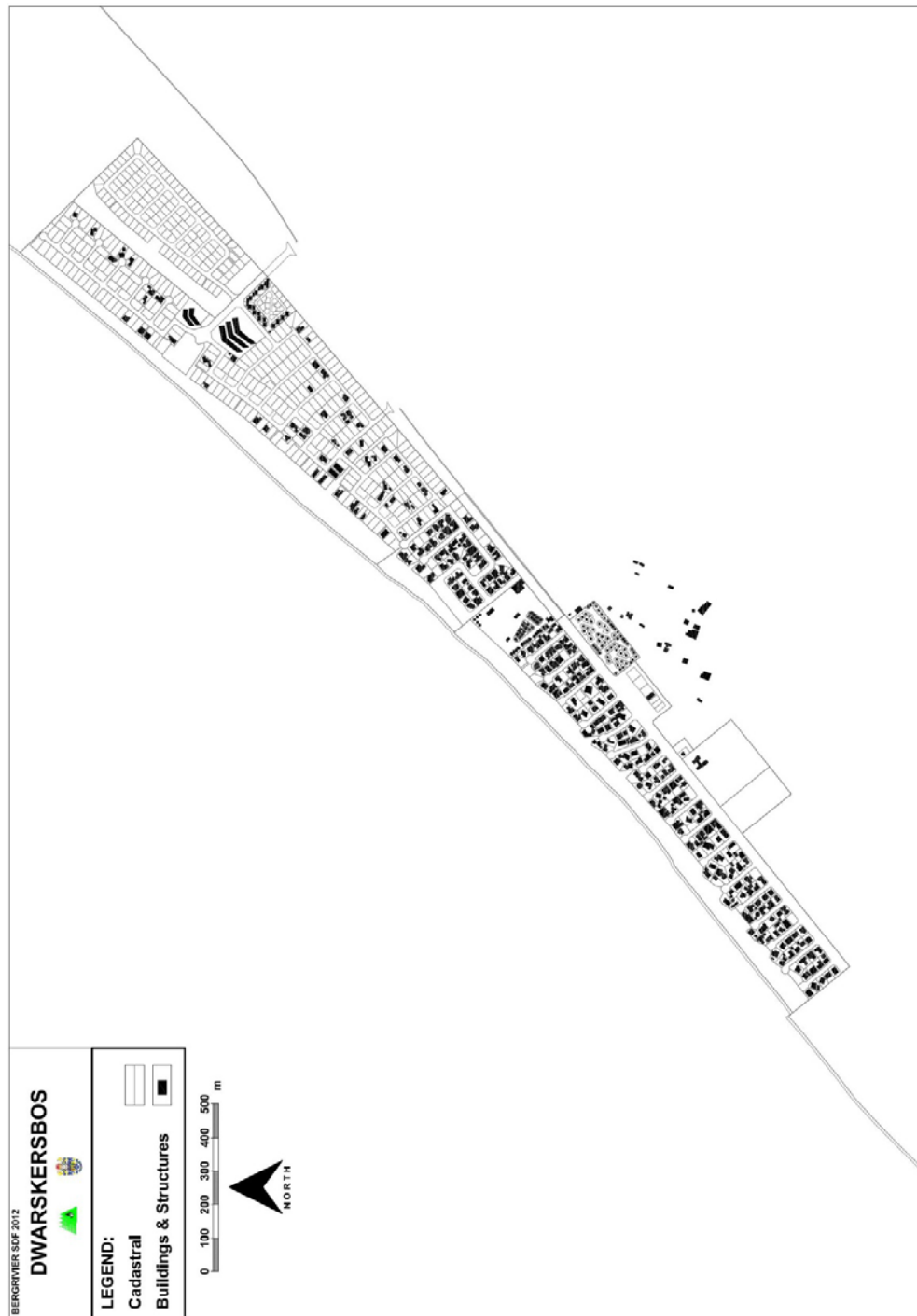
Table 9.2.7(a): Existing land uses in Dwarskersbos.



Map 9.2.7 (a): Land uses, Dwarskersbos, Berggrivier Municipality

(ii) Density

The current gross density in Dwarkersbos is 5.8 du/ha which is very low. Future densification of the town will be subject to private owner's willingness to subdivide.



(iii) Vacant land

Total area (built edge)	Vacant erven within urban area	Ownership
±95ha	410	Mostly privately owned residential erven – large new subdivision on the north eastern boundary of the town.

Table 9.2.7(b): Vacant land in Dwarskersbos.

A vacant land audit was done for all the towns in the Bergrivier Municipal area with the vacant land Audit maps included in the annexure of this report.

(iv) Built form

Dwarskersbos is a small coastal town with a linear structure that follows the form of the coastline. The town consists mainly of low density single residential dwellings with the southern part having no particular built form. Newer homes to the north have a more distinct built form resembling white washed West Coast cottages. Two higher density group housing developments also occur within the town, with the one to the east of the access road having an unusual built form completely removed from any architectural style typical of the West Coast.



Map 9.2.7(b): Structuring Elements, Dwarskerbos, Berggrivier Municipality.

(v) Functionality

Although the town has a linear form along the coastline the town is relatively compact with a 3.2 kilometre diameter on the north south axis and an average diameter of 400 meters on the east west axis. The services within the town are limited with the caravan park and community hall in a central location in terms of the town structure and within walking distance of all residents.

The community services and business premises are all located on the R 27 through route, which is the access road to Dwarskersbos.

(vi) Movement Network

The main access road to Dwarskersbos, the R27 also forms the main activity road within the town. The other roads mainly function as access roads to the residential erven.

9.2.8 Services and Infrastructure

Bergivier Municipality provides the services within Dwarskersbos.

(i) Water

Water to Dwarskersbos is sourced from the WCDM pipeline also feeding Velddrif/ Laaiplek to the south. Water is then stored in two (2) reservoirs and pumped from there into a pressure tower to feed the erven in the town. Water supply is complicated during seasonal peak times when the population increases drastically. In order to cater for such demand the reservoirs are storing more water than needed during the off season with the result that water becomes salty during these times and needs to be retreated to eliminate the problem.

(ii) Sewerage

Three systems currently exist in Dwarskersbos, a septic tank system, a French drain system in the older developed area and a water borne system for the new development area to the north. The septic tanks are pumped by the municipality and transported to the Dwarskersbos Waste Water Treatment Works, which is located two (2) kilometers north of Dwarskersbos. The water borne system is pumped to the WWTW. Services are considered adequate.

(iii) Electricity

The municipality supply electricity to the town and the current supply is adequate.

(iv) Refuse

Refuse bags are collected from all the houses by the municipality and are then transported to the Transfer station in Velddrif from where they get taken to the Highlands Refuse site at Malmesbury.

(v) Storm water

There is no storm water system in place for the older area of Dwarskersbos and storm water drains into the sand dunes between the houses and the beach.

(vi) Roads

The majority of roads in Dwarskersbos are tarred with a maintenance plan in place. Direct access to Dwarskersbos is via the R 27 between Velddrif/Laaiplek in the south and Elands Bay in the north. This

road also form the main activity road in Dwarskersbos with all the services located along this road.

(vii) Traffic/ Safety

Traffic movement is smooth flowing throughout the town with easy access points, also to all erven. The short cul de sacs or dead ends in the older development to the south promote safety.

9.3 Redelinghuys

Redelinghuys is a Sandveld village in the picturesque Verlorenvlei valley located halfway en route to the sea from Piketberg.

9.3.1 Historical Overview

The town Redelinghuys was established in 1906 when land belonging to J.N. Redelinghuys was donated for the building of the Dutch Reformed church.

9.3.2 Locality

The rural village of Redelinghuys is located 160 kilometers north of Cape Town. Redelinghuys is connected with Piketberg and Elands Bay via the R366 regional route.

9.3.3 Demography

The projected population growth for Redelinghuys is as follows:

Year	2001	2005	2008	2011	2012	2020
Source	(Census)	<u>Growth Potential Study</u>	<i>(Bergrivier SDF – 2008)</i>	(Census)	(Growth based on 2008 estimate)	<i>(Municipal projection)</i>
No of people	581	593	840	574	874	900
Percentage Growth				0% (‘01-‘11)	1% (‘08-‘12)	0% (‘12-‘20)

Table 9.3.3(a): Projected population growth for Redelinghuys.

9.3.4 Town Hierarchy

Redelinghuys has been classified in the current SDF as an isolated village and the functions being provided here classify it as a lower order town. An overview of the spatial identity of the urban area of Porterville follows in the table below.

Town	Economic base		Place Identity		Investment Priorities		SDF Classification
Eendekuil	Residential supporting social infrastructure	Town with		Rural town	Major infrastructure	social infrastructure	Low order rural settlement

Table 9.3.4(a): Spatial classification of Redelinghuys.

9.3.5 Economic Base

Redelinghuys functions as a residential rural village and provides supporting social infrastructure (church, school, library, clinic, police station and sporting facilities) for the town and the surrounding agricultural areas. As a village it provides residential uses for local inhabitants, surrounding farm workers and retirees. It provides a police station, a public library, a satellite health clinic, and two primary schools that are going to be conjoined in the near future. There is a guesthouse linked with a camping site next to the river at the northern entrance to the town catering for visitors to the area. Redelinghuys lies in the upper reaches of the Verlorenvlei a wetland of International Importance as per RAMSAR convention.

Development Potential

The town has limited growth potential that is dependent on agriculture and also the development of tourism.

The municipal housing waiting list reflects 140 applications for Redelinghuys whilst the demand in 2007 was 102 households. At a gross density of 25 units per hectare this represents 5.6 hectares of land.

9.3.6 Spatial Structuring Elements

River

The town is situated on the south bank of the upper reaches of the Verlorenvlei River and the river provides a unique feature to the town as one crosses the riverbed to enter the town from a northern direction. The river flows into the Verlorenvlei at Elands Bay and the whole area has been declared a RAMSAR site.

Vegetation

Vacant municipal land is available on the western, southern and eastern side of the town and the natural vegetation on this commonage and in the vicinity of Redelinghuys is one of the main assets of the area that has to be handled with care in regarding any future development.

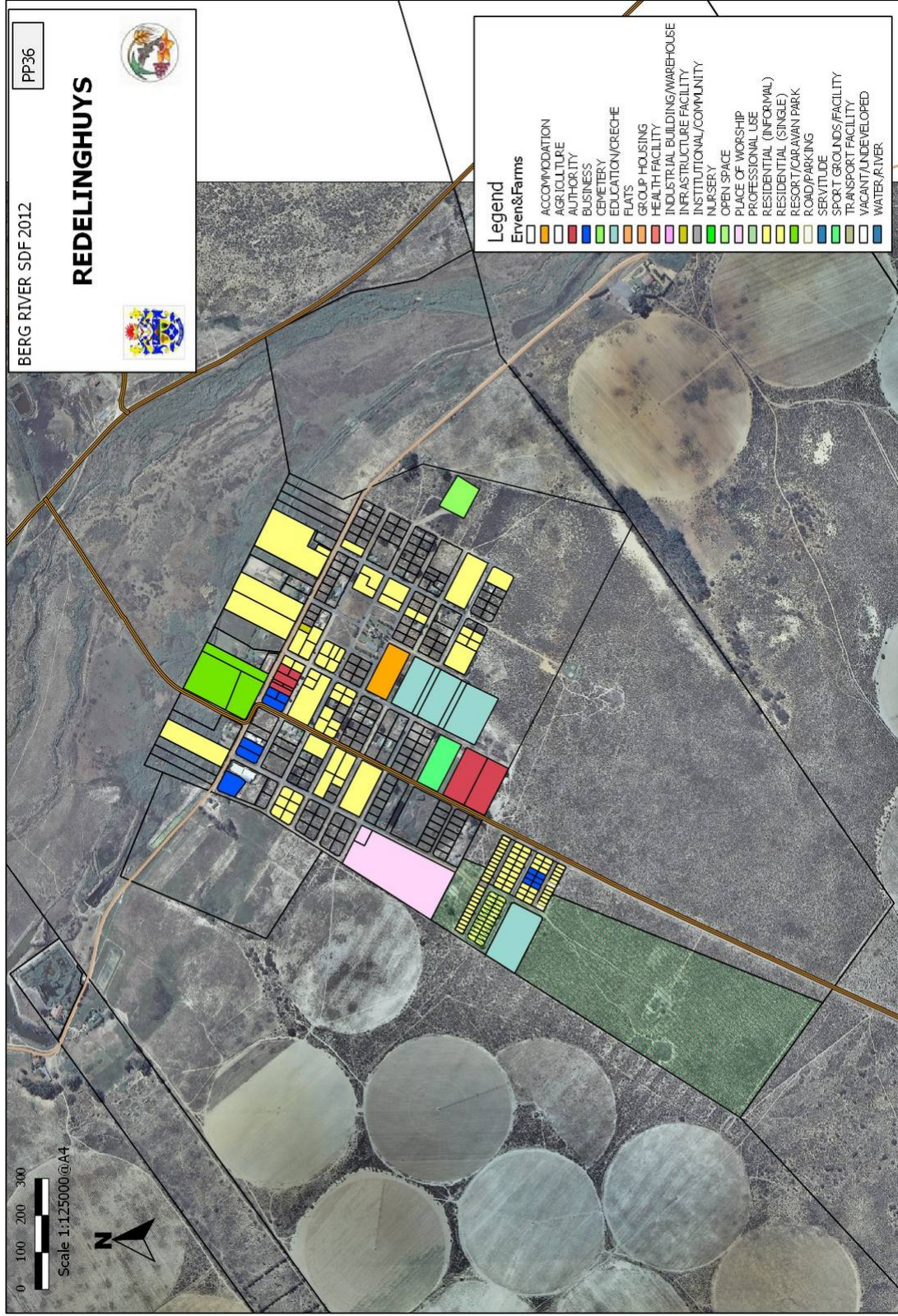
9.3.7 Urban Structure

(i) Town layout and uses

The following table provide an overview of the existing land uses in Redelinghuys:

Redelinghuys Land uses		
Land Use	Number	Description
Residential	291	Buildings scattered throughout town with many vacant erven
Business	±10	Sites found mainly around entrance to town from the Elands Bay road
Clinic	1	Combined with municipal building and available 3 days per week
School	2	Primary schools to merge Redelinghuys Laerskool Gr 1- 7; 87 learners Redelinghuys Primary School Gr R 7; 192 learners
Library	1	Forms a combined building lacking in space
Community hall	1	
Sports ground	1	
Cemetery	2	Cemetery to east of town has room for expansion while one to the west also has enough vacant land left for future expansion.

Table 9.3.7(a): Existing land uses in Redelinghuys.



Map 9.3.7 (a): Land uses, Redelinghuys, Bergvriër Municipality

(ii) Density

The current gross density for Redelinghuys is 4,3 du/ha indicating a very low urban density. Future densification of the town will be subject to private owner's willingness to set aside their land for development purposes, but this has to be done in such a way to ensure the existing urban character.



(iii) Vacant land

Redelinghuys		
Total area (built edge)	Vacant erven within urban area	Ownership
±67ha	153	Private owned land as well as municipal land

Table 9.3.7(b): Vacant land in Redelinghuys.

A vacant land audit was done for all the towns in the Bergrivier Municipal area with the vacant land Audit maps included in the annexure of this report.

(iv) Built form

The town has a rural character set within a predominantly agriculture-orientated (mainly potato growing) area. The built form consists of low density single residential dwellings with no particular architectural style. The low density footprint offers the existing rural character of the town together with the town's location on the banks of the river.

(v) Functionality

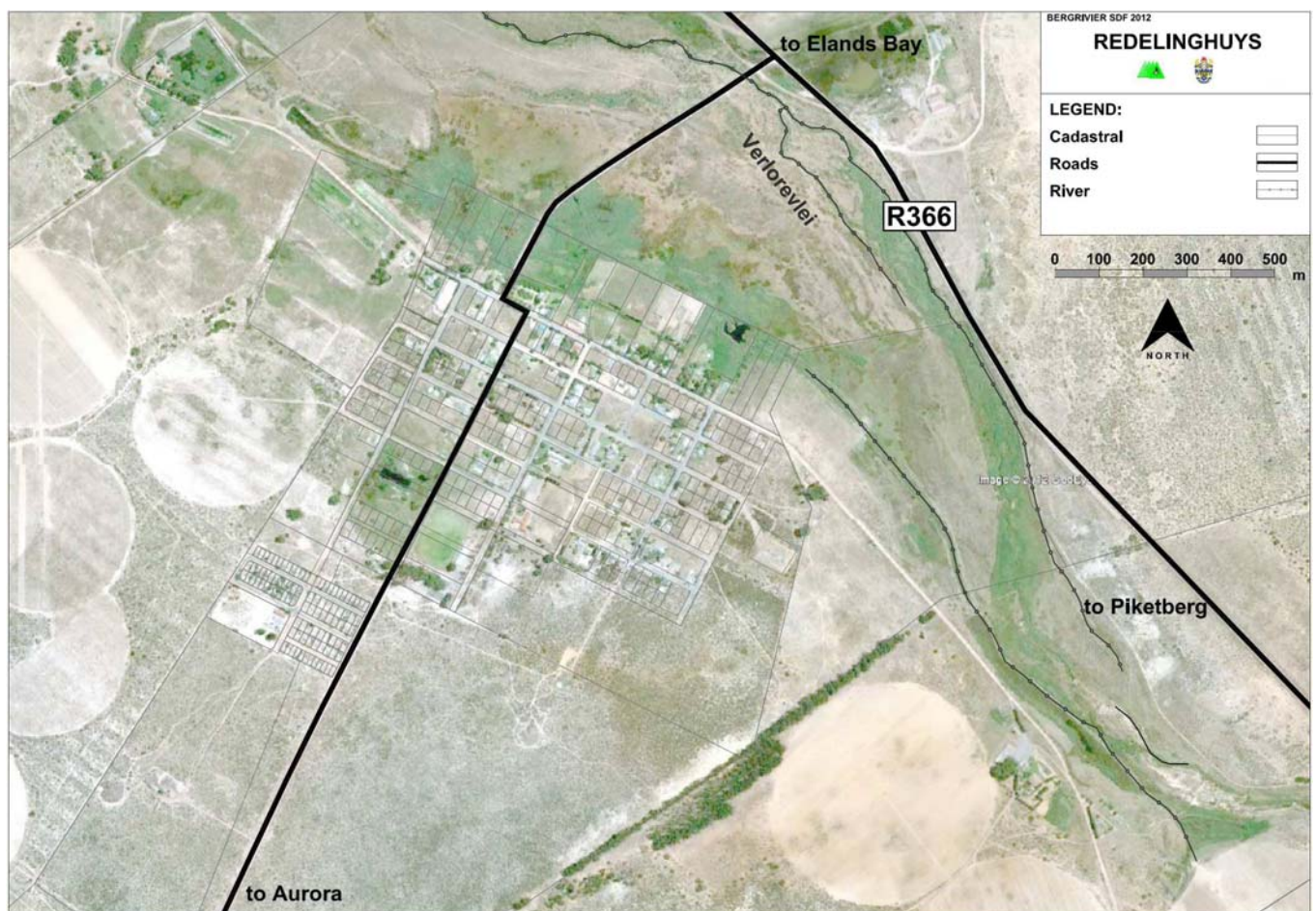
The town is almost square in shape with a 1,1 km diameter on the north south axis and a 1,1 km diameter on the east west axis and this is because of being established on flat land on the southern bank of the river. The services of the town are therefore within walking distance of all the residents. The services in the town are limited to mainly social infrastructure such as school, churches, general dealer, municipal office, clinic, police station, and library and sports grounds.

.

(vi) Movement Network

Redelinghuys is located on the R366 road linking up with Elands Bay to the west. The town is also linked with Aurora to the south and Piketberg to the east by means of dirt/ tarred roads.

The two (2) main roads through Redelinghuys (east/ west and north/ south) form the spine of the town with all the main services (municipal office, clinic, shops and police station) situated on these roads.



Map 9.3.7(b): Structuring Elements, Redelinghuys, Bergvliet Municipality.

9.3.8 Services & Infrastructure

(i) Water

The water sources for Redelinghuys are found in the fountains on farms near the town from where it is piped to two (2) reservoirs on the southern side of the town. Purification is carried out at the reservoirs and the current capacity is sufficient for future development.

(ii) Sewerage

Two systems currently exist for Redelinghuys i.e. soak away and a septic tank systems. The majority of erven make use of the soak away system and the few septic tanks are pumped out by the municipality with a tractor and trailer. Oxidation ponds are anticipated as necessary in planning for the future.

(iii) Electricity

ESKOM is the electricity supplier to the town and from the available supply they provide only half is used.

(iv) Refuse

Refuse bags are collected from all the houses by the municipality. The current dumping site is in the process of being closed and refuse will be taken to the Piketberg Transfer station.

(v) Storm water

No storm water system are in place for Redelinghuys creating problems for the residents during the wet winter months and the municipality is currently preparing a Master Plan for the town to address this issue.

(vi) Roads

Formalized roads supply access to all of the erven in Redelinghuys and all of the main roads in the town are tarred. The access road from Piketberg (R366) is partially tarred, and completion of the tarred surfacing seems unlikely in the near future.

(vii) Traffic/ Safety

Traffic is smooth flowing throughout the town with easy access points, also to all erven and facilities.

Chapter 10: Status Quo – Ward 7–Velddrif and Laaiplek

10.1 Historical Overview

A local farmer, Theunis Smit, took his stock through a drift in the field (Afrikaans for *velde*), to find grazing across the river and hence the name Velddrif came about. In 1899, a Pont or ferry was built to cross the Berg River.

10.2 Locality

Velddrif and Laaiplek are coastal fishing towns at the mouth of the meandering Berg River which flows into St Helena Bay and for purposes of this document Velddrif and Laaiplek are handled as one town. The town is approximately 145 kilometers north of Cape Town and is connected to Vredenburg and Cape Town via the R27.

10.3 Demography

The projected population growth for Velddrif/ Laaiplek is as follows:

Year	2001	2005	2008	2011	2012	2020
Source	(Census)	<u>Growth Potential Study</u>	<i>(Bergrivier SDF – 2008)</i>	(Census)	(Growth based on 2008 estimate)	<i>(Municipal projection)</i>
No of people	7500	7327	10700	11017	13108	18800
Percentage Growth		0%	23%	5% ('01-'11)	6% ('08-'12)	5% ('12-'20)

Table 10.3(a): Projected population growth for Velddrif/ Laaiplek.

10.4 Town Hierarchy

Velddrif and Laaiplek have been developed on the northern bank of the Berg River while the jurisdiction stretches over the river to the farms on the southern side where no existing urban land uses exist. The Berg River estuary is a most valuable resource, specifically concerning tourism. Velddrif has developed in a linear pattern all along the river while Laaiplek developed on the ocean's edge closer to the river mouth. The third urban area is that of Noordhoek lying to the north between Velddrif and Laaiplek. No physical connection exists between these three urban nodes and is it separated by flat vacant land. An overview of the spatial identity of the urban area of Velddrif follows in the table below.

Town	Economic base	Place Identity	Investment Priorities	SDF Classification
Velddrif/ Laaiplek	- Service based tourism, fishing and salt Industries with supporting services and social infrastructure; - 2 Central business districts	Coastal fishing towns combined with sensitive natural areas along the river and coast	Major Infrastructure	High order service centre

Table 10.4(a): Spatial classification of Velddrif/ Laaiplek.

10.5 Economic Base

Velddrif/Laaiplek functions as a coastal town providing jobs mainly in the tourism, fishing and salt mining industries with supporting services and social infrastructure (church, school, library, clinic and sporting facilities) also for the surrounding rural areas. Retirees also favour the area together with second home residents. Velddrif is within easy reach of the Saldanha Bay Industrial Development Zone, holding high development potential for the town.

The town also forms part of the Crayfish Route along the West Coast. A common scene in the area is the wooden jetties where fish are dried for the specialty food named *Bokkoms*. Port Owen lies between Velddrif and Laaiplek and comprises 100 hectares and has 3.5 km of waterways linking to the Berg River. A holiday resort has popped up around the marina area of Port Owen while 2 other resorts (Pelican Park & Stywe Lyne) are also available to the public.

There are 2 hotels, numerous guesthouses and self-catering accommodation is available. The restaurants in Velddrif and nearby Laaiplek serve fresh fish and other seafood. The town attracts a number of tourists, especially for its birds, fishing, boating, yachting and the West Coast Gallery, where work of over 100 artists and craftsmen in the area are sold.

The annual Berg River Canoe marathon is also a huge capital injection for the town.

Development Potential

The development potential of the town is based on the fishing industry, tourism potential, agriculture and

the development of Saldanha Bay IDZ.

The municipal housing waiting list reflects 826 applications for Velddrif/ Laaiplek whilst the demand in 2007 was 338 households. At a gross density of 25 units per hectare this represents 33 hectares of land.

10.6 Spatial Structuring Elements

Berg River

The town's unique position on the north bank of the Berg River provides for extensive views over the river estuary, salt marshes and plateau-like landscape especially to the south. These sensitive visual elements of the town need to be protected in future development. Fishing boats can enter the river from the sea via the river mouth to moor safely at jetties in the river giving a unique aesthetic character to the town



Fishing boats moored at jetties in the river

The well-known annual Berg River Canoe Marathon starts in Paarl and ends at the Carinus Bridge in Velddrif drawing a large number of visitors to the town. The first Berg River Canoe Marathon took place in 1962 and has gained not only a reputation for being one of the toughest courses in the world, but also the longest course in South Africa. The Berg River estuary is an important bird habitat, home to around 30,000 birds, including up to 80 species which are endemic to the Cape coast. Regular boat cruises along the river can be enjoyed whilst fitting in some bird watching.

Vegetation

The vegetation for the Velddrif/ Laaiplek area is that of Strandveld, Coastal Renosterveld, Coastal Fynbos and plant species found in the Berg River mouth vicinity as described earlier in the Status Quo document under Vegetation. The flowers typical to the area include the Kersbos, Rotstert, SonkwasRiet, Strandroos and SandveldLuisebos. The jurisdiction area south of the Berg River is covered by the draft Saldanha Environmental Management Framework and will be taken into account regarding possible future extension.

10.7 Urban Structure

(i) Town layout and uses

As can be expected from original development along the river the town stretches up to the river mouth

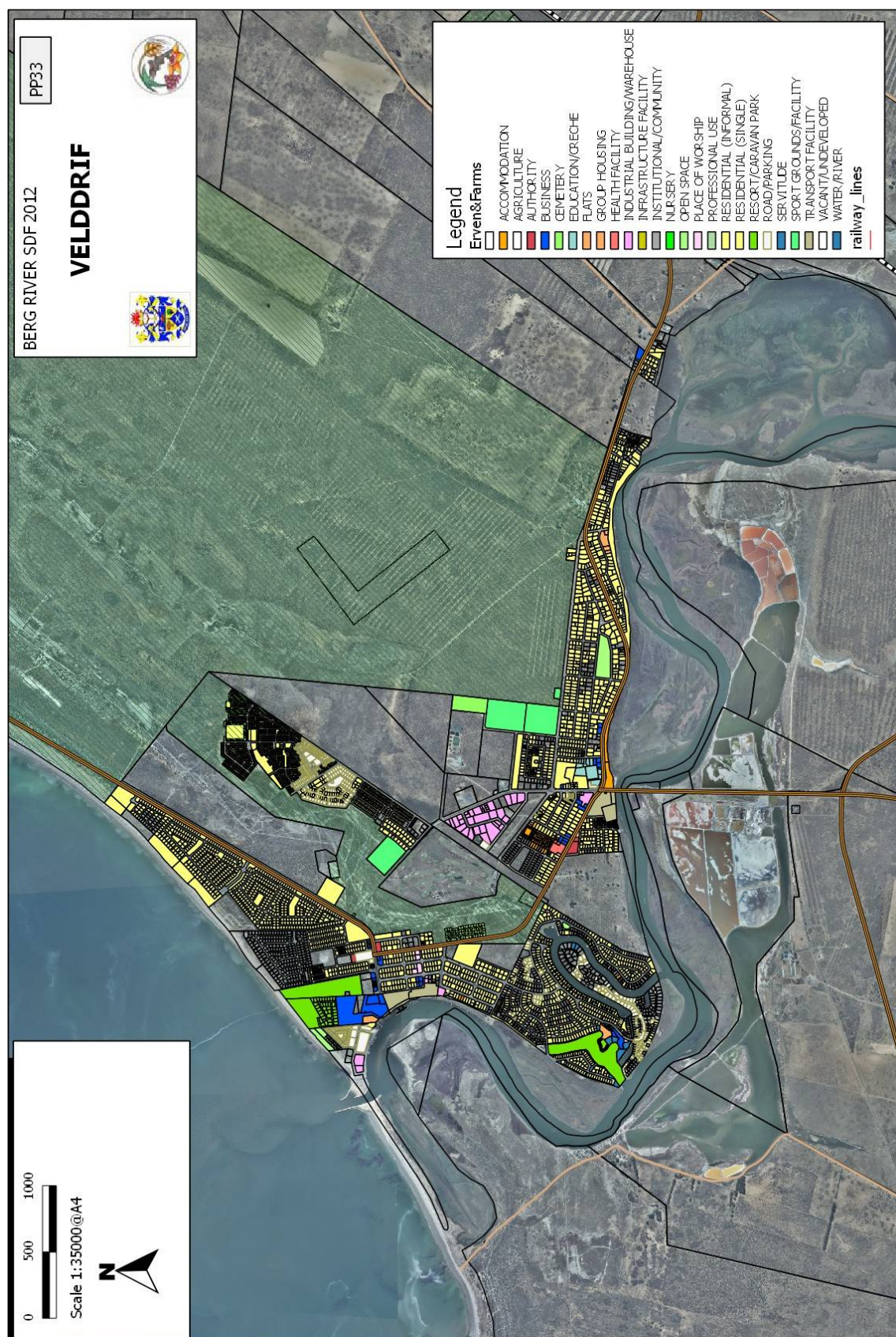
giving it a long linear pattern. The layout of the erven however shows a typical grid pattern. The focal point of the town is the river and the fishing factories where the majority of activity takes place. The dominant land use within the town is single residential dwellings which are supported by a light industrial component as linked to the fishing industry. Social uses include schools, community hall, clinic, municipal offices and library, sports grounds, business premises and cemeteries.

The town has a segregated urban form with lower density residential erven along the river and ocean front and higher density residential uses to the northeast of the town. There are various vacant land parcels distributed throughout the town, which provide for infill opportunities. The town is accessed via excellent link roads as described to Vredenburg and Cape Town in the south, Piketberg in the east and Dwarskersbos and Elands Bay in the north.

The following table provides an overview of the existing land uses in Velddrif/ Laaiplek.

Velddrif/ Laaiplek Land uses		
Land Use	Number	Description
Residential	4046	A large number of these erven are situated north of Laaiplek and are still undeveloped.
Business	±100	Situated in Velddrif at entrance to town over Carinus bridge. Along main feeder roads. At harbour in Port Owen. Main road in Laaiplek and in harbour area.
Clinic	1	
School	2	Noordhoek Primary – 975 learners Velddrif High School – 414 learners
Library	2	1 at town hall and other in Noordhoek
Cemetery	2	One to northwest of town has space for expansion, but no more burials are currently taking place. Existing cemetery east of WWTW has ample room for expansion directly to the north.
Community Hall	2	Town Hall at Municipal offices
Resorts	2	Pelican & Stywe Lyne
Golf course	1	9 Hole course

Table 10.7(a): Spatial classification of Velddrif/ Laaiplek.



Map 10.7 (a): Land uses, Velddrif/Laaipek, Bergrivier Municipality

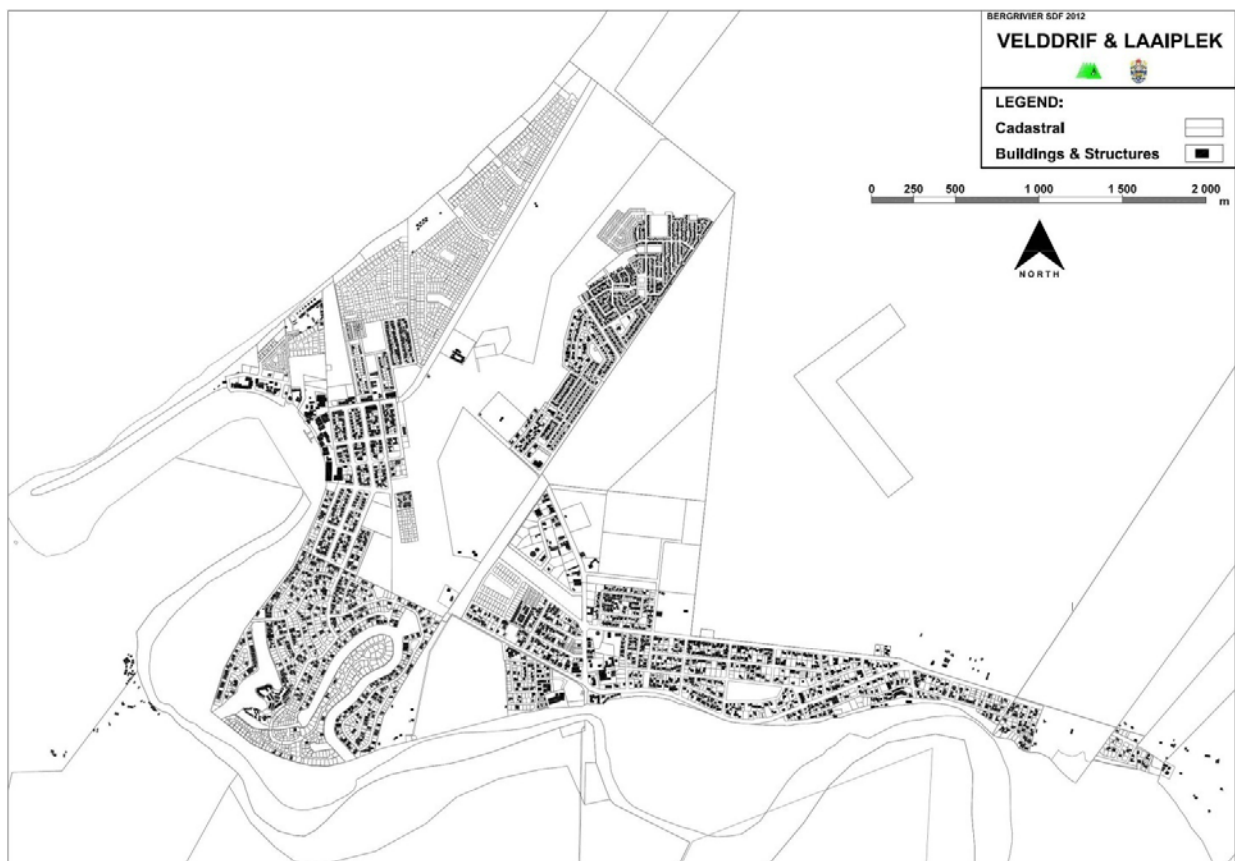
(ii) Density

The current gross density for Velddrif/ Laaiplek is 5,1du/ha indicating a very low urban density. Future densification of the town will be subject to vacant land being made available for development.

(iii) Vacant land

Velddrif/ Laaiplek			
Total area (built edge)	Extent of vacant land within built edge(ha)	Vacant erven within urban area	Ownership
±690ha	300ha plus	±1502 erven	Mainly private-owned land

Table 10.7(b): Vacant land in Velddrif/ Laaiplek.



A vacant land audit was done for all the towns in the Bergrivier Municipal area with the vacant land Audit maps included in the annexure of this report.

(iv) Built form

The town has a fishing village charm set against the picturesque river setting. The built form consists of low density single residential dwellings with no particular architectural style although some of the old fishing cottages remain and this theme is carried through to present day development as can be seen below.



Architectural styles link to the fisherman cottage style.

(v) Functionality

The town's stretched out form on an east west axis (6,2 km) and also the north south axis (4,3 km) means that all services are not within walking distance of all the residents, thus encouraging vehicle traffic.

(vi) Movement Network

Direct access from the south over the river to Velddrif/ Laaiplek is via a tarred road, the R27, which is the connecting road to Cape Town and Vredenburg. Velddrif and Laaiplek are also linked via Main Road 529 to Piketberg to the east and via tarred road to Dwarskersbos and Elands Bay in the north.

The main road through Velddrif along the river also supplies access to Laaiplek and forms one of the main activity roads where it ends as a cul de sac in the Central Business District. The other activity street is Noordhoek Street and forms an economic corridor accommodating light industrial activities.

A very important link to the business area and factories of Laaiplek exist from the higher density areas to the northeast of that (Noordhoek) and an informal footpath has been constructed to accommodate pedestrians.



Informal footpath linking Noordhoek and Laaiplek.



Map 10.7 (b): Structuring Elements, Velddrif/ Laaiplek, Berggrivier Municipality

10.8 Services and Infrastructure

(i) Water

Water is supplied to Velddrif/ Laaiplek off the West Coast District Municipal pipeline over the Carinus Bridge from the southern side. Because of the development of 1600 new erven north of Laaiplek storing capacity problems exist in that water can only be stored for 36 hours and not the 48 hours as is the norm.

(ii) Sewerage

Two systems currently exist for Velddrif/ Laaiplek and that is a waterborne system for the Port Owen, Noordhoek and new development areas while a septic tanksystem exists for the older residential areas in Velddrif. The WWTW is situated to the south of the town with 55 pump stations to pump sewage to the treatment works. The first phase of upgrade of the WWTW is starting this year and is planned over a period of three years to go from an oxidation pond system to an activated slush system. Because of the current system, subdivision of erven is restricted to erven not smaller than 500m², subject to capacity of existing infrastructure.

(iii) Electricity

The electricity capacity upgrade to the town has just been finished (overhead cables also entering Velddrif via the Carinus bridge) to double the current capacity.

(iv) Refuse

The previous disposal site to the northwest of Noordhoek has been closed to be rehabilitated and refuse is collected from erven and transported to the Transfer station next to the WWTW from where it is taken to the Malmesbury dumping site. Negotiations are currently under way to change this to the Vredenburg dumping site.

(v) Storm water

An adequate system to control storm water run-off is already in place for all residential areas and at Noordhoek and the other new higher density areas proper storm water channels feeding into a storm water retention pond has been constructed.

(vi) Roads

All roads throughout the town are tarred with most of them being constructed with curbstones on the sides.

(vii) Traffic/ Safety

Traffic is smooth flowing throughout the town with easy and tarred access points, also to all erven

Addendum A: Mines – Operational, Redundant and Mineral Resources

COM1		MINENAME	SIZE	YEAR_1ST_P	YEAR_LAST_	FARMNAME	REGDIST
CS	Calsite	ENGELBRECHT BAKSTENE BRIDGETOWN DOLOMITE		1978	2000	GROOTE FONTEIN	PIKETBERG
Do	Dolomite	QUARRY NO 1 BRIDGETOWN DOLOMITE	3	1990	1998	VLEDERMUISDRIFT	MOORREESBURG
Do	Dolomite	QUARRY NO 2	3	1998	1999	STATE LAND	MALMESBURY
Do	Dolomite		0			REMHOOGTE	PIKETBERG
Fe	Iron			1993	1998	VONDELING	PIKETBERG
Gy	Gypsum		0			BOOKRAM	PIKETBERG
Gy	Gypsum		0			BOOKRAM	PIKETBERG
Gy	Gypsum		0			BOOKRAM	PIKETBERG
Gy	Gypsum		0			ST. HELENAFONTEIN A	PIKETBERG
Gy	Gypsum		0			ST. HELENAFONTEIN A	PIKETBERG
Gy	Gypsum		0			ST. HELENAFONTEIN A	PIKETBERG
Gy	Gypsum		0			ST. HELENAFONTEIN A	PIKETBERG
Gy	Gypsum		0			MODDERFONTEIN A	PIKETBERG
HM			0			MODDERFONTEIN A	PIKETBERG
HM			0			MODDERFONTEIN A	PIKETBERG
HM			0			BOTTEL FONTEIN	PIKETBERG
L						ADAMBOERSKRAAL	PIKETBERG
L			0			ADAMBOERSKRAAL	PIKETBERG
L			0			WOESTE HEUVEL	PIKETBERG
L			0			WEGLOPERHEUWIL	PIKETBERG
L			0			KERSEFONTEIN	PIKETBERG
L			0			DOORNFONTEIN A	PIKETBERG
L			0			DOORNFONTEIN A	PIKETBERG
L			0			PAMPOENE KRAAL	PIKETBERG
L			0			KLIPFONTEIN	PIKETBERG
L			0			MODDERFONTEIN A	PIKETBERG
L			0			BOTTEL FONTEIN	PIKETBERG
Ls	Limestone		3	1960	1990	VELDDRIFT	PIKETBERG
Ls	Limestone			1960	1962	KLIPPLAAT	PIKETBERG
Ls	Limestone		2	1970	1980	VELDDRIFT	PIKETBERG
Ls	Limestone	PPC - DE HOEK	4	1923	1983	RIETFONTEIN	PIKETBERG

		ZOUTKLOOF					
Ls	Limestone	QUARRY	4	1981	2002	RIETFontein	PIKETBERG
Ls	Limestone	LAAIPLEK	3	1965	2001	VELDDRIFT	PIKETBERG
Ls	Limestone		2	1970	1999	DWARSKERSBOS	PIKETBERG
Ls	Limestone		2	1950	2002	RIETFontein	PIKETBERG
Ls	Limestone		2			FLAMINKE VALEY	MALMESBURY
Ls	Limestone		0			KLEIGAT	PIKETBERG
Ls	Limestone		0			MATJESFontein	PIKETBERG
Ls	Limestone		0			KLIPLAAT	PIKETBERG
Ls	Limestone		0			T VOETPAD	PIKETBERG
Ls	Limestone		0			SERVITEURS KRAAL	PIKETBERG
Mn	Mangaan		0			DE TRONK	PIKETBERG
Mn	Mangaan		0			KLIPHUIS VLAKTE	PIKETBERG
Na	Salt	GROOTPAN	2	1920	1970	DROMMELVALLEY	PIKETBERG
Na	Salt	LA ROCHELLE		1954	1975	BOOKRAM	PIKETBERG
		SKAAPKRAAL					
Na	Salt	SALT PAN		1935	1968	KLIFFontein	PIKETBERG
Na	Salt		1	1920	1938	DRIEHEUVELS	PIKETBERG
Na	Salt			1923	1940	DRIEHEUVELS	PIKETBERG
Na	Salt			1946	1965	DRIEHEUVELS	PIKETBERG
Na	Salt			1925	1958	DRIEHEUVELS	PIKETBERG
Na	Salt			1937	1965	KLIFFontein	PIKETBERG
Na	Salt			1938	1965	KLIFFontein	PIKETBERG
Na	Salt			1925	1970	DRIEHEUVELS	PIKETBERG
Na	Salt			1930	1965	VISSERS HOF	PIKETBERG
Na	Salt			1930	1965	TASSARS KUIL	PIKETBERG
Na	Salt			1910	1965	DROMMELVALLEY	PIKETBERG
Na	Salt			1920	1970	DRIEHEUVELS	PIKETBERG
Na	Salt			1920	1970	DROMMELVALLEY	PIKETBERG
Na	Salt			1925	1966	DROMMELVALLEY	PIKETBERG
Na	Salt			1930	1970	ZOUTE KLOOF	PIKETBERG
Na	Salt			1930	1970	ZOUTE KLOOF	PIKETBERG
Na	Salt			1920	1958	DRIEHEUVELS	PIKETBERG
Na	Salt			1920	1970	DROMMELVALLEY	PIKETBERG
Na	Salt			1920	1970	DROMMELVALLEY	PIKETBERG
Na	Salt			1920	1970	DROMMELVALLEY	PIKETBERG
Na	Salt			1970	1975	OLIPHANTS KRAAL	MALMESBURY
Na	Salt			1920	1970	DROMMELVALLEY	PIKETBERG
Na	Salt			1920	1975	KLIPHOEK	MALMESBURY
		BERG RIVER SALT					
		WORKS					
Na	Salt	(CEREBOS)	2	1979	2001	FLAMINKE VALEY	MALMESBURY

Na	Salt	VELDDRIFT SALT WORKS	1	1994	2002	VELDDRIFT	PIKETBERG
Na	Salt					DOORNFONTEIN A	PIKETBERG
Na	Salt	FLAMINKVLEI KLEIN TAFELBERG		1950	2001	FLAMINKE VALEY	MALMESBURY
Na	Salt	SALT PAN KLIPHOEK		1935	2002	LANGEFONTEIN	PIKETBERG
Na	Salt	SALTWORKS	1	1994	2001	KLIPHOEK	MALMESBURY
Na	Salt	SWARTJIESBAAI	1	1973	2001	KLIPHOEK	MALMESBURY
Na	Salt			1947	2000	GROENEVELD	PIKETBERG
Na	Salt			1945	2001	DRIEHEUVELS	PIKETBERG
Na	Salt		0			ZOUTE KLOOF	PIKETBERG
Na	Salt		0			ZOUTE KLOOF	PIKETBERG
Na	Salt		0			TASSARS KUIL	PIKETBERG
Na	Salt		0			DROMMELVALLEY	PIKETBERG
Na	Salt		0			BOOKRAM	PIKETBERG
Na	Salt		0			BOOKRAM	PIKETBERG
P	Phosphate		0			WEGLOPERHEUWEL	PIKETBERG
P	Phosphate		0			GROENEVELD	PIKETBERG
P	Phosphate		0			GROENEVELD	PIKETBERG
P	Phosphate		0			BOOKRAM	PIKETBERG
P	Phosphate		0			PAMPOENE KRAAL	PIKETBERG
P	Phosphate		0			GROENEVELD	PIKETBERG
P	Phosphate		0			DWARSKERSBOS	PIKETBERG
P	Phosphate		0			BOOKRAM	PIKETBERG
P	Phosphate		0			BOOKRAM	PIKETBERG
P	Phosphate		0			BOOKRAM	PIKETBERG
P	Phosphate		0			BOTTEL FONTEIN	PIKETBERG
P	Phosphate		0			MODDERFONTEIN A	PIKETBERG
P	Phosphate		0			BOTTEL FONTEIN	PIKETBERG
Q			4	2000	2002	OUWINKEL WERF	PIKETBERG
QB				1994	2000	RIETKLOOF	PIKETBERG
QB				1999	2001	FLAMINKE VALEY	MALMESBURY
QB				1994	2001	BROODKRAAL	MALMESBURY
QB				1970	2001	KLIPHOEK	MALMESBURY
QB				1980	2001	MATJESFONTEIN	PIKETBERG
QB			0			ZOUTE KLOOF	PIKETBERG
QB			0			CLOETES KRAAL	MALMESBURY
QB			0			ADAMBOERSKRAAL	PIKETBERG
QB			0			WEGLOPERHEUWEL	PIKETBERG
QB			0			FLAMINKE VALEY	MALMESBURY
RM			0			DOORNBOSCH	PIKETBERG

RM	0			KERSEFONTEIN	PIKETBERG
RM		1970	1990	RIETKLOOF	PIKETBERG
				ST. HELENAFONTEIN	
RM		1976	1978	A	PIKETBERG
RM		1976	1978	BOTTEL FONTEIN	PIKETBERG
RM		1977	1982	HELDERWATER	MALMESBURY
RM				KERSEFONTEIN	PIKETBERG
RM		1990	1998	KLIPHOEK	MALMESBURY
RM		1975		DE KOPPIES	PIKETBERG
RM				VELDDRIFT	PIKETBERG
RM	0			HAZEKRAAL	MALMESBURY
RM	0			ZOUTE KLOOF	PIKETBERG
RM	0			DOORNBOSCH	PIKETBERG
RM	0			KLIP BANK	MALMESBURY
RM	0			CALEDONIA	MALMESBURY
Ve	0			RIETFONTEIN	PIKETBERG
W	4			NAMAQUASFONTEIN	PIKETBERG

Addendum B: Critical Biodiversity Categories

Table 6: Criteria used to define the CBA Map categories.

CBA MAP CATEGORY	CRITERIA DEFINING THE CATEGORY	
Protected Areas	Any formally Protected Area (except for Mountain Catchment Areas) <ul style="list-style-type: none"> Nature Reserves and National Parks protected by the National Environment Management: Protected Areas Act Forest Nature Reserves protected by the National Forest Act Ramsar Sites protected by the Ramsar Convention World Heritage Sites protected by the National Environment Management: Protected Areas Act Marine Protected Areas protected by the National Environment Management: Protected Areas Act or Marine Living Resources Act 	
Critical Biodiversity Areas	Any terrestrial or aquatic area required to meet biodiversity pattern and/or process thresholds <ul style="list-style-type: none"> all ecosystems listed in terms of the National Biodiversity Act All 'best design' sites in terms of meeting the pattern and process thresholds. 'Best design' refers to an identified network of natural sites that would meet pattern and process thresholds in all vegetation and aquatic types in a spatially efficient and ecologically robust way. 	
	Critical Biodiversity Areas – Terrestrial <ul style="list-style-type: none"> all remaining patches of Critical Endangered vegetation all known point localities of Species of Special Concerns Endangered, Vulnerable or Least Threatened vegetation required to meet national thresholds landscape corridors required to meet the predefined thresholds for spatially explicit ecological processes (e.g. upland-lowland corridors, coastal-and-sand movement corridors, etc.) 	Critical Biodiversity Areas – Aquatic <ul style="list-style-type: none"> river reaches required to meet 20% threshold of each river type (where preference was given to rivers of a higher integrity and irreplaceability, i.e. A, AB and B classes) river reaches required to meet a predefined threshold of two sanctuaries per indigenous fish species sub-catchments required for achieving river type conservation thresholds sub-catchments required to meet a predefined threshold of two sanctuaries per indigenous fish species wetlands required to meet a 24% threshold of each wetland types. These were chosen based on having a selection of significant (any cluster of wetlands that once buffered by 750m, is greater than 500 ha in size and has more than 80% natural vegetation within that buffer area) wetland clusters, known habitat for Red data listed hydrophytic (water) plant species, known habitat for focal amphibian species and good condition wetlands. all estuaries
Ecological Support Area	Supporting zone required to prevent degradation of Critical Biodiversity Areas and Protected Areas. <ul style="list-style-type: none"> All remaining wetlands or river reaches and their terrestrial buffer area (riparian habitat) surrounding these ecosystems, which have not been deemed a CBA Sub-catchments containing: a) significant groundwater recharge and discharge sites; b) upstream management zones; or c) connections for fish sanctuaries 	
	Critical Ecological Support Areas <ul style="list-style-type: none"> Wetlands: non-significant wetlands or wetland clusters which either a) support a CBA river or CBA wetland or b) are in a good condition and fall within a CBA or CESA sub-catchment Rivers: a) river reaches which are important for connectivity between CBA river reaches, b) major rivers that support CBA river segments or wetland or c) minor rivers situated within priority sub-catchments Sub-catchments not containing CBA rivers or wetlands but rather maintaining the integrity of the downstream CBA 	Other Ecological Support Areas <ul style="list-style-type: none"> All remaining wetlands All remaining river reaches Sub-catchments containing: a) significant groundwater recharge and discharge sites; b) upstream management zones; or c) connections for fish sanctuaries
Other Natural Areas	Natural areas not required to meet national thresholds (on condition that all CBA are protected) <ul style="list-style-type: none"> Remaining patches of Endangered, Vulnerable or Least Threatened ecosystems not required to meet national thresholds 	
No Natural Remaining Areas	These areas no longer contain natural areas and their safeguarding would not result in any biodiversity protection. <ul style="list-style-type: none"> cultivated areas plantations mined areas urban areas infrastructure dams areas under coastal development 	

Bibliography

- Bergrivier Municipality. 2010. Bergrivier Human Settlement Plan Slides.
- Bergrivier Municipality. 2010. Biodiversity Report.
- Bergrivier Municipality. 2010. Stormwaterbestuur.
- Bergrivier Municipality. 2010. Watervoorsieing, Sanitasiedienste and Nywerheidsuitvloei.
- Bergrivier Municipality. 2011. Revised Local Economic Development Strategy and Implementation plan.
- Bergrivier Municipality. 2011. Local Biodiversity Strategic and Action Plan.
- Bergrivier Municipality. 2011. Integrated Waste Management Plan.
- Bergrivier Municipality. 2012. Draft Integrated Development Plan – 2012- 2017.
- Bergrivier Municipality. 2008. Meesterplan vir Behuising.
- Bergrivier and Cederberg Municipalities. 2005. Ruimtelike Ontwikkelingsplan vir die Kusgebied Veldrif tot Elandsbaai.
- Cape Nature. 2008. C.A.P.E. Fine-scale Systematic Conservation Planning Assessment: Technical Report.
- Cape Nature, C.A.P.E, South African National Parks and GEF. 2010. Biodiversity Sector Plan for Saldanha Bay, Bergrivier, Cederberg and Matzikama Municipalities.
- CSIR. 2010. Verlorenvlei Estuarine Management Plan. Version 1.
- Department of Agriculture. 2006. Geïntegreerde landbouontwikkelingsplan vir Goedverwacht. Compiled by BKS.
- Department of Agriculture. 2009. Oorsigtelike Beskrywing van die Swartland Substreek.
- Department of Agriculture. 2012. Land Use Maps.
- Department of Environmental Affairs and Development Planning. 2010. *Guidelines for the Preparation of Credible Spatial Development Frameworks*.
- Department of Housing, Rural Management and Development, Western Cape. 1996. *Landelike Gebied Goeverwacht – 'n Sosiaal- Ekonomiese profiel*.
- Department of Rural Development and Land Reform. 2010. *Guidelines for the Formulation of Spatial Development Frameworks*.
- Die Beplanningsvennootskap. 1999. *Benede-Bergrivier Substreek struktuurplan*. Volume 2.

Jeffares, Gree and Iliso consulting. 2012. Integrated Transport Plan for West Coast.

Municipality of Piketberg. 1998. *Verloreplei Struktuurplan, Elandsbaai*.

Mouton, W.H. 1970. *Benede-Bergrivier Ontwikkelingstreek. Inleiding: Geskiedkundige Agtergrond en Perspektief*.

University of Cape Town. 2009. Berg Estuary Draft Management Plan.

University of Stellenbosch. 1995. *Wittewater: 'n Gemeenskapsprofiel*.

West Coast District Municipality & Bergrivier Municipality. 2002. *Piket Bo-Berg Ontwikkelingsplan*.

West Coast District Municipality. 2007. West Coast Spatial Development Framework.

West Coast District Municipality. 2011. Integrated Development Plan.