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SRK Author:

Warrick Stewart

SRK GIS Team:

Masi Fubesi and Keagan Allan

SRK Review:

Christopher Dalgliesh, Sharon Jones and Jessica du Toit

DEA&DP Project Team:

Karen Shippey, Ronald Mukanya and Francini van Staden

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Western Cape Government Environmental Affairs & Development Planning:

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Other:

Genevieve Pence (CapeNature), Andrew Turner (CapeNature), Dean Impson (CapeNature), Lydia Cape (CSIR), Nicky Allsopp (SAEON)

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ABBREVIATIONS AND ACRONYMS

BES	Biodiversity Economy Strategy
BioNet	Biodiversity Network (BioNet), City of Cape Town
CBA	Critical Biodiversity Area
CBD	Convention on Biological Diversity
CFR	Cape Floristic Region
CITES	Convention on International Trade in Endangered Species of Fauna and Flora
CR	Critically Endangered
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DEA&DP	Department of Environmental Affairs and Development Planning
DEAT	National Department of Environmental Affairs and Tourism (see DEA)
DWAF	Department of Water Affairs and Forestry (see DWS)
DWS	Department of Water and Sanitation
EIA	Environmental Impact Assessment
EIIF	Ecological infrastructure investment framework
EN	Endangered
EPL	Ecosystem Protection Level
ESA	Ecological Support Area
FEPA	Freshwater Ecosystem Priority Area
IUCN	International Union for the Conservation of Nature
LT	Least Threatened
MUCP	Management Unit Clearing Plans
NBA	National Biodiversity Assessment
NBSAP	National Biodiversity Strategy and Action Plan
NEMA	National Environmental Management Act 107 of 1998
NEM:BA	National Environmental Management Biodiversity Act 10 of 2004
NEM:PAA	National Environmental Management Protected Areas Act 57 of 2003
NSBA	National Spatial Biodiversity Assessment
PACA	Protected and Conservation Areas
PAES	Protected Areas Expansion Strategy
PBSAP	Provincial Biodiversity Strategy and Action Plan
PNR	Private Nature Reserves
RAMSAR	Convention on Wetlands of International Importance
SALGA	South African Local Government Association
SANBI	South African National Biodiversity Institute
SPLUMA	Spatial Planning and Land Use Management Act 16 of 2013
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
VU	Vulnerable

GLOSSARY

Afforestation	The establishment of forest by natural succession or by the planting of trees on land where they did not formerly grow, e.g. establishment of monocultures of pines, eucalyptus, or wattles in in South Africa.
Biodiversity	The variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part. The term also includes diversity within species, between species, and of ecosystems.
Biome	A major portion of the living environment of a particular region, characterised by its distinctive vegetation and maintained largely by climatic conditions.
Biota	The combined flora and fauna of a particular region or period.
Carbon sink	Carbon reservoirs and conditions that take in and store more carbon than they release (e.g. forests and oceans).
Climate change	A change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forces such as modulations of the solar cycles, volcanic eruptions, and persistent anthropogenic changes in the composition of the atmosphere or in land use. According to the Intergovernmental Panel on Climate Change (IPCC), climate change refers to any change in climate over time, whether due to natural variability or as a result of anthropogenic activities. Note that the Framework Convention on Climate Change (UNFCCC) differs in that it defines climate change as in addition to natural climate variability, i.e. ' <i>a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods</i> '. The UNFCCC thus makes a distinction between climate change attributable to human activities altering the atmospheric composition, and climate variability attributable to natural causes.
Ecological processes	The physical, chemical and biological actions or events that link organisms and their environment, such as decomposition, production [of plant matter], nutrient cycling, and fluxes of nutrients and energy.
Ecosystem	A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit (CBD, 2000).
Ecosystem services	Ecological processes or functions having monetary or non-monetary value to individuals or society at large. These are frequently classified as (i) supporting services such as productivity or biodiversity maintenance, (ii) provisioning services such as food, fiber, or fish, (iii) regulating services such as climate regulation or carbon sequestration, and (iv) cultural services such as tourism or spiritual and aesthetic appreciation.
Endemic species	A plant or animal species that occurs and is restricted to a particular geographical region is said to be 'endemic' to that region, owing to factors such as isolation or response to soil or climatic conditions.
Habitat degradation	A decline in species-specific habitat quality that leads to reduced survival and/or reproductive success in a population.

Habitat fragmentation

The break-up of natural habitat into small non-contiguous parts. This becomes problematic when the portions are too small to function effectively on their own.

Indigenous species

Plants, animals, or microbes those are native to a particular area.

Invasive alien species

Species that are intentionally or unintentionally introduced to an area where they would not naturally occur, which then reproduce and invade areas beyond those into which they were originally introduced, impacting on natural habitats.

1 INTRODUCTION

Biodiversity in the Western Cape is immensely rich at a global scale. Two global biodiversity hotspots, namely the Cape Floristic Region (CFR) and the Succulent Karoo, are located in the province. These are all *Centres of Endemism*, sites of global importance based on their high endemism and species richness, and which are under immense pressure from human activities (Mittermeier *et al.*, 2004) (see Figure 1-1, Conservation International, 2009).

This richness is primarily due to the estimated 13 489 plant species in the Western Cape, 56% of the floral species occurring in South Africa (Le Roux *et al.*, 2012). A total of six biomes are present in the province, namely Fynbos, Succulent Karoo, Nama Karoo, Forest, Albany Thicket and Grassland (see Figure 1-2, NSBA, 2011). The extent of biodiversity (original extent of ecosystems) in the province is further reflected by the 174 different ecosystems present (see Figure 1-3, Pence, 2017) although the presence and distribution of these varies between the districts as evident on Figure 1-4 to Figure 1-9 (Mucina, Rutherford *et.al*, 2014).



Fynbos Biome



Albany Thicket Biome



Nama Karoo Biome

Biodiversity delivers valuable long-term services to people, such as clean water for drinking, irrigation and industrial use; fishing grounds; grazing land; pollination of crops and natural vegetation; soil formation; clean air; climate regulation; tourism opportunities; flood attenuation and disaster risk reduction (Cape Nature, 2012; SANBI, 2014). Biodiversity fundamentally sustains life and underpins many aspects of human well-being and socio-economic development (Millennium Ecosystem Assessment, 2005). Such biodiversity includes mountain catchments, rivers, wetlands, coastal dunes, tracts and corridors of natural vegetation, and the immense diversity of plants and animals in the Western Cape.



Grassland Biome

South Africa's legislation enshrines environmental protection and wise stewardship via the Constitution of the Republic of South Africa (section 24 of the Bill of Rights) through national legislation – The National Environmental Management Act 107 of 1998 (NEMA), National Environmental Management Biodiversity Act 10 of 2004 (NEM: BA) and National Environmental Management Protected Areas Act 57 of 2003

(NEM:PAA), as well as provincial legislation – the Western Cape Nature Conservation Ordinance 19 of 1974. The NEM: BA requires reporting on the state of biodiversity at a national level and it is expected that provincial reporting should facilitate national reporting. CapeNature intends implementing provincial biodiversity monitoring to enable the national process. This will also align with the country's obligation under Articles 6 and 7 of the Convention on Biological Diversity (CBD).



Forest Biome



Succulent Karoo Biome

This chapter explores the current state of biodiversity and ecosystem health in the Western Cape province and changes since 2013¹. It details the drivers and pressures, indicators of and impacts on biodiversity and ecosystem health, and responses implemented to date by national, provincial, district and local authorities and other key role-players. The state of biodiversity and ecosystem health is tracked in the Western Cape using the following indicators: ecosystem threat status, ecosystem protection levels, species threat status, biodiversity priority areas, habitat degradation, and invasive alien species. Data on each of these aspects, and other indicators that could not be used, are discussed in this chapter. A State of Biodiversity Report is produced every five years by the provincial conservation entity, CapeNature. The 2017 State of Biodiversity Report is being drafted in parallel with this report and the two have been aligned.

2 DRIVERS AND PRESSURES

The key drivers of change to biodiversity and ecosystem health in the Western Cape are population growth, development and increased demand for commodities and land degradation.

Population growth has principally occurred due to migration into the Western Cape from surrounding areas. This has been most prevalent in urban coastal areas, but also in rural areas (StatsSA CS, 2016).

Investment and increased demand for commodities has resulted in the expansion of urban areas, agriculture and mining in the province. Land degradation is driven by increased demand for agricultural products, the availability of larger-size mechanized agricultural implements and ongoing unsustainable practices. The primary pressures are urban growth, agricultural expansion, climate change (particularly increase temperatures and more frequent droughts), invasive alien species, over-exploitation of natural resources (including water abstraction), overgrazing and illegal harvesting of species, altered fire regimes, increased pollution and mining. Each of these pressures, which leads to biodiversity loss or a decline in ecosystem health, is discussed in detail in the land chapter.

In addition to the key drivers and pressures affecting biodiversity and ecosystem health, the following emerging issues may have an impact:

- **Potential loss of biodiversity from shale gas prospecting**
- **Bird, bat and insect mortalities from collision with wind turbines**
- **Declining pollinator populations**

¹ In some cases, earlier data is also presented where this provide valuable information regarding the longer term trends.

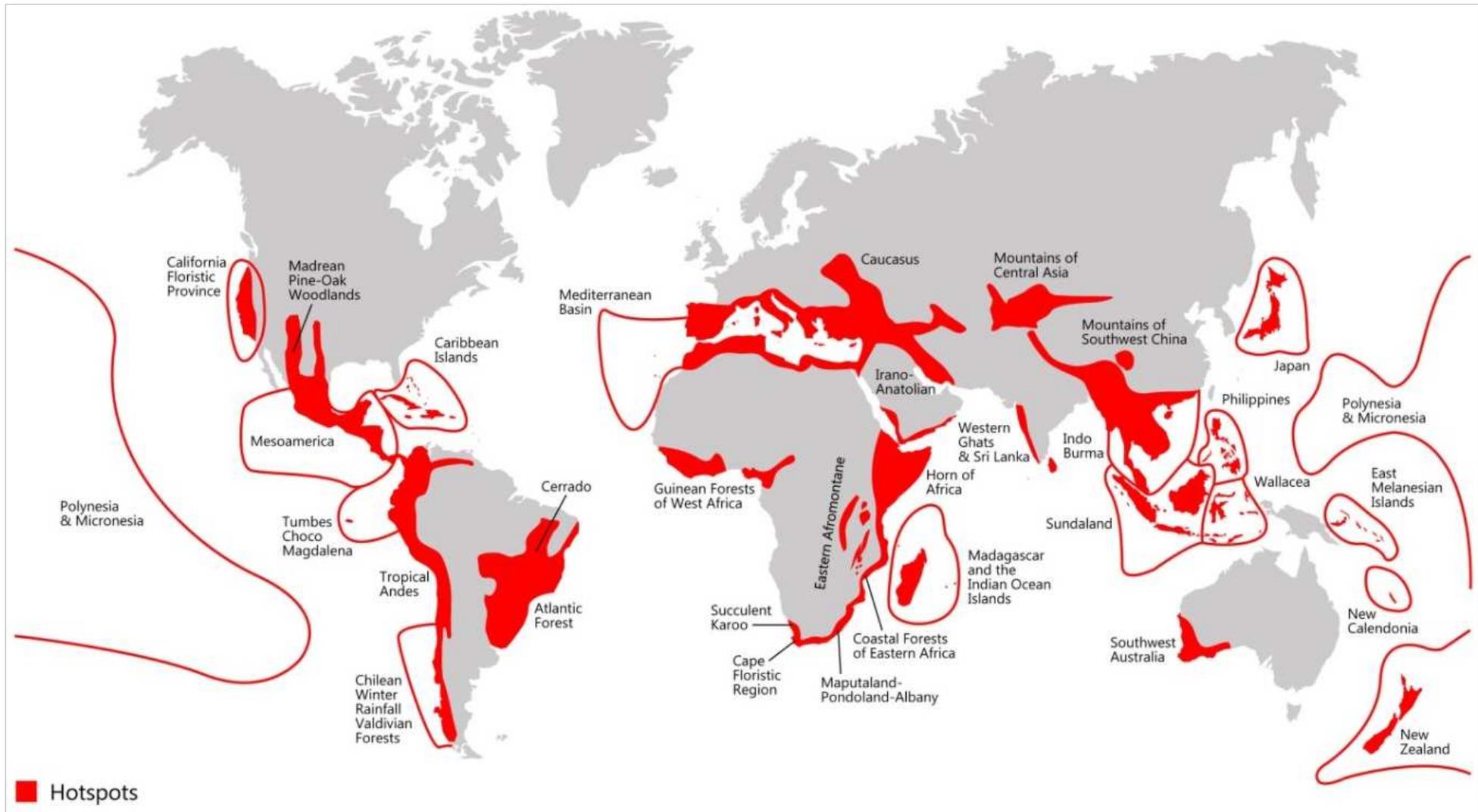


Figure 2-1: Global biodiversity hotspots

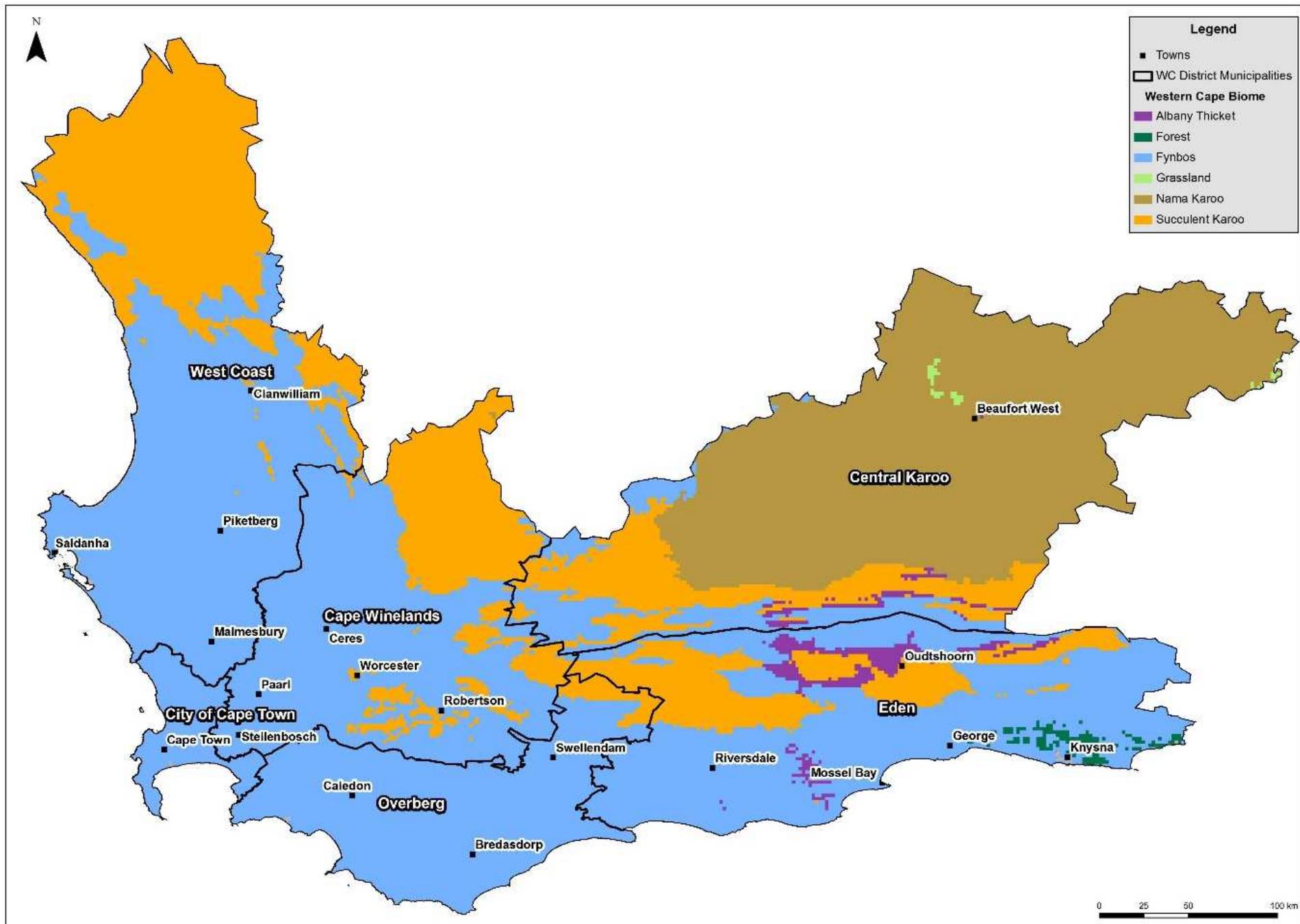


Figure 2-2: Biomes in the Western Cape

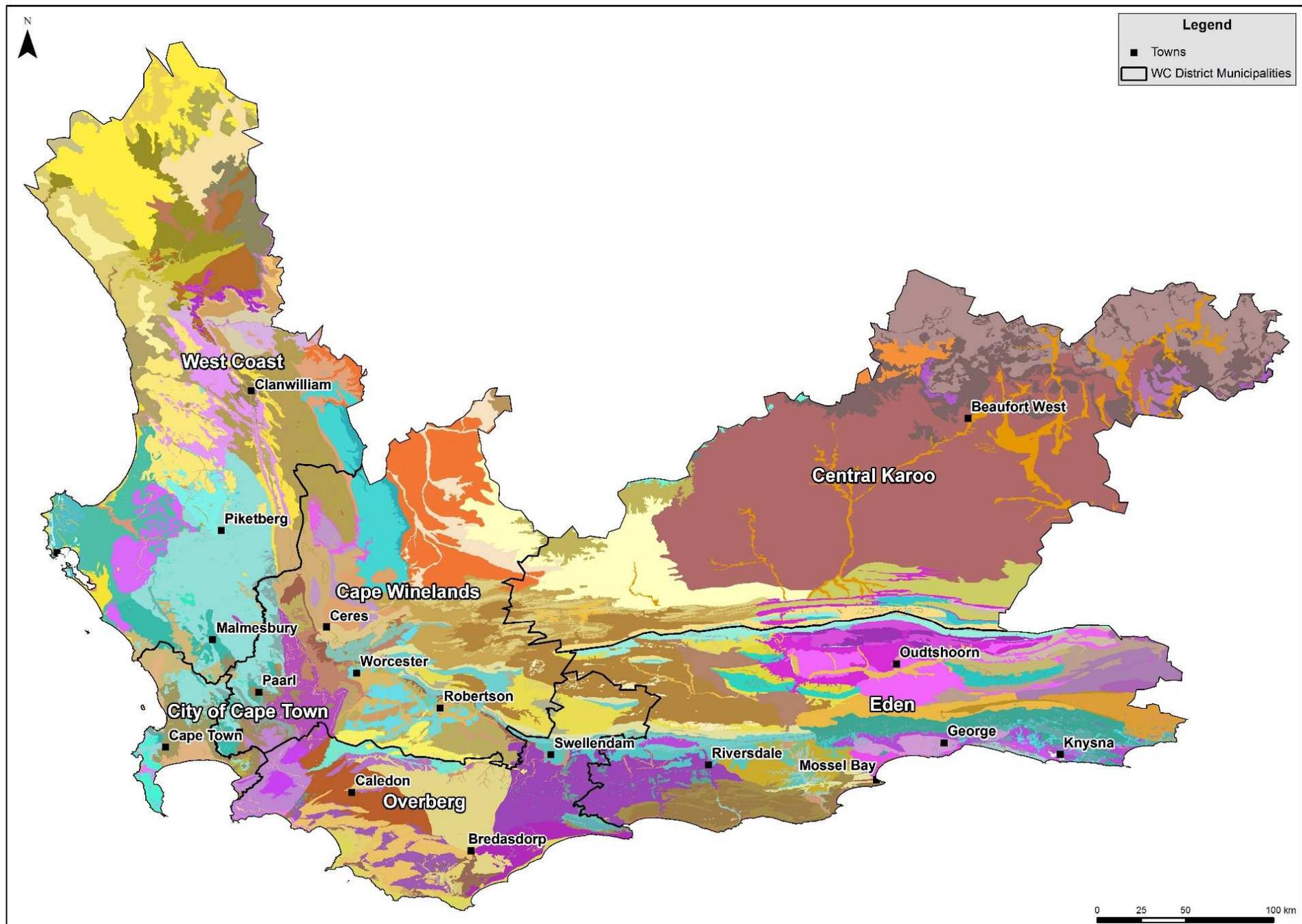


Figure 2-3: Original distribution of ecosystems in the Western Cape

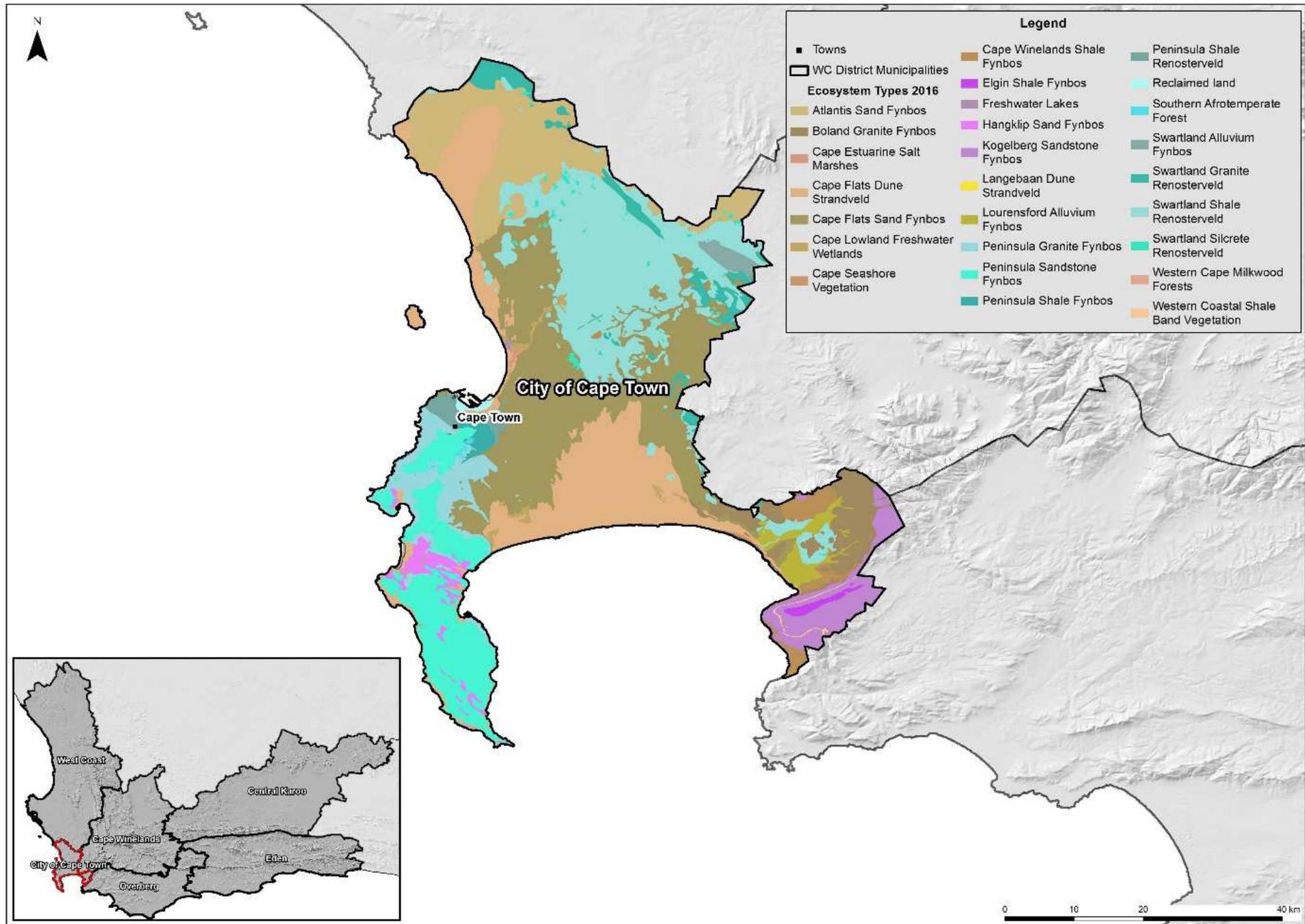


Figure 2-4: Original distribution of ecosystems in the City of Cape Town

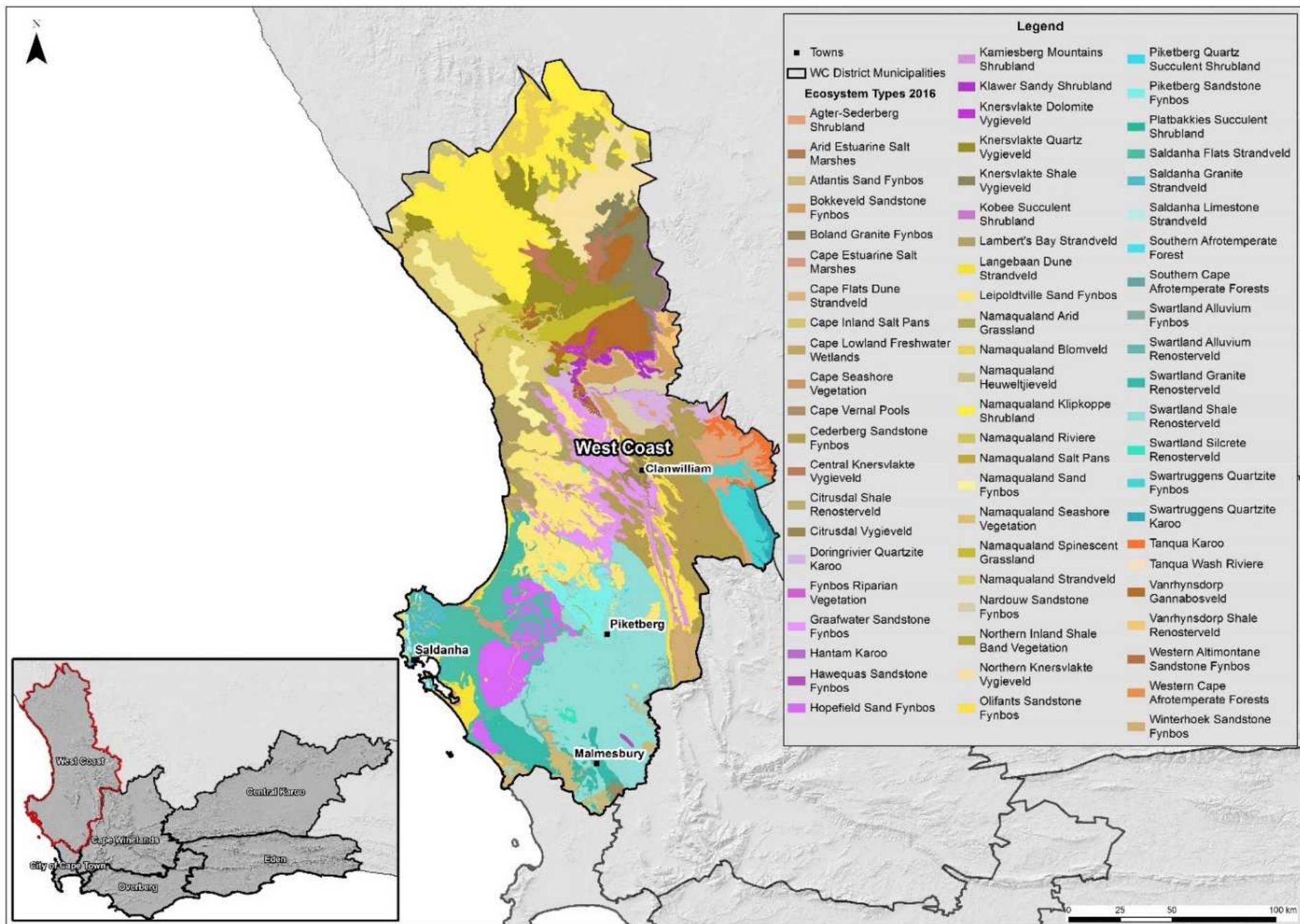


Figure 2-5: Original distribution of ecosystems in the West Coast District

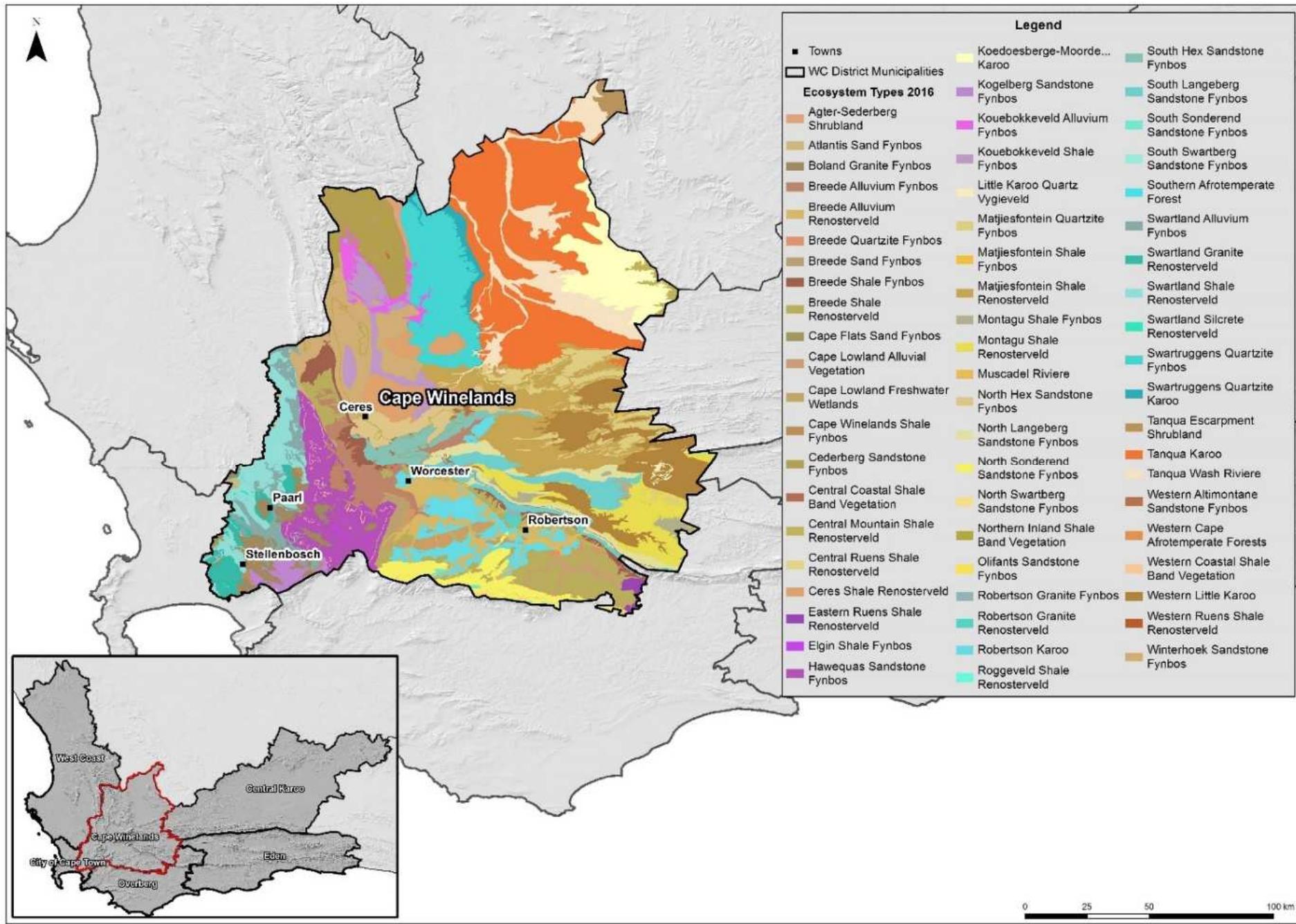


Figure 2-6: Original distribution of ecosystems in the Cape Winelands District

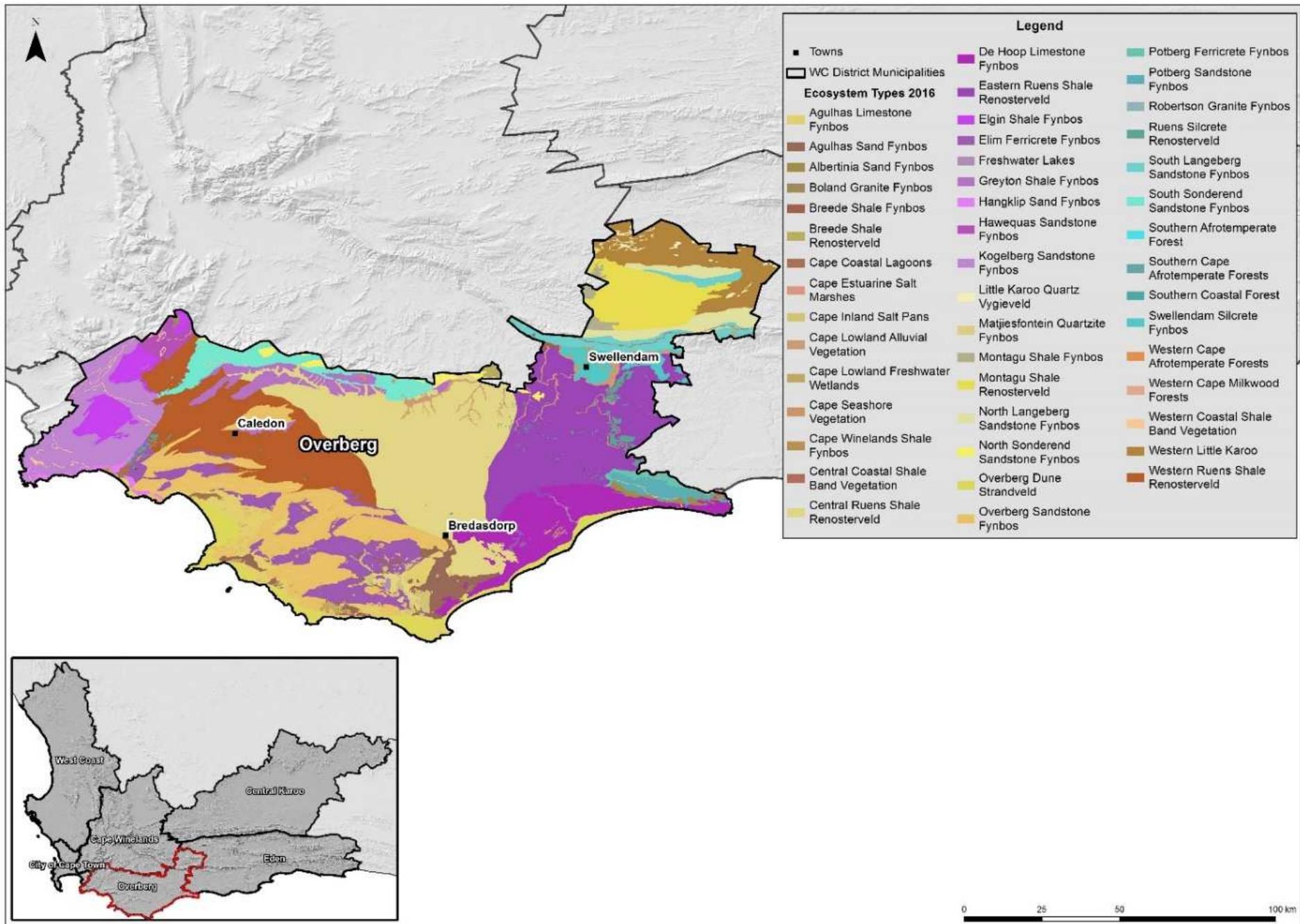


Figure 2-7: Original distribution of ecosystems in the Cape Winelands District

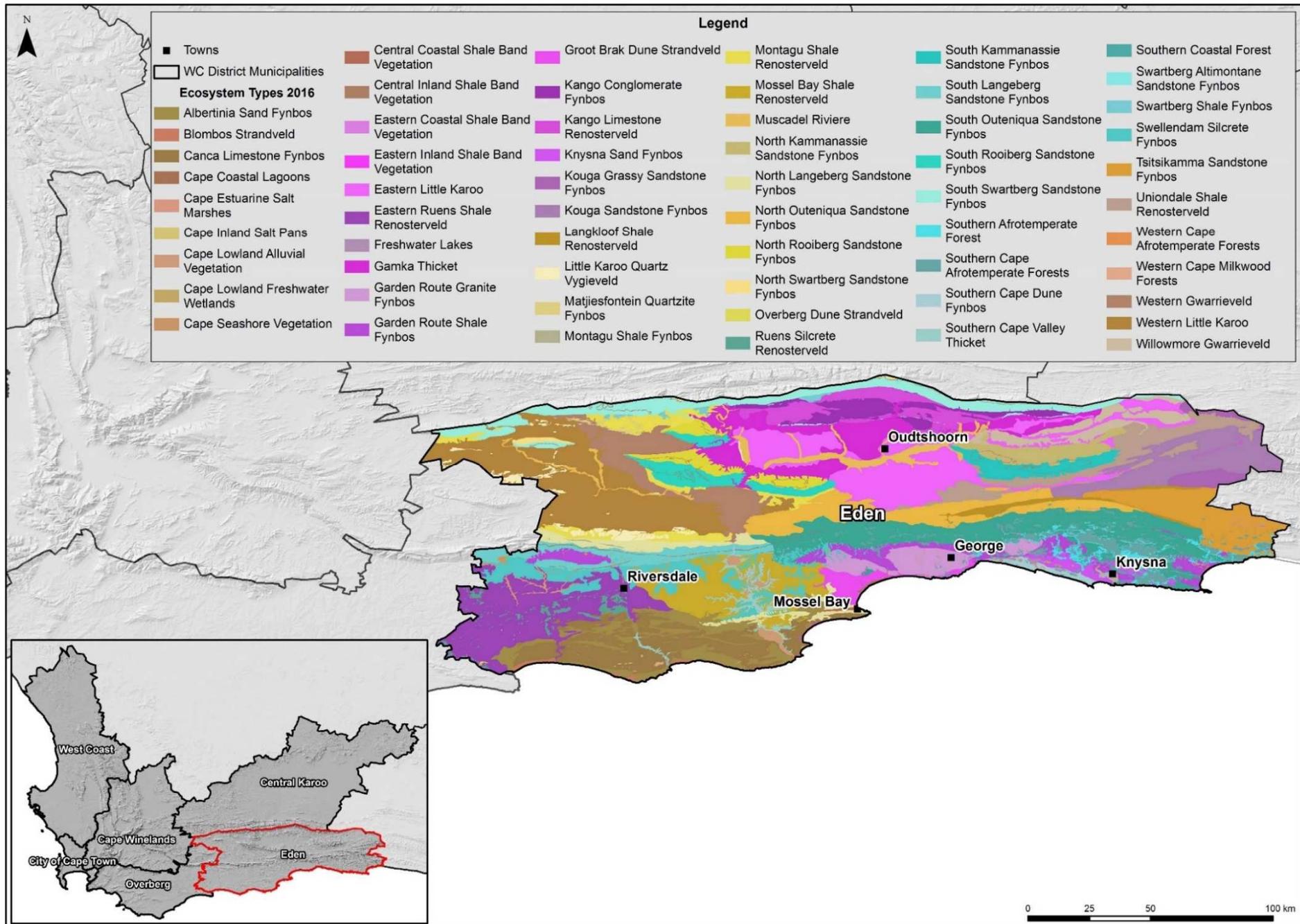


Figure 2-8: Original distribution of ecosystems in the Overberg District

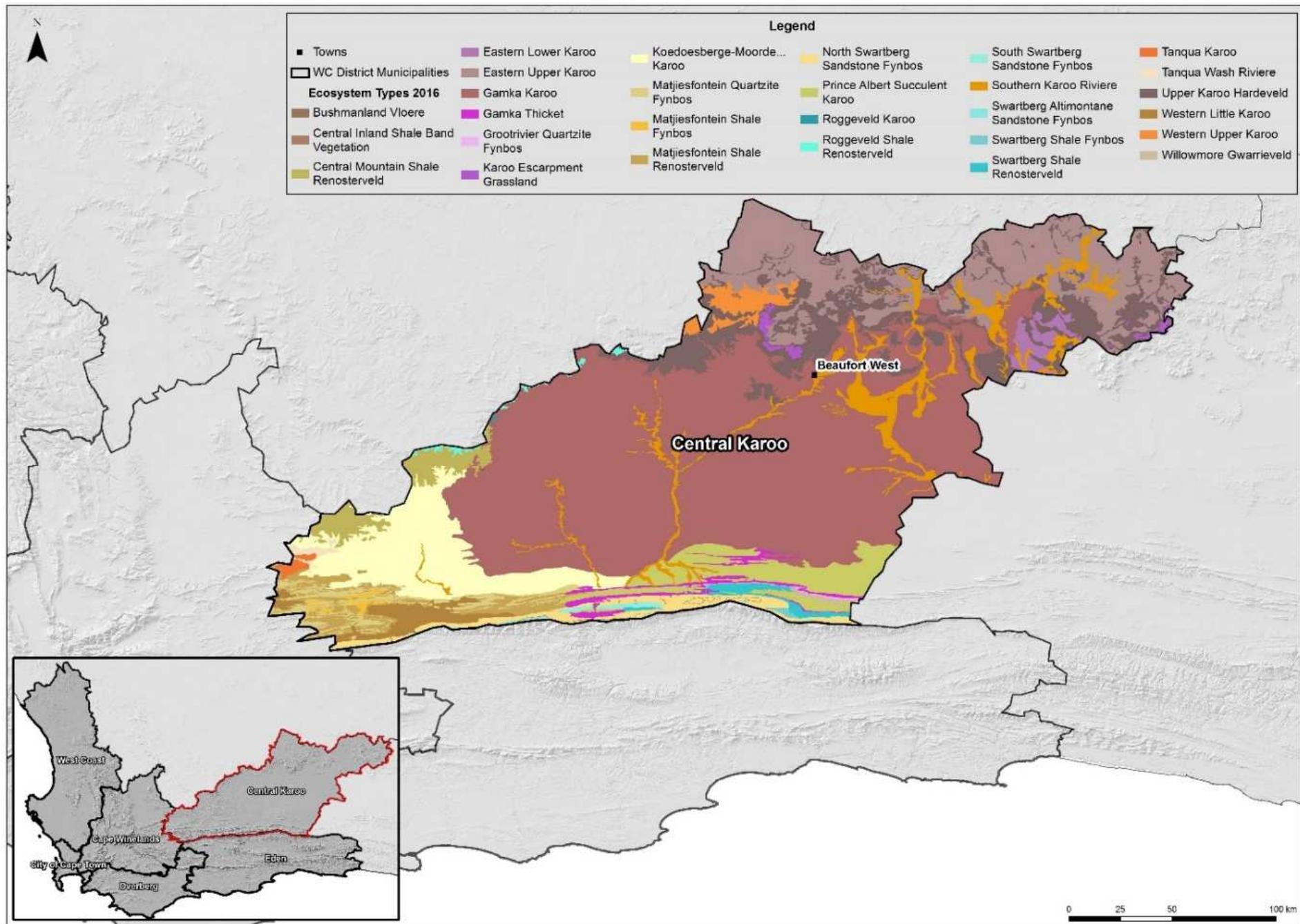


Figure 2-9: Original distribution of ecosystems in the Central Karoo District

3 STATE

3.1 Ecosystem threat status

Ecosystem threat status indicates the degree to which ecosystems (vegetation types) are still intact or, conversely, losing vital aspects of their structure, function and composition, on which their ability to provide ecosystem services ultimately depends.

Based on the proportion of each ecosystem type that remains in good ecological condition relative to a series of thresholds of ecosystem loss, ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Least Threatened (LT) as defined in Table 3-1 (SANBI, 2011).

The state of **biodiversity and ecosystem health** is tracked using the following key **indicators**:

- Ecosystem threat status
- Ecosystem protection levels
- Species threat status
- Biodiversity priority areas
- Habitat degradation
- Invasive alien species

Table 3-1: Ecosystem threat categories

Critically Endangered	Ecosystem types that have very little of their original extent left in natural or near-natural condition. Few natural or near-natural examples of these ecosystems remain. Any further loss of natural habitat or deterioration in condition of the remaining healthy examples of these ecosystem types must be avoided, and the remaining healthy examples should be the focus of urgent conservation action.
Endangered	Ecosystem types that are close to becoming critically endangered. Any further loss of natural habitat or deterioration of condition in these ecosystem types should be avoided, and the remaining healthy examples should be the focus of conservation action.
Vulnerable	Ecosystem types that still have the majority of their original extent left in natural or near-natural condition, but have experienced some loss of habitat or deterioration in condition. These ecosystem types are likely to have lost some of their structure and functioning, and will be further compromised if they continue to lose natural habitat or deteriorate in condition.
Least Threatened	Ecosystem types that have experienced little or no loss of natural habitat or deterioration in condition.

The current threat status of ecosystems in the Western Cape is depicted in Figure 3-1.

Since 2011², the ecosystem threat status of eight ecosystem types in the Western Cape has increased, primarily due to habitat loss. Three additional ecosystem types have been classified as Critically Endangered, taking the total number to 24. Four additional types are now classified as Endangered (total: 18); and there is one new Vulnerable ecosystem (total 25) (Pence, 2017).

² The date of completion of the last WCBSPP prior to the 2013 WC SoER.

The Critically Endangered ecosystems³ in the Western Cape are:

- Cape Lowland Alluvial Vegetation;
- Central Rûens Shale Renosterveld;
- Eastern Rûens Shale Renosterveld;
- Elgin Shale Fynbos;
- Elim Ferricrete Fynbos;
- Garden Route Granite Fynbos*;
- Knysna Sand Fynbos;
- Kouebokkeveld Alluvium Fynbos*;
- Langkloof Shale Renosterveld;
- Lourensford Alluvium Fynbos;
- Muscadel Riviere;
- Peninsula Granite Fynbos;
- Peninsula Shale Renosterveld;
- Piketberg Quartz Succulent Shrubland*;
- Ruens Silcrete Renosterveld;
- Swartland Alluvium Fynbos;
- Swartland Silcrete Renosterveld;
- Western Rûen Shale;
- Renosterveld;
- Cape Flats Sand Fynbos;
- Swartland Granite Renosterveld;
- Swartland Shale Renosterveld;
- Atlantis Sand Fynbos;
- Kogelberg Sandstone Fynbos; and
- Overberg Sandstone Fynbos.

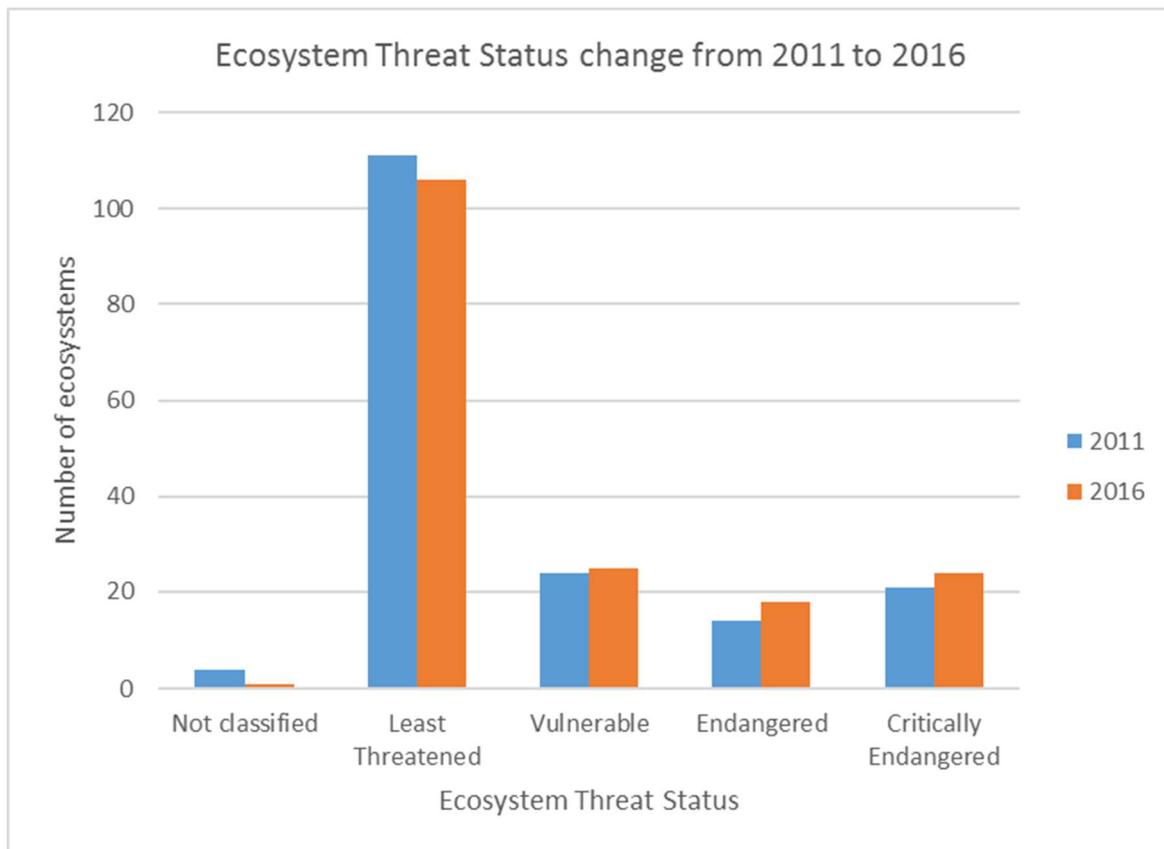


Figure 3-1: Change in Ecosystem Threat Status between 2011 and 2016

These changes can be largely attributed to agricultural and urban expansion, industrial development, mining, renewable energy installations and coastal development. However, some drivers of ecosystem loss are more insidious and challenging to track via the ecosystem threat status method, such as invasive alien species and fires at occurrences greater than natural return frequencies. Future improvements or additions to the nationally accepted methodology to map landcover will be crucial for the future assessment of ecosystem loss.

³ An asterisk denotes those that have recently been categorised as Critically Endangered.

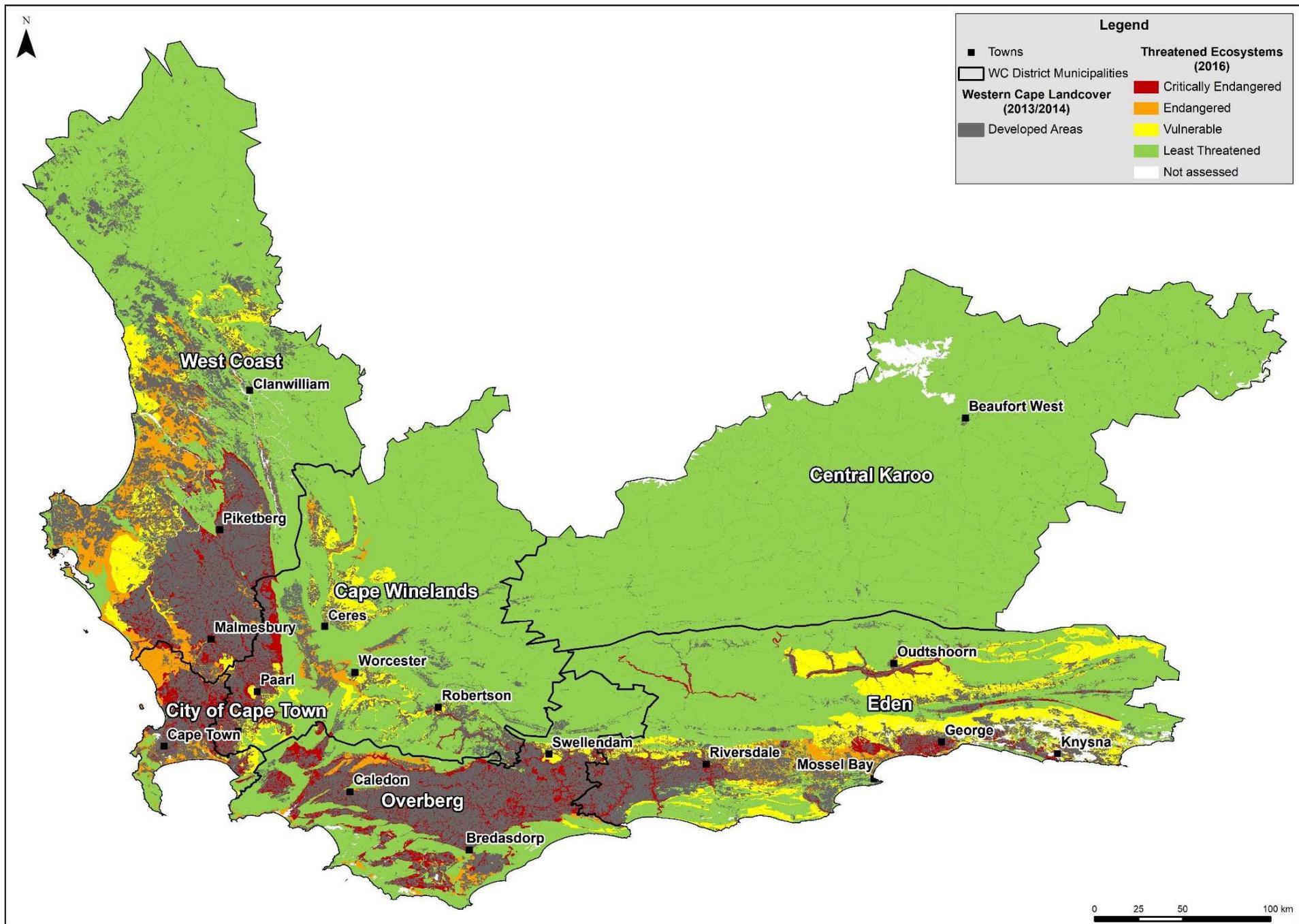


Figure 3-2: Ecosystem threat status in the Western Cape

3.2 Ecosystem protection level (protected areas)

Ecosystem protection levels are determined on the basis of the percentage of the biodiversity target for each ecosystem met in Type 1 protected areas (i.e. National Parks, Provincial Nature Reserves, Local Authority Nature Reserves and DAFF Forest Nature Reserves). The protected areas in the Western Cape are depicted on Figure 3-4 (Pence, 2017).

A total of 43 ecosystems were well protected in Type 1 protected areas in 2017, an increase of 8 from 2011; 21 ecosystems were moderately protected in 2017, an increase of 12 from 2011; 56 ecosystems were poorly protected in 2017, a reduction of 20 from 2011 and 43 ecosystems were not protected at all in 2017, an increase of 15 from 2011⁴ (See Figure 3-3, Pence, 2017). This analysis showed that the majority of ecosystems in the province were either poorly or not protected (99 out of 150), an alarming statistic for a province so richly endowed with biodiversity, much of which is found nowhere else in the world.

The changes are influenced by two factors: firstly, the application of verification methods for protected areas subsequent to 2011 (which reduced the number of Private Nature Reserves officially recognised in the Province), and secondly, pro-active efforts to expand the provincial protected area network (see Figure 3-4)

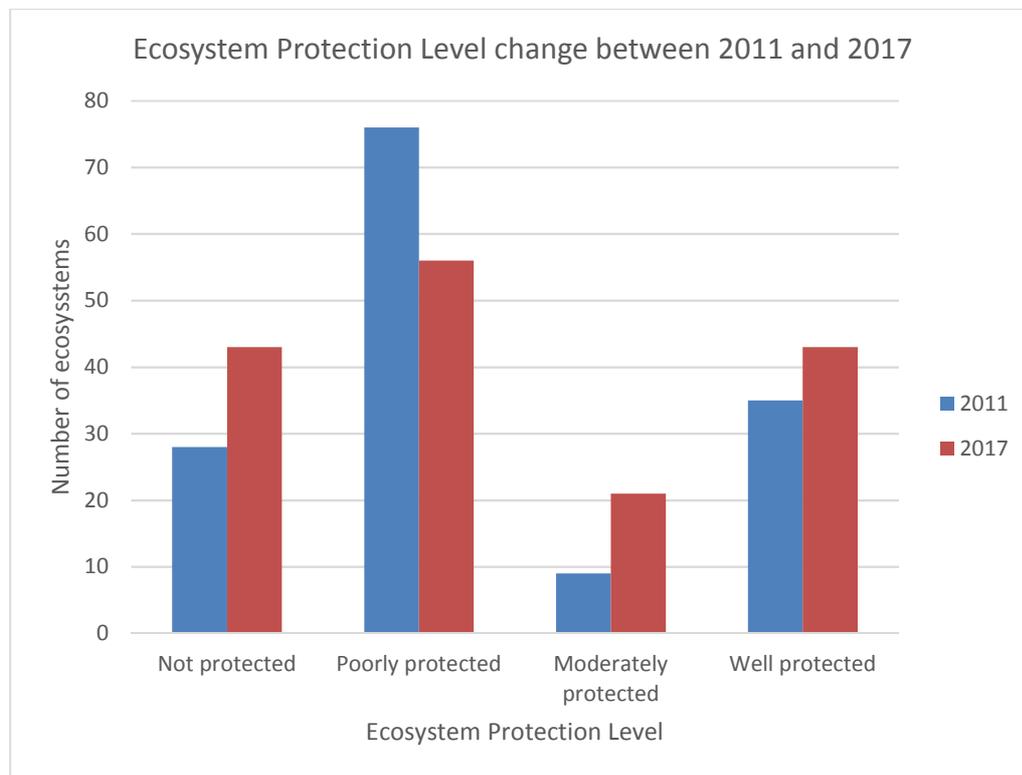


Figure 3-3: Change in the Ecosystem Protection Level between 2011 and 2017

Ecosystem protection levels in the Western Cape are presented in Figure 3-5. The extent of protection achieved per ecosystem is important in terms of the ecosystem threat status of each. However, at a broad level, in 2017 a total of 1,852,649.5 ha was under formal protection, compared to 1,828,435.0 ha in 2011, an increase of 24,214.5 ha (1.3%). A more accurate and detailed comparison of the changes over time per ecosystem type will be presented in the

⁴ This is partially due to a review of formal protected areas across the country and the exclusion of some protected areas from the calculations. The review resulted in some protected areas (predominantly Private Nature Reserves) having been included in the 2011 assessment, but excluded in 2017 as they were never properly or fully proclaimed, and thus not meeting the requirements for recognition as formal protected areas in terms of NEM: PA. The 2011 and 2017 data should thus not directly compared.

National Biodiversity Assessment to be issued in 2018. The improved protection of Critical Endangered and Endangered Ecosystem must continue to be prioritised, to avoid the future loss of such ecosystems. A reduction in funding for the proclamation and management of protected areas during the current reporting period is of concern.

3.3 Biodiversity priority areas

Priority biodiversity areas in the province include terrestrial Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs) and Freshwater Ecosystem Priority Areas (FEPAs) (see Figure 3-6 and Figure 3-7). These are the most efficient suite of natural areas that need to be protected formally or informally to ensure a representative proportion of all ecosystems in the province persists in the long-term. In addition, the FEPA's, mostly in mountainous and high yield water areas, play a vital role in generating large amounts of water of excellent quality.

The 2017 Western Cape Biodiversity Spatial Plan, which illustrates these CBAs, ESAs and FEPAs, is the first province-wide plan to have been developed. Previous provincial plans were amalgamated from various regional and local plans. In addition, the landcover data associated with the 2014 plan was derived using a different classification system.

The 2017 Western Cape Biodiversity Spatial Plan can now be used as the first set of province-wide priority biodiversity areas, against which future plans can be assessed.

The resolution of procurement and curation processes between the Department of Rural Development and Land Reform and other organs of state for future landcover data for the province is fundamental to enable the assessment of the loss of priority biodiversity areas going forward.

As a result, it was not possible to assess the extent of loss of Biodiversity Priority Areas between 2014 and 2017 using directly comparable datasets. However, recognising these data limitations and for the purposes of demonstrating high level trends, a total of 19 270 ha of CBAs were lost between 2011 and 2014.

3.4 Habitat degradation

Taking cognisance of the data limitations discussed immediately above, habitat degradation in the province increased by 16.2% between 2009 and 2014 (SANBI, 2009; GeoTerra, 2013/14). Degradation in the province is caused by both natural and human-induced erosion. Soils in the province are pre-disposed to erosion, with sheet erosion being the most common form in the Western Cape (Hoffman and Ashwell, 2001). Human-induced erosion is caused by poor agricultural and plantation forestry practices, collection of plant material, invasive alien plants, and inappropriate development, amongst others (Hoffman and Todd, 1999; Chamier *et al.*, 2012).



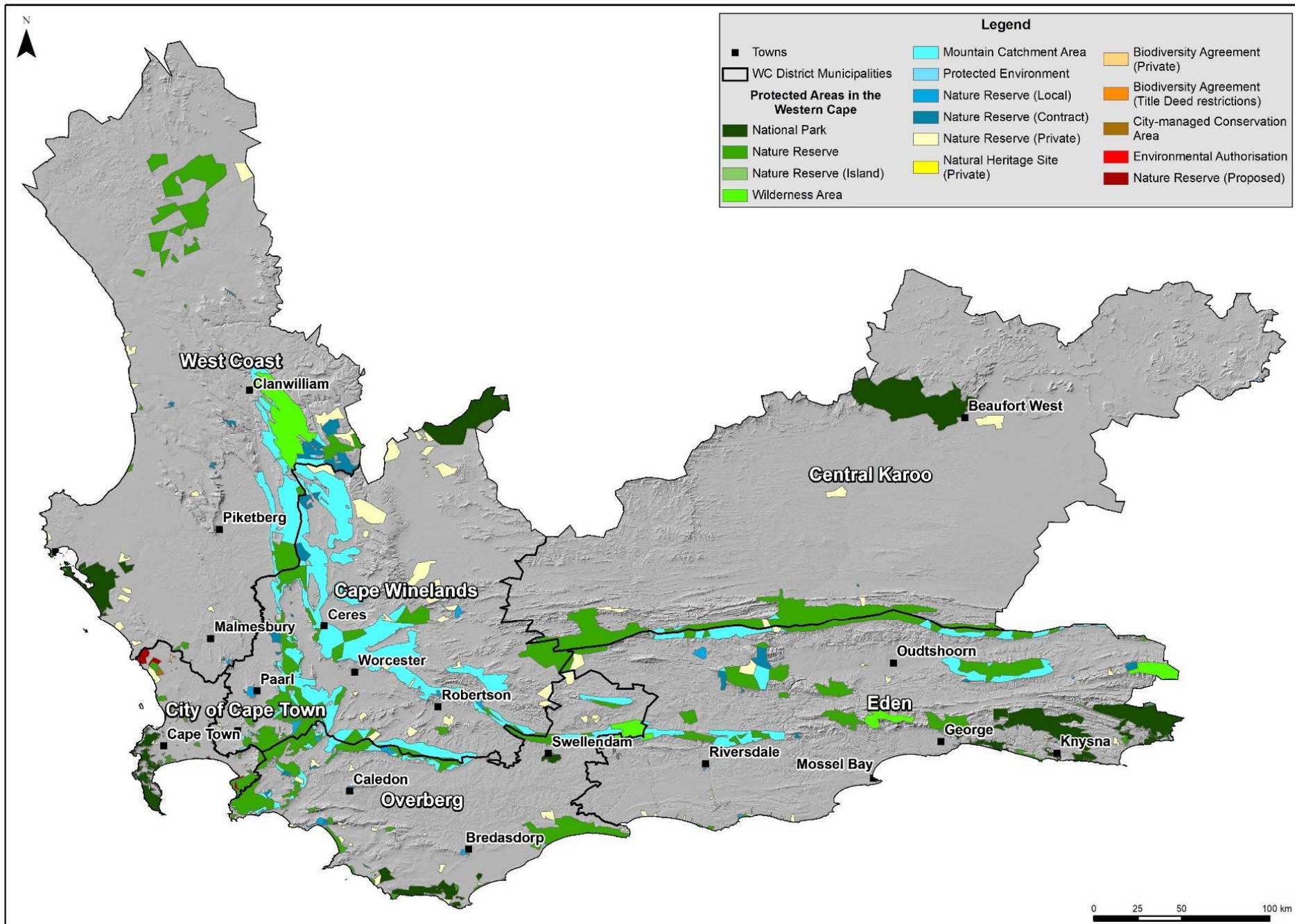


Figure 3-4: Protected areas in the Western Cape

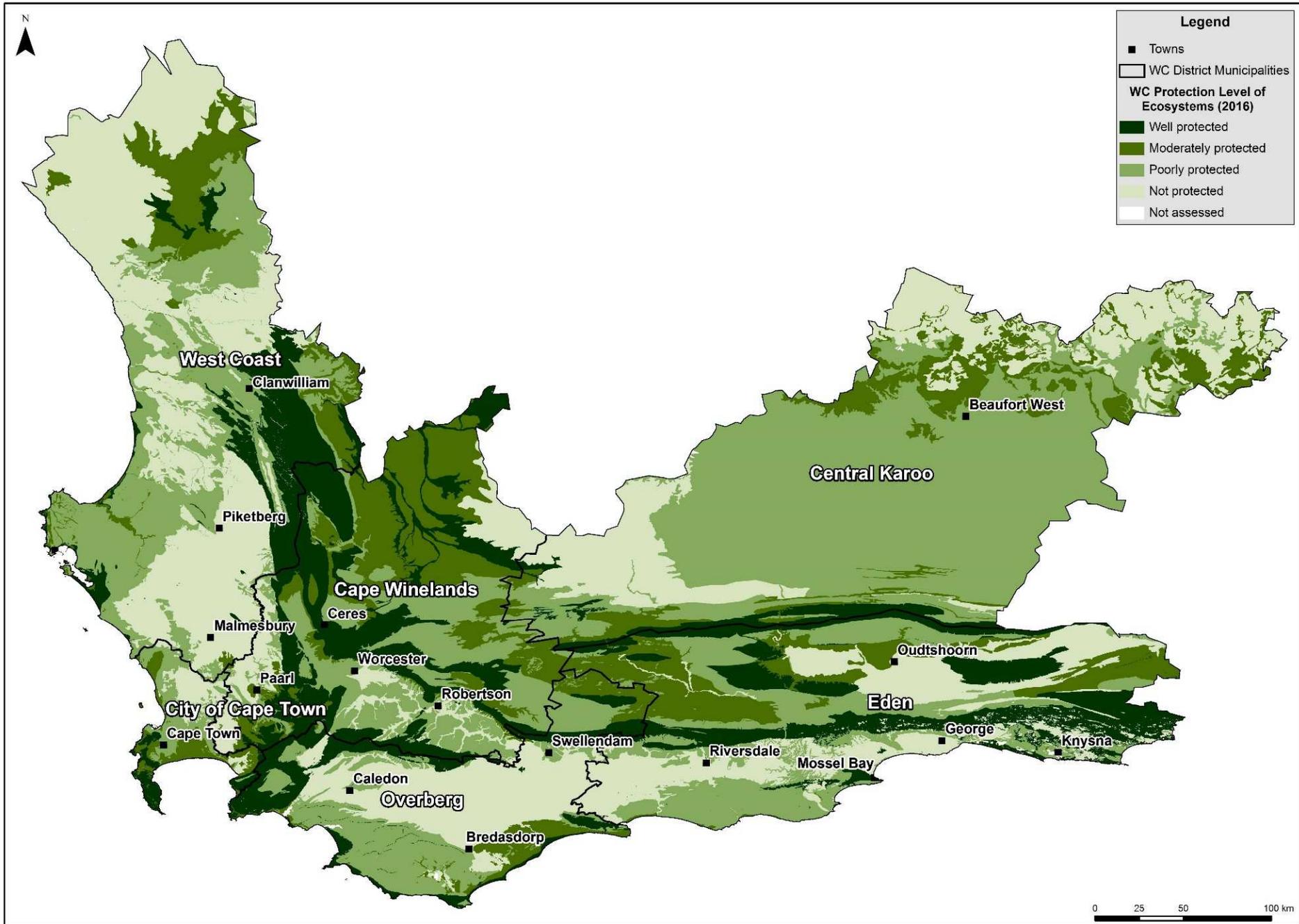


Figure 3-5: Ecosystem protection levels in the Western Cape

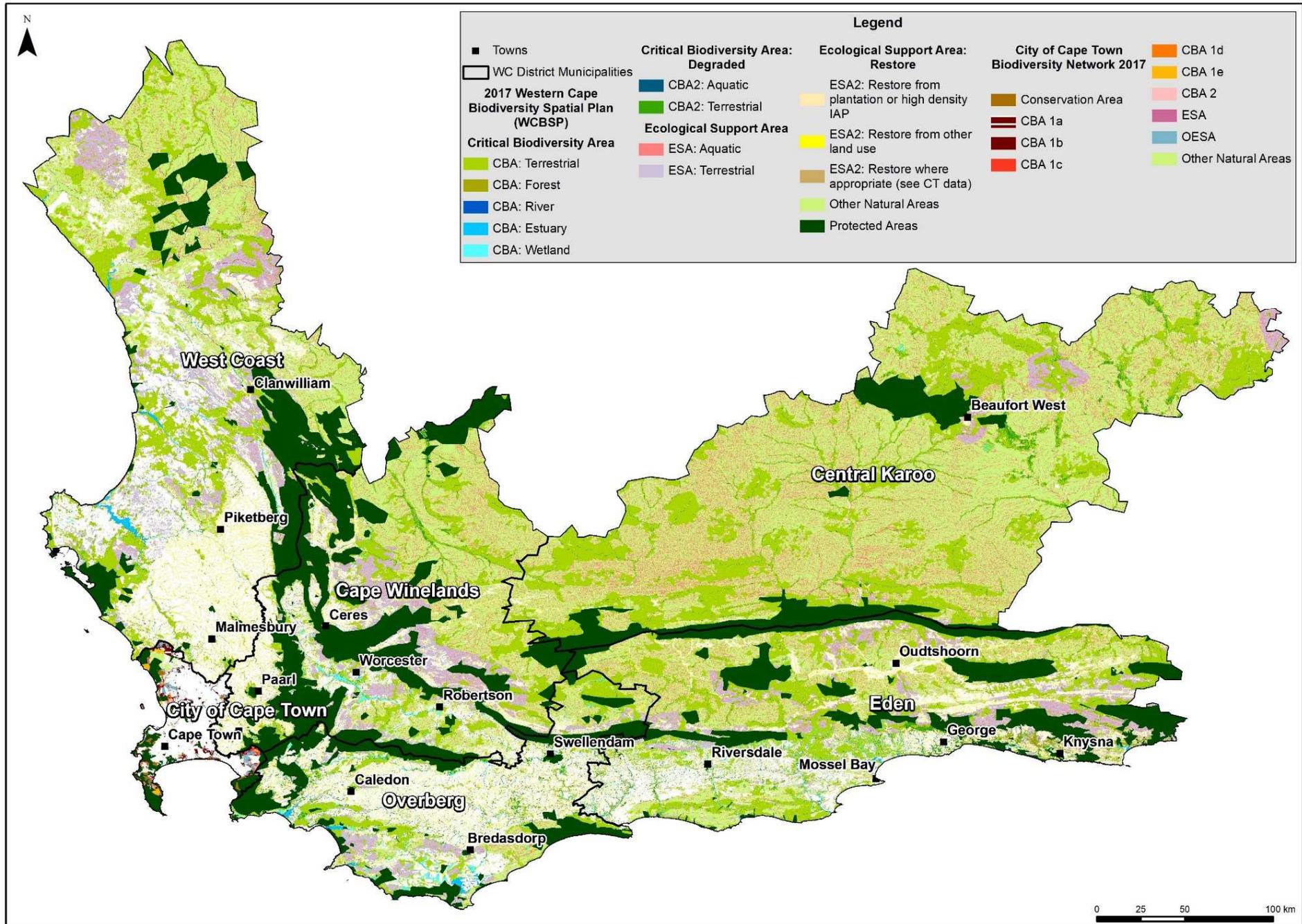


Figure 3-6: Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Western Cape

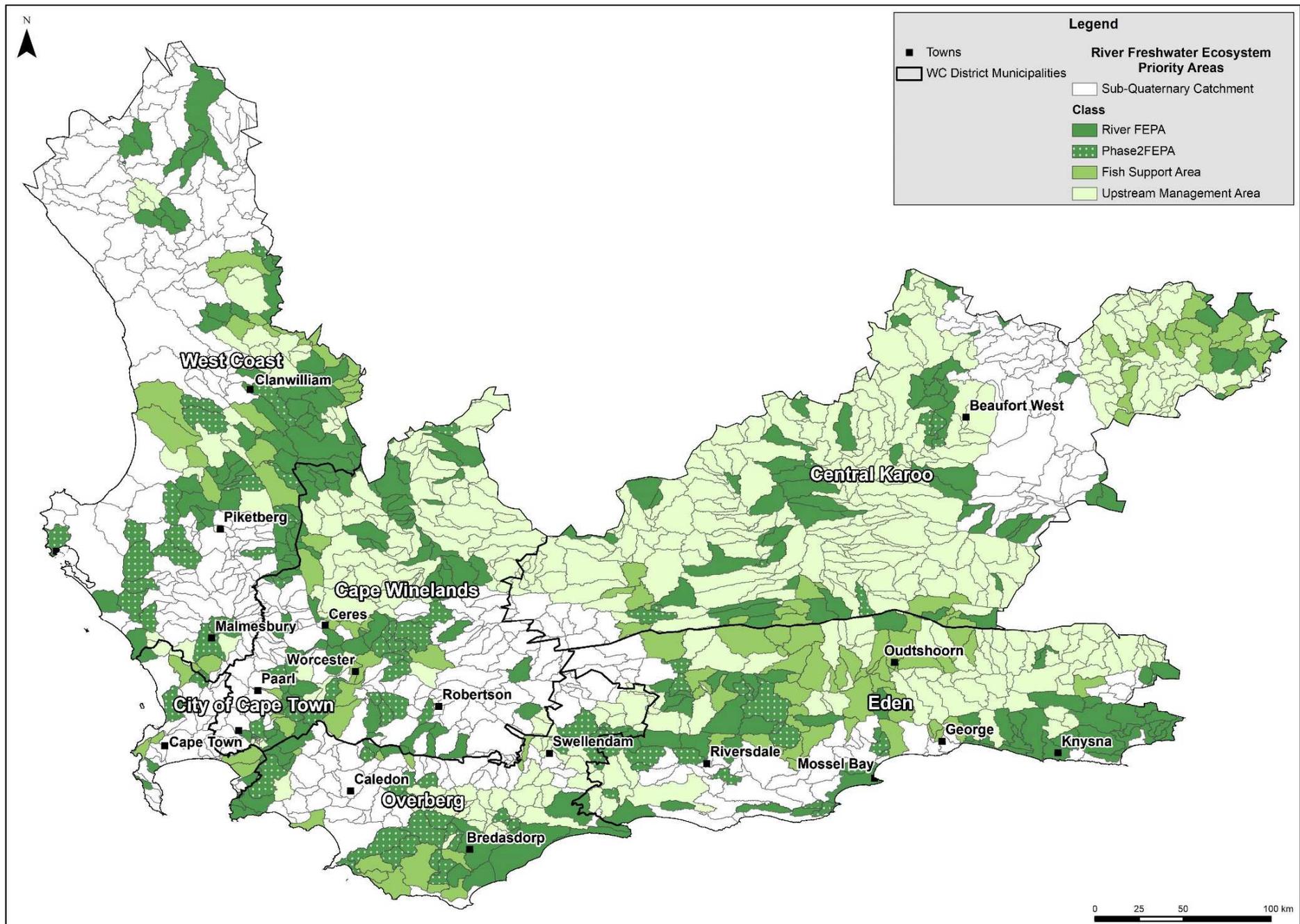


Figure 3-7: Freshwater ecosystem priority areas in the Western Cape

3.5 Species threat status

There are 13 489 recorded plant species in the Western Cape Province, which constitutes 56% of South Africa's flora species, and a large number of these are endemic (6 776). Some 1 889 plant species in the Western Cape are classified as threatened, with 330 classified as Critically Endangered, of which 38 are presumed extinct. A further 636 are Endangered and 900 are Vulnerable. These species account for up to 68% of the threatened plant species in the country; 1 695 of these are endemic to the Western Cape (Le Roux *et al.* 2012). Moreover, there are 3 923 plant species of conservation concern because they are Near Threatened, Data Deficient,



Rare, Critically Rare Endemics or Declining in numbers (Le Roux *et al.* 2012). Twenty plants species are reported as being Extinct, with a further 3 extinct in the wild (Turner *et al.*, 2017).

The very high levels of diversity are believed to have arisen due to the long evolutionary history of the province and the edaphic (soil) and topographic diversity of the province (e.g. Cowling *et al.* 2009, Linder *et al.* 2010). This, coupled with the relatively stable climatic conditions, has allowed local populations of plants and animals to diversify and persist through evolutionary time leading to the current

situation where there are many species distributed across the province's varied landscapes. As a result of this mode of evolution, many of these species have small and restricted ranges which has led to the province having very high numbers of endemic species. These species are dependent on the province's conservation bodies for their conservation. Another effect of this evolutionary pattern is that many of these species are likely to be adapted to local environmental conditions and this may occur at very fine spatial scales so that the number, and extent, of suitable habitats may be very limited, which limits management options. This may have knock-on management effects, e.g. when animals or plants are moved from one area to another, the chances are good that this may interfere with the results of many (often in the order of millions or tens of millions) years of evolution (Turner, 2012).

The threat status of species in the province has changed substantially since 2011. The threat status of species are categorised by the IUCN as follows:

- **Critically Endangered species** are considered to be facing extremely high risk of extinction in the wild in the immediate future;
- **Endangered species** are considered to be facing a very high risk of extinction in the wild;
- **Vulnerable species** are considered to be facing high risk of extinction in the wild;
- **Near Threatened species** do not qualify as Critically Endangered, Endangered or Vulnerable now, but are close to qualifying for or are likely to qualify for a threatened category in the near future;
- **Least Concern species** do not qualify as Critically Endangered, Endangered, Vulnerable or Near Threatened and include species which are widespread and abundant.

The IUCN does not categorise **Rare** species, however within the South African context, a species is Rare when it meets at least one of four South African criteria for rarity, but is not exposed to any direct or plausible potential threat and does not qualify for a category of threat according to one of the five IUCN criteria.

The four criteria are as follows:

- Restricted range: Extent of Occurrence <500 km², or
- Habitat specialist: Species is restricted to a specialised microhabitat so that it has a very small Area of Occupancy, typically smaller than 20 km², or
- Low densities of individuals: Species always occurs as single individuals or very small subpopulations (typically fewer than 50 mature individuals) scattered over a wide area, or
- Small global population: <10 000 mature individuals.

A total of 50 species indigenous species deteriorated in their IUCN Red List threatened status since 2011/12, particularly within the Critically Endangered and Endangered categories. A total of 58 species have improved conservation status since 2011/12. The major negative changes have been as follows:

- Twelve species have changed from Endangered to Critically Endangered;
- Five have changed from Threatened to Endangered;
- Ten have changed from Vulnerable to Endangered;
- Three have changed from Least Concern to Endangered;
- One has changed from Rare to Endangered;
- Three have changed from Least Concern to Near Threatened;
- One has changed from Rare to Near Threatened;
- Ten have changed from Least Concern to Vulnerable;
- One has changed from Rare to Vulnerable; and
- Four have changed from Rare to Least Concern.

The changes in threat status that have taken place for indigenous plants in the province between 2012 and 2017 is provided in Table 3-2:

Table 3-2: Changes in threat status for indigenous plants between 2012 and 2017

IUCN Threat status	2012	2017
Extinct	21	20
Extinct in wild	3	3
Critically Endangered and Presumed extinct	37	38
Critically Endangered	296	292

Source: Turner *et al.*, 2017

The Western Cape Province has the highest number of threatened and endemic freshwater fish species in South Africa, with 19 formally described indigenous primary freshwater fish species, of



Clanwilliam Yellowfish

which 11 are endemic. A further 18 distinct genetic lineages of fishes (17 endemic) are awaiting description. The province's unique aquatic diversity is increasingly under threat, with the prime threats being invasive fish and plant species, excessive levels of water abstraction during the dry season, pollution and bulldozing of river banks and floodplains.

The conservation status of South African fishes is in the process of being reviewed and the proposed listings of fishes for 2017 shows the following changes compared to 2012 (Jordaan *et al.* 2012; Impson *et al.* 2017):

- Three remain Critically Endangered
- One Not Evaluated to Critically Endangered,
- One Critically Endangered to Endangered
- Three remain Endangered
- Six Not Evaluated to 6 Endangered
- One Endangered to Near Threatened
- One remains Least Concern
- Two remain Near Threatened
- Three Vulnerable to Near Threatened
- One Not Evaluated to Vulnerable
- Three remain Data Deficient

In terms of the terrestrial vertebrate groups, 15% of amphibians, 5% of reptiles, 5% of birds and 10% of mammals recorded in the Province are classified as Threatened (Turner, 2012).

The province now has 60 indigenous amphibian species, 60% of which are endemics. Of the 60 indigenous species, five are Critically Endangered, four are Endangered, and six are Near Threatened. Three recently described species are Data Deficient and a further three are yet to be evaluated. There are also at least two new species in the genus *Capensibufo* still to be described and have their threat status formally evaluated. More than half (36) of the frogs are endemic to this province. The primary threats to amphibians in the province are habitat loss, invasive alien plant species and inappropriate fire frequencies. The change in threat status is illustrated in Figure 3-8 (Turner *et al.*, 2017).



Western Leopard Toad



Table Mountain ghost frog

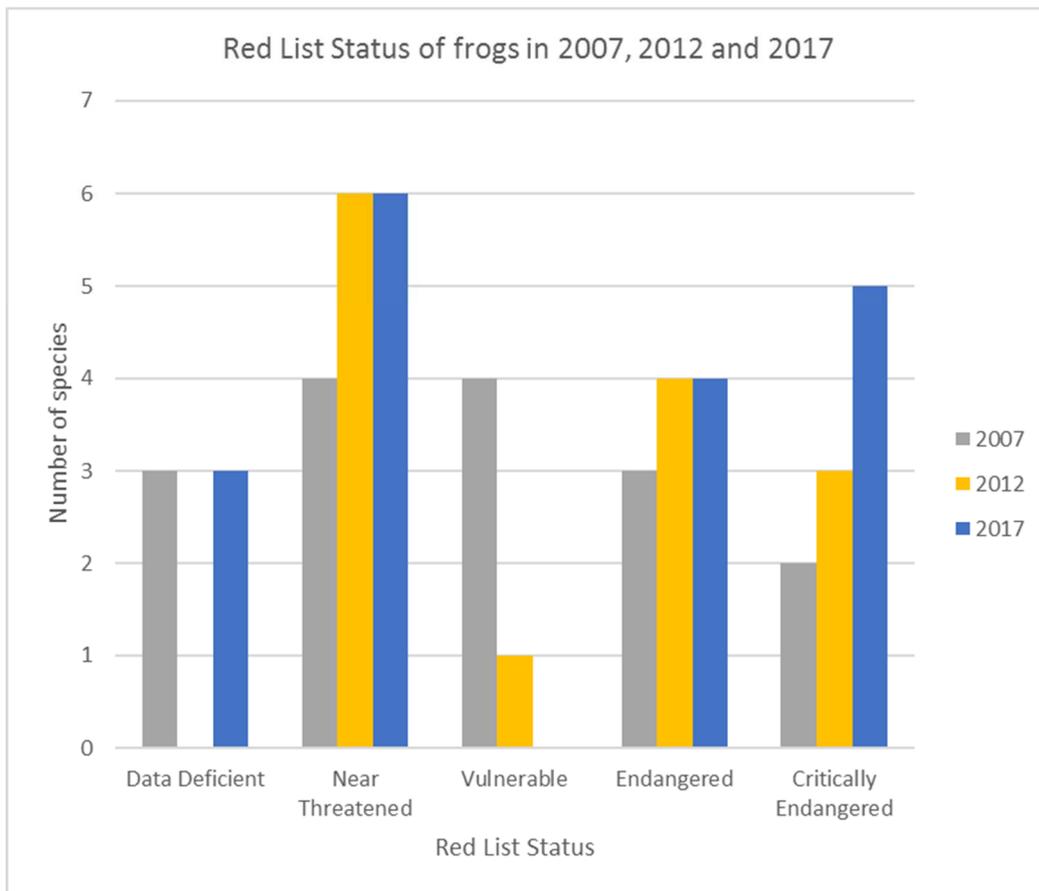


Figure 3-8: Summary threat status of Western Cape frogs in 2007, 2012 and 2017

Source: Turner et al., 2017

There are 145 described indigenous reptile species and subspecies recorded to occur in the province, of which 22 are considered endemic to the Province. Of the 145 indigenous species, eight are listed as Threatened. These are made up of one Critically Endangered, one Endangered and six Vulnerable species. A further 11 species are listed as Near Threatened and one species is still considered to be Data Deficient. The change in threat status between 2007, 2012 and 2017 is illustrated in Figure 3-9.

The province has 176 described mammal taxa (species and subspecies). Of these, four are extinct, 24 are listed as Threatened and 13 are listed as Near Threatened in the 2016 Red List of Mammals of South Africa, Lesotho and Swaziland (Child et al. 2012). Three are Critically Endangered, eight are Endangered, 13 are Vulnerable to extinction. Eight of nine historically present taxa remain and are endemic to the province, while 10 are near endemic and some taxa are considered locally Extinct in the Wild. Of the extant mammal species of the Western Cape, 40 species are indicated to have an improved conservation status, 117 species are indicated to have remained unchanged, but 19 species have a deteriorating conservation status. Nine of these are endemic to South Africa. (Birss, 2017)

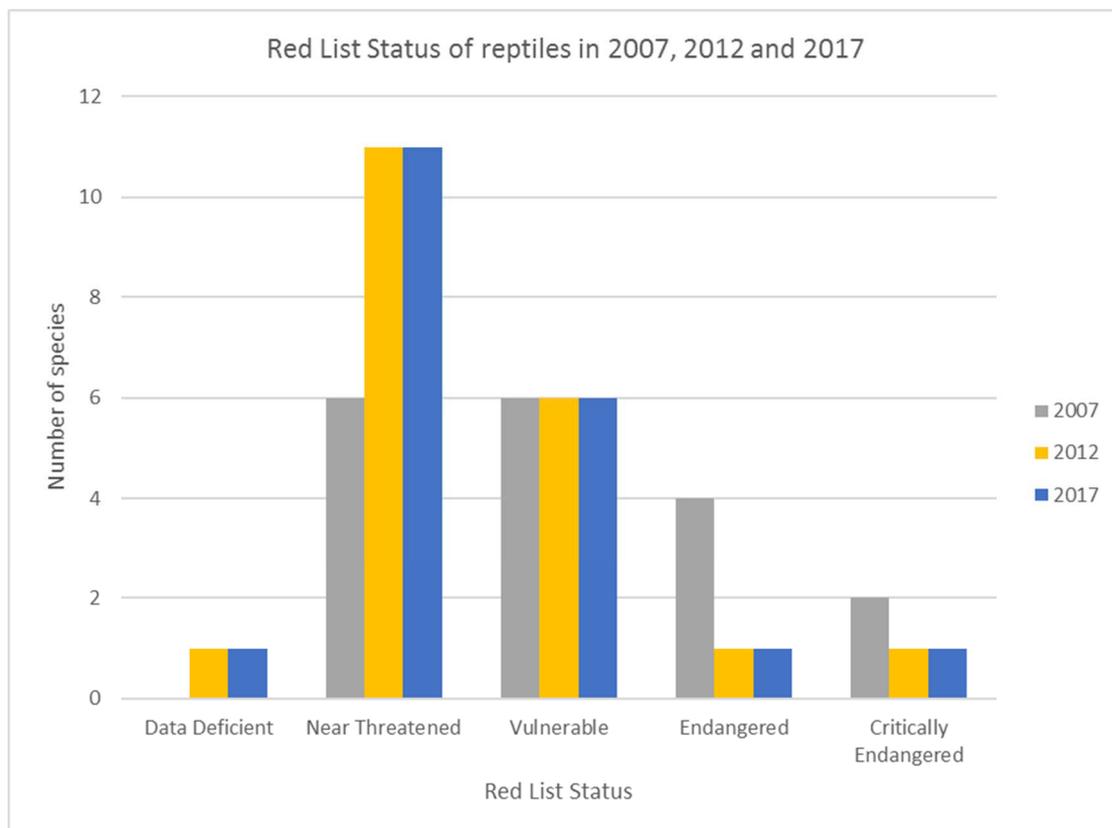


Figure 3-9: The number of reptile species in each threat category in 2007, 2012 and 2017

Source: Turner et al., 2017

Considering the high levels of plant endemism in the Cape Floristic Region (Goldblatt, 1978), similar levels of insect endemism might be expected. Approximately 27% of bee species are endemic to the Fynbos and Succulent Karoo biomes (Kuhlmann, 2009). The Western Cape Neuroptera fauna (insect orders Neuroptera and Megaloptera) is unique, with very high levels of endemism. These insects are extremely vulnerable, with some species highly endangered owing to urbanization and agriculture and require special protection. To date, 156 species have been recorded in the province. Of these, 38 species are endemic. In addition there are at least 20 species of that are awaiting formal description.

The aquatic ecosystems of the Cape Fold Ecoregion are very diverse with high endemism in certain insect taxonomic groups (e.g. caddisflies, 119 species, 85 endemic species), and are extremely vulnerable to human disturbance due to a requirement for flowing rivers with diverse habitat and nutrient poor acidic waters (de Moor and Day, 2013).

The threat status of key genera are provided in Figure 3-10 (Turner et al., 2017).

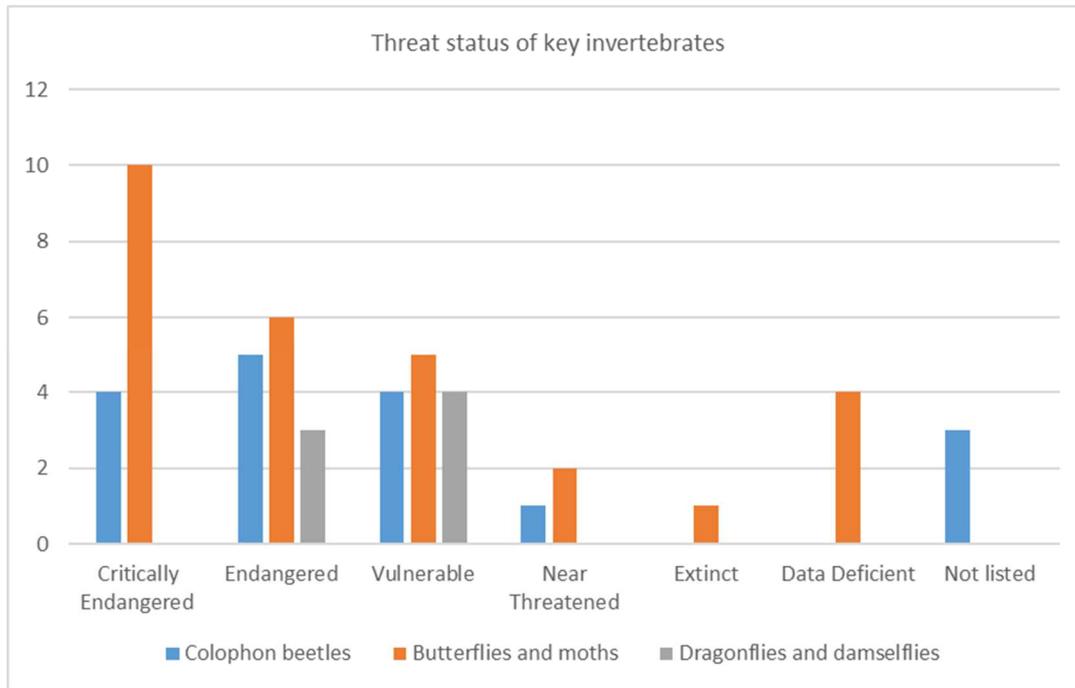


Figure 3-10: Threat status of key invertebrates

Source: Turner *et al.*, 2017

A total of 608 bird species are recorded for the province, including the offshore waters. Of these, 269 species are resident to the province, a number which has remained constant over the last 15 years. Of the threatened species in the province, two species are critically endangered, 11 are endangered, 15 are vulnerable and 19 species are near threatened. The change in threat status between 2007, 2012 and 2017 is illustrated in Figure 3-11. Threats faced by these species include habitat degradation, decreasing food supply, invasive species, disease, predation and climate change. The impact and severity of all these threats are likely to increase in future.

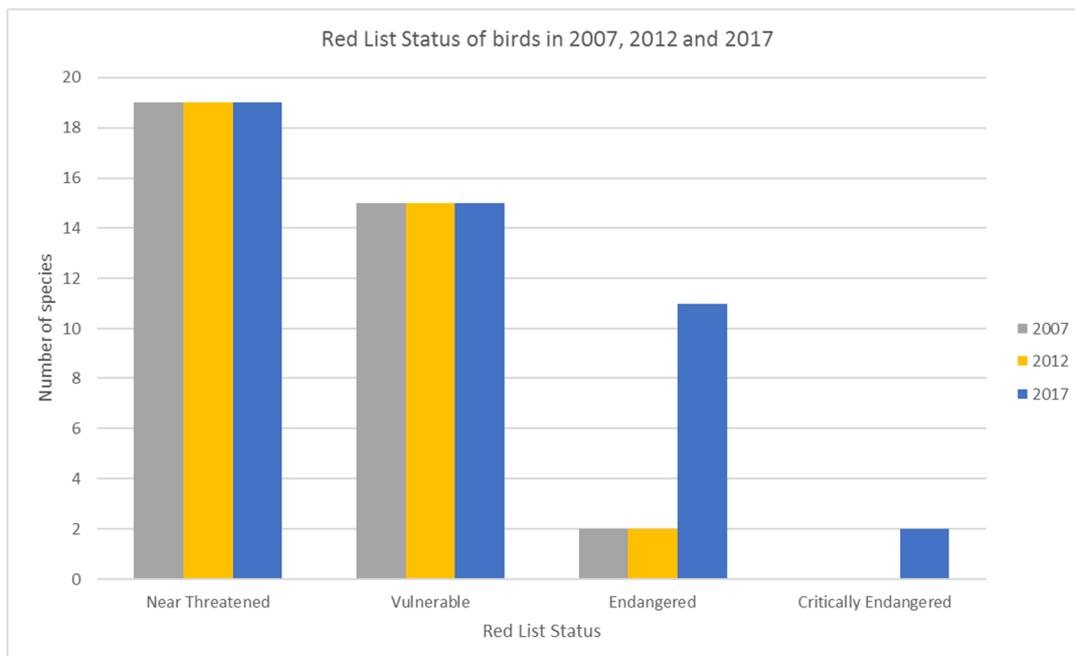


Figure 3-11: Number of Western Cape bird species occurring in each threat category as assessed at a regional level for 2007, 2012 and 2017

Source: Turner *et al.*, 2017

3.6 Invasive alien species

Invasive alien vegetation is thought to cover approximately 1.8 million hectares nationally, with the highest concentrations found in the south-western, southern and eastern coastal belts and the adjacent interior (Le Maitre *et al.* 2016). Unfortunately, insufficient reliable and comparable data is currently available on either the extent of invasive alien species present in 2011/12 compared to 2017 or at a provincial level.

Invasive alien species introduced and/or spread outside their natural habitats have affected native biodiversity in almost every ecosystem type on earth and are one of the greatest threats to biodiversity. Since the 17th century, invasive alien species have contributed to nearly 40% of all animal extinctions for which the cause is known (CBD, 2006).

An **invasive alien species** is a species that is "established outside of its natural past or present distribution, whose introduction and/or spread threaten biological diversity" (CBD, 2000).

Invasive alien species result in an array of challenges for both the natural environment and society. For invasive plants these include higher levels of surface and ground water uptake than



indigenous species leading to reduced water availability, increased fire risk and intensity, out competing of indigenous species resulting in natural habitat loss, and increased erosion of topsoil, amongst others. Invasive alien plants are an extensive problem in the province despite massive efforts from CapeNature and the national eradication programmes: Working for Water, Working for Wetlands, and Working for the Coast. The extent and intensity of the problem is represented in Figure 4-1 below

(Kotzé *et al.* 2010). Note that most areas densely infested with invasive alien vegetation are in the mountainous catchment areas of the province.

The most challenging invasive alien plant species in the province include:

- Cluster pines (*Pinus pinaster*), Port Jackson (*Acacia saligna*) and Rooikrans (*Acacia cyclops*) predominantly in the lowlands,
- Black wattles (*Acacia mearnsii*) predominantly along watercourses, silky hakeas (*Hakea sericea*) and cluster pines (*Pinus pinaster*) predominantly in the mountainous areas, and
- Mesquite (*Prosopis* species), prickly pear (*Opuntia ficus-indica*) and saltbush (*Atriplex* species) predominantly in the Succulent Karoo (Turner, 2012; De Villiers *et al.* 2005).

The province also has 17 invasive fish species, of which 10 are from outside South Africa, five are from outside the province and two are native to the province, but have extra-limital populations in the province (Clanwilliam yellowfish *Labeobarbus seeberi* and Cape kurper *Sandelia capensis*). Invasive alien fish species dominate all mainstem rivers and remain the biggest threat to the indigenous fishes of the province (Turner *et al.*, 2017). Invasive alien fish affect indigenous populations by preying on both juvenile indigenous fish and small fish species, limiting the number of individuals reaching sexual maturity for reproduction and leading to local extinction of some, especially smaller, species. The invasive species are also responsible for habitat alteration (carp cause muddy water), introduction of disease, disruption of ecological processes, and compete with native species for resources (Jordaan *et al.* 2012).

Two domestic exotic species of amphibian are present in the wild in the province. The introduced guttural toad has persisted between 2012 and 2017 in areas around Cape Town, although its spread has been limited by active management. The painted reed frog continues to expand its range in the province. No invasive alien amphibians originating outside South Africa have become established in the province.



Painted reed frog

The Cape dwarf gecko (*Lygodactylus capensis*) has significantly expanded its distribution since the 2012 report and is now established and breeding in numerous urban areas in the province and further spread is likely. Control of this species will be difficult



Cape Dwarf Gecko

and the negative effects, if any, of this species' invasion are unknown and unquantified at present. A single record has been reported of a Nile monitor (*Varanus niloticus*) in the province near George. This species naturally occurs in the northern and eastern provinces of South Africa and widely elsewhere in Southern, Central and Eastern Africa. It is not known whether this species was intentionally or accidentally introduced.

This species has successfully invaded parts of Florida in the USA and may well be able to expand its range within Southern Africa. The common agama (*Agama agama*), Namibian rock agama (*Agama planiceps*), common snapping-turtle (*Chelydra serpentina*) and the corn snake (*Pantherophis guttatus*) have all been observed in the wild in the province, but are not known to have become established (Turner *et al.*, 2017).



Common Myna

Both the composition and number (10) of alien bird species that have established free ranging populations in the province have remained constant between 2007 and 2012 as well as 2012 to 2017. The invasive Common Myna is expanding its range and there is a real possibility that it could move into the Western Cape. The program to remove the highly invasive House Crow from the Cape Metropolitan Area has been extremely successful (Turner *et al.*, 2017).

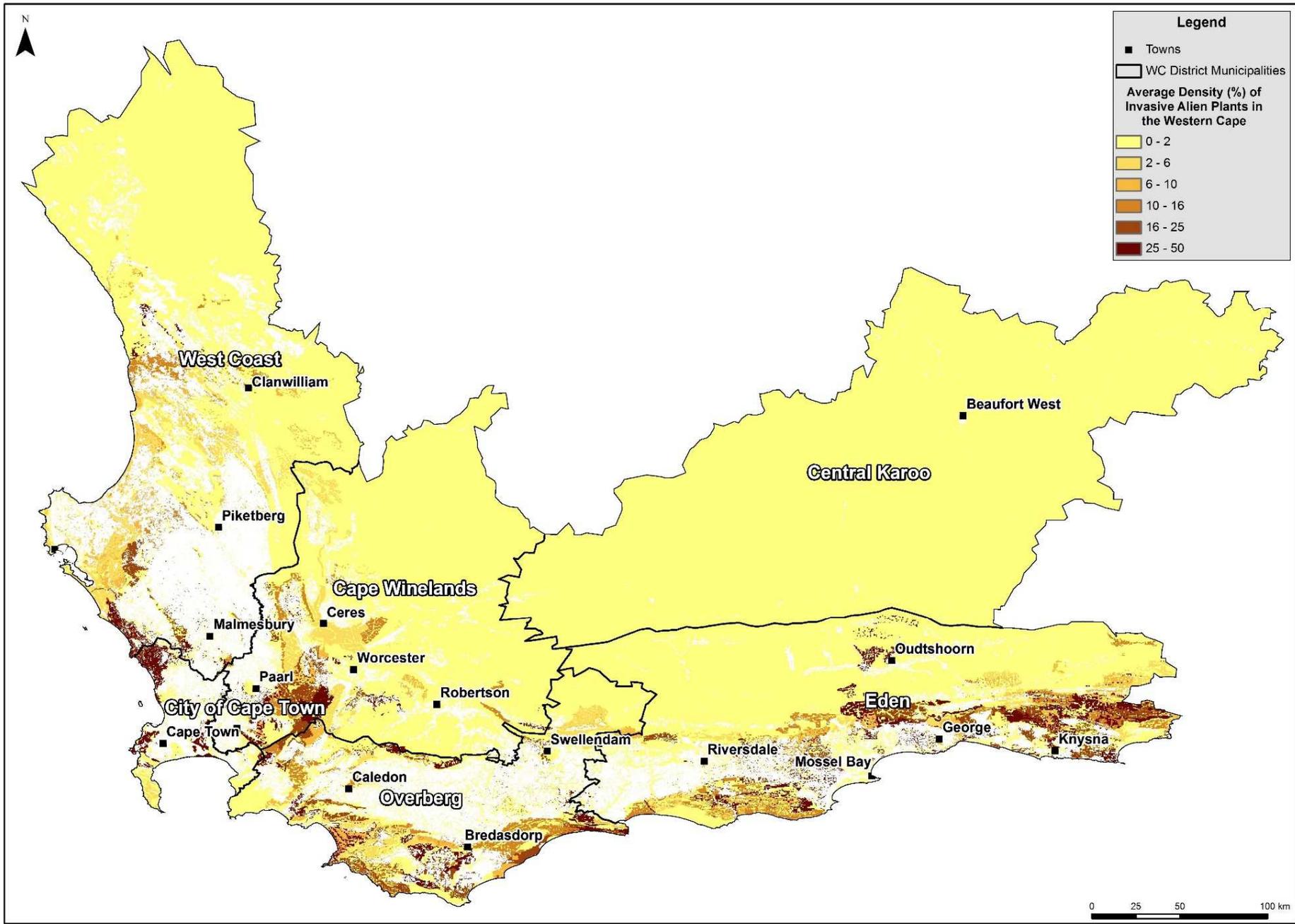


Figure 4-1: Average density (% cover) of invasive alien plants in the Western Cape Province

4 IMPACTS

The loss of biodiversity and a decline in ecosystem health results in a range of negative impacts, including:

- Loss of habitats (vegetation types/ecosystems), species and ecological processes;
- Habitat degradation;
- Increased habitat fragmentation;
- Reduced water flow in rivers and associated reduction in water resources;
- An increase in disease vectors and transmission (of disease); and
- A reduction in ecosystem services/ecological infrastructure.

4.1 Loss of habitats, species and ecological processes

Increased development, including clearing of land for agriculture, residential, commercial, industrial and tourism development, as well as mining operations and renewable energy installations, resulted in the loss of natural habitats, species and ecological processes in the province (Turner *et al.*, 2017). The increasing trend in CBA loss is particularly alarming, with 16 800 ha of CBAs lost between 2006 and 2011, and 19 270 ha lost up to 2014 (Duffell-Canham *et al.*, 2017).⁵



Additional causes of species loss included the absence or higher than natural frequency of fire events and the spread of invasive alien plants.

The distribution of habitats in the province is directly correlated with the wide array of soil types, local topography and rainfall patterns. As a result, many of these habitats occupy unique niches, which enable their survival. The reduction in extent of such habitats leads to the loss of fauna and flora dependent on such habitats for their survival. In turn, the loss of these habitats and species leads to a reduction or disruption of important ecological processes such as the water cycle, whole patch fires⁶, nutrient cycles and carbon sinks.

A substantial number of threatened plant and animal species are also collected and traded in informal markets across the province (some illegally). Various plant species have a wide variety of applications, such as for traditional medicinal purposes, as a food source, as fibre and for use in gardens. A study in the City of Cape Town determined that of 181 species assessed for Red List status, 30 threatened species are available at informal markets in the city, of which three species are Critically Endangered, 14 are Endangered, and 13 are Vulnerable. A further 13 species were considered Near Threatened, while six species were known to have declining population numbers (Petersen *et al.* 2012). The total mass of biological material being extracted from Western Cape natural areas for traditional medicinal use every year was estimated at 279 tons. The majority of this amount is plant material (Petersen *et al.*, 2014).

⁵ CapeNature notes that inconsistencies may confound the picture.

⁶ Large scale fires at a landscape scale (e.g. across natural areas of much of an entire municipal area or district, as would have taken place historically).

4.2 Habitat degradation

Habitat degradation is “a decline in species-specific habitat quality that leads to reduced survival and/or reproductive success in a population” (IUCN, 2006). Habitat degradation is typically caused by unsustainable extractive use of natural resources, land conversion and invasive alien species. Primary causes in the province between 2012 and 2017 have included overgrazing, afforestation, mining, urban expansion, altered fire regimes, the spread of invasive alien species, malfunctioning waste water treatment works and agricultural expansion (Turner et al., 2017).

Habitat degradation does not necessarily result in the outright loss of all biodiversity, but frequently results in loss or degradation of habitats, species, ecological processes, and ecosystem goods and services.

The current method of classifying and capturing landcover data for the country, and by default the Western Cape, does not enable regular assessment of changes in habitat degradation. As a result, it is presently not possible to accurately report on changes and drivers of habitat degradation in the province.

4.3 Increased habitat fragmentation

Habitat fragmentation is a process during which “a large expanse of habitat is transformed into a number of smaller patches of smaller total area, isolated from each other by a matrix of habitats unlike the original” (Wilcove et al.1986). Habitat fragmentation restricts the movement of species between areas to more favourable environments, which further reduces their prevalence in the landscape and impedes genetic exchange. Fire is often excluded or applied too frequently, both resulting in species decline. This in turn reduces the long-term viability of rare and unique plants and animals, and the habitats in which they are located.

Due to current landcover data limitations and the lack of a province-wide assessment of habitat fragmentation, no relevant data exists to report on this impact. Ongoing expansion of the City of Cape Town, George and other smaller urban and rural centres, coupled with the expansion of large-scale infrastructure such as roads, pipelines, electrical lines etc. are all increasing the extent of habitat fragmentation in the province.

4.4 Reduced water flow in rivers and associated reduction in water resources

Water is a limited, yet critical resource required for the survival of society, organisms and entire ecosystems, but is in high demand for human consumption and economic activities. Water resources in the province are limited by the strong seasonal Mediterranean climate in the western extent of the region. Coupled with this, is a disparity between water availability and water demand, which is expected to become more pronounced due to the projected effects of climate change and population growth in the province. Water intensive activities, such as intensive crop production, residential and industrial development and mining, are impacted by limited supply or degradation in the quality of available water. This is especially evident as a serious drought grips the south-western Cape in 2017/18.

Over-abstraction of both ground and surface water also impacts biodiversity, which in turn reduces the provision and effective delivery of water-related ecosystem services, such as water purification and flood attenuation provided by wetlands and ecologically healthy rivers. The dominance of invasive alien species along water courses and in catchment areas that extract large volumes of water further limits water availability for human consumption, economic activities and natural ecosystems as discussed further in the Inland Water chapter (Le Maitre et al., 2015 and 2016).

4.5 Increased disease transmission

A growing body of scientific literature now shows that the loss of biodiversity increases disease risks to humans and livestock (Keesing et al. 2010, Johnson et al. 2013). As biodiversity is lost and decreases, encounters among infected individuals and between infected and susceptible hosts increase, leading to an increased spread of diseases. Greater species diversity provides a greater proportion of incompatible hosts thereby interrupting the cycle of infection (Center for Health and the Global Environment, 2015; McCallum, 2015; Keesing et al. 2010).

Habitat loss and degradation have consequently been shown to exacerbate disease transmission. For example, the devastating outbreak of the highly pathogenic avian influenza virus across ostrich farms in the Western Cape in 2012 (and again in 2017), and subsequent culling of thousands of birds, was possibly introduced by wild waterfowl species, which are attracted to ostrich grazing lands and feeding areas in response to habitat degradation (Sinclair et al. 2006; BirdLife International, 2007; CCT, 2012). Although the infection and loss of entire wild bird populations to avian influenza is considered rare, such a disease could be most damaging to species that are already threatened, and/or found in only a few localities (BirdLife International 2007), such as many of the endemic species of the Western Cape. In another example, the highly endemic fish populations of the province are at risk of disease (such as Epizootic Ulcerative Syndrome or Red Spot Disease) caused by the water mould (*Aphanomyces invadans*) discovered in several Western Cape dams, which is known to infect various fish species (Jordaan et al. 2012).

It is critically important that major threats to biodiversity, such as habitat loss, degradation and fragmentation, are abated to minimise the spread of infection and potential for human transmission.

4.6 Reduction in ecosystem services/ecological infrastructure

The sustained provision of ecosystem services is dependent on the long-term persistence and ecological integrity of biodiversity. Ecosystems provide vitally important ecosystem services that are of enormous benefit to society, for example water purification, pollination of economically important crops, flood attenuation, grazing land and clean air. If the pressures on biodiversity are not reduced, many of the ecosystems services that society is dependent on may reach a level where human intervention is required to maintain or replace them, with severe cost implications.

5 RESPONSES

A broad suite of responses to the challenges of biodiversity loss and a reduction in ecosystem health are being implemented at the international, national, provincial and local levels. These include the signing of international treaties; development and implementation of national and provincial legislation, policies, strategies and assessments; local policies, strategies, plans and municipal by-laws, the most important of which are outlined in Annexure A. Other responses to the challenges of biodiversity loss and a reduction in ecosystem health are described below.

5.1 Implementation

A vast number of biodiversity conservation initiatives are being implemented in the Province. These include projects across the economic and tourism sectors, and with private landowners and various organs of state.

The Western Cape Biodiversity Spatial Plan (WCBSP) is a spatial tool that comprises the Biodiversity Spatial Plan Map (BSP Map) of biodiversity priority areas, accompanied by contextual information and land use guidelines that make the most recent and best quality

biodiversity information available for land use and development planning, environmental assessment and regulation, and natural resource management.

The development and implementation of the WCBSA is a core output for the Provincial Biodiversity Strategy and Action Plan (2016) which is aligned to the Aichi Targets for the United Nations Convention on Biological Diversity as well as the National Biodiversity Strategy and Action Plan (2015). The WCBSA represents the "state-of-the-art" provincial systematic biodiversity planning product. It presents the priority biodiversity areas and ecological infrastructure that need to be secured in the long-term in order that DEA&DP, together with CapeNature, fulfil their core provincial mandate for biodiversity conservation and management.

Various business and biodiversity initiatives are being implemented, including collaborative projects in the agriculture sector, such as wine, citrus, cut flowers, potatoes and rooibos.

The DEA&DP gave prominence to the UNESCO Man and Biosphere (MAB) principles and the implementation of Biosphere Reserves in their operational plan and through the Western Cape Biosphere Reserves Act 6 of 2011. Five biosphere reserves have been established in the province: Garden Route Biosphere Reserve, Cape West Coast Biosphere Reserve, Cape Winelands Biosphere Reserve, Gouritz Cluster Biosphere Reserve and Kogelberg Biosphere Reserve. Biosphere reserves are 'living laboratories' for testing and demonstrating integrated management of land, water and biodiversity. The objectives of biosphere reserves are to conserve, maintain and rehabilitate biodiversity, promote sustainable development and conduct research & education. The five Western Cape Biosphere Reserves cover 4 686 256 ha, the smallest being the Kogelberg Biosphere Reserve (100 000 ha), the largest being the Gouritz Cluster Biosphere Reserve (3 187 893 ha).

The Western Cape Protected Areas Expansion Strategy (PAES) drafted by CapeNature, has two overarching goals:

- to expand the Western Cape Protected Area network to encompass a more representative and resilient suite of areas that support biodiversity and ecological infrastructure, especially those threatened species and ecosystems that remain unprotected as yet; and
- to regularise existing Protected Areas so that environmental security is ensured for everyone in South Africa, and the costs and benefits of appropriation accrue to the appropriate entity.

Land acquisition for the expansion of protected areas is primarily through partnerships between conservation agencies and private or communal landowners through biodiversity stewardship agreements, with a focus on improving management effectiveness in protected areas.

In compliance with the NEM:PAA, CapeNature is required to develop management plans for each of its nature reserves, to ensure protection, conservation and management of the protected area in a manner that is consistent with the objectives of NEM:PAA.

In addition, a number of Biodiversity Management Plans have or are being developed and implemented, focusing on the management of species endemic or near endemic to the Western Cape including the Cape Mountain Zebra, Bontebok, African Penguin, Barrydale Redfin and Geometric Tortoise. These plans are aimed not only at species specific outcomes but also at facilitating inter-agency collaboration and stakeholder engagement.



5.2 Ecological infrastructure and persistence approach

Ecological infrastructure refers to naturally functioning ecosystems that deliver valuable services to people, such as fresh water, climate regulation, soil formation and disaster risk reduction. It is the nature-based equivalent of built or hard infrastructure, is just as important for providing services and underpinning socio-economic development, but often provides more sustainable solutions (SANBI, 2017).

South Africa has begun approaching biodiversity conservation from the perspective of seeking to facilitate strategic investment into ecological infrastructure, to lengthen the lifespan and optimise delivery of services from existing ecological infrastructure. Also, to reduce the need for additional built or grey (i.e. man-made or cement) infrastructure, often with significant cost savings. This approach aims to facilitate rural development, support job creation, and enable adaptation to climate change; thereby improving the resilience of communities and infrastructure to natural disasters.

It was deemed imperative by key stakeholders in the province to develop a provincial plan for alien threats which recognises distribution and density patterns, key focal areas of concern in terms of threats to ecological infrastructure, and opportunities for alien biomass economies. The need was therefore identified to develop an invasive alien species strategy and ecological infrastructure investment framework (EIIIF) for the Western Cape Province. In addition to the EIIIF, in 2017 the province began to test the Water Fund concept for the Atlantis aquifer and to then scale it up for the Breede catchment. The DEA&DP Sub-Directorate: Biodiversity Management, together with the South African Local Government Association (SALGA), has begun to provide focussed support to municipalities that do not have approved alien clearing plans. Workshops were held with relevant municipalities to assist them to develop Management Unit Clearing Plans (MUCPs), to be submitted to DEA for approval.

Growth in green investment and market opportunities are at the centre of the Western Cape Green Economy Strategy Framework, supported by five drivers: Smart living and working, Smart mobility, Smart ecosystems, Smart Agri-production and Smart enterprise. The “Smart Ecosystems” driver, speaks to aspects related to green infrastructure, ecosystem management and restoration, biodiversity management, sustainable harvesting, conservation education, research and human well-being amongst others. Smart Agriculture for Climate Resilience (SmartAgri), a two-year project by the Western Cape Department of Agriculture and the DEA&DP was launched in August 2014 and echoes these ideals through priority projects to restore ecological infrastructure for, inter alia: increased landscape productivity, socio-ecological equity and job creation. An example of such a project is the Bitou Agroforestry Projects in Harkerville and Kranshoek, which have been earmarked nationally as showcase community development projects in the Bioprospecting sector. The projects are ready to move from “project-to-business” and have already proven to enhance the livelihoods of the communities where they are implemented.



5.3 Ecosystem-based adaptation

Ecosystem-based adaptation involves a wide range of ecosystem management activities to increase resilience and reduce the vulnerability of people and the environment to climate change (IUCN, 2017). Typical approaches include sustainable agriculture, integrated water resource management, and sustainable natural resource management interventions such as restoring ecosystems, wetland and floodplain management, conservation of forests to stabilise slopes, and the establishment of healthy and diverse agroforestry systems to cope with increasingly variable climatic conditions (Reid *et al.*, 2017). The role of ecosystems in adaptation is recognised at the international level under the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity (CBD) and the United Nations Convention to Combat Desertification (UNCCD) (IUCN, 2017).

People's ability to adapt to climate change is inextricably linked to their access to basic human rights and to the health of the ecosystems they depend on for their livelihoods and well-being. If adaptation policies and programmes are to be effective, they must integrate efforts to sustain and restore ecosystem functions and promote human rights under changing climate conditions (IUCN, 2017).

Ecosystem-based adaptation is gaining increasing prominence and is likely to become a mainstream approach to ecosystem management activities in the future.

5.4 Western Cape Climate Change Response Strategy

Climate change is one of the most important direct drivers of biodiversity loss and ecosystem service changes worldwide, and it may become the dominant direct driver of these changes by the end of the 21st century. South Africa's biomes are expected to be impacted by climate change, as the current climates which influence conditions within the biomes are likely to shift (DEA&DP, 2016).

A number of programmes that address the identified threats to biodiversity from climate change are underway in the Western Cape. In 2009, an exercise undertaken with the support of the Table Mountain Fund identified 28 Climate Change Corridors in the Western Cape (refer to Figure 5-1). These corridors were taken into account when designing the Province's Protected Area Expansion Strategy (DEA&DP, 2016).

The current Western Cape Climate Change Response Strategy priority areas for addressing biodiversity and ecosystem goods and services in the Western Cape in a changing climate include (DEA&DP, 2016):

- Prioritisation, valuation, mapping, protection, and restoration of ecological infrastructure;
- Landscape initiatives / biodiversity corridors and identification of requirements for climate change adaptation corridors;
- Biodiversity stewardship; and
- Mainstreaming of conservation planning into decision-making.

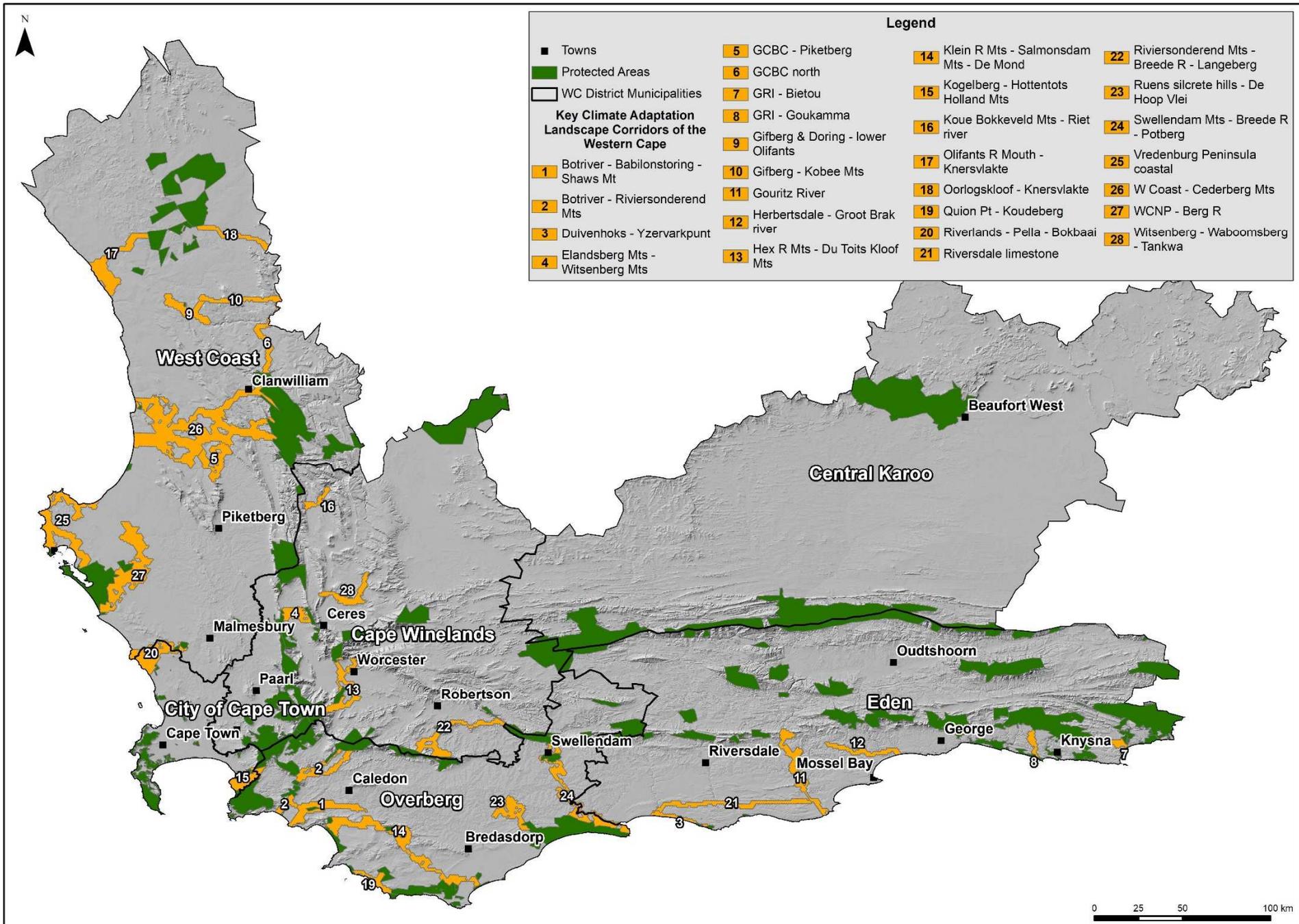


Figure 5-1: Key climate adaptation landscape corridors of the Western Cape

6 CONCLUSION

OUTLOOK: DECLINING

The Province has experienced a decline in the Ecosystem threat status of vegetation types, primarily due to habitat loss and a loss in excess of 19 000 ha of CBAs in recent years, with the extent of habitat degradation increasing by 16% between 2009 and 2014. While the species threat status of some species has improved, the threat status of others, particularly those in the endangered and critically endangered threat categories has further deteriorated, demonstrating a continued negative trend during the reporting period. An improvement was only experienced in the ecosystem protection level of vegetation types due to the establishment of new protected areas or the expansion of existing ones. Insufficient data was available to assess the status of invasive alien species.

At present, the Western Cape's unique and threatened biodiversity resources are being depleted at a faster rate than they can be safeguarded. As a result, a total of 14 additional ecosystems qualify for national listing as threatened since the 2011 gazetting of threatened ecosystems. The continued loss of natural habitat, particularly in CBAs and ESAs, undermines not only the rich natural heritage of the Western Cape, but our very livelihoods and quality of life, our water security, and our resilience in the face of a changing climate. It is vital that illegal land clearing activities in CBA's are stopped with effective action taken against transgressors.

Greater effort is consequently required to mainstream and safeguard the priorities identified in the 2017 Western Cape Biodiversity Spatial Plan, the City of Cape Town Bioregional Plan, the Biodiversity Sector Plans for each of the District Municipalities, and the various local biodiversity implementation initiatives. Action must be taken to procure the next land cover time-step with which to compare the 2013/14 land cover information. The design and implementation of a development and environmental authorisation tracking tool to enable reporting on legal versus illegal land conversion would also greatly aid biodiversity conservation efforts.

An overview of the key aspects identified in this chapter and the outlook for biodiversity and ecosystem health are reflected below in Table 6-1 and Table 6-2.

Table 6-1: Overview of key biodiversity and ecosystem health aspects

Aspect	Summary of key points
Pressures	<ul style="list-style-type: none"> • Urban growth • Agricultural expansion • Climate change • Invasive alien species • Over-exploitation of natural resources, including water abstraction, overgrazing and illegal harvesting of species amongst others • Altered fire regimes • Increased pollution • Mining
Impacts	<ul style="list-style-type: none"> • Loss of habitats, species and ecological processes • Habitat degradation • Increased habitat fragmentation • Loss of water resources • Reduction in ecosystem services/ecological infrastructure

Challenges	<ul style="list-style-type: none"> • Reduction in the spatial extents of many critically endangered and endangered ecosystems • Increased number of critically endangered and endangered ecosystems types • Biodiversity management and conservation funding
Progress	<ul style="list-style-type: none"> • Protected areas being expanded • Increase in the number moderately and well protected ecosystems • Regular updating of systematic conservation planning data and maps • Development of biodiversity planning products at a district level for incorporation into municipal Spatial Development Frameworks
Critical areas for action	<ul style="list-style-type: none"> • Mainstreaming of systematic biodiversity planning information into spatial planning at district and local municipal levels • Ongoing expansion of the protected area network • Management of alien vegetation • Need for increased focus on retaining of the condition and extent of ecosystems, due to their provision of goods and services. Particularly through programmes that reduce the vulnerability of the poor to the impacts of such loss or degradation. • Need for indicators that show when ecosystems are becoming degraded.

Table 6-2: Summary of the outlook for biodiversity and ecosystem health in the Western Cape

Indicator	Quantification	Target/ Desired State	Trend
Ecosystem threat status	<ul style="list-style-type: none"> • Increase in threat status for some vegetation types due to habitat loss (+4 CR, +4 EN, +11 VU)⁷ 	Maintain or decrease the threat status for all ecosystems in the Western Cape	Declining 
Ecosystem protection level	<ul style="list-style-type: none"> • 43 ecosystems well protected in 2017, an increase of 8 from 2011. • 21 ecosystems were moderately protected in 2017, an increase of 12 from 2011. • 56 ecosystems poorly protected in 2017, a reduction of 20 from 2011. • 43 ecosystems not protected at all in 2017, an increase of 15 from 2011. • Increase of 24 214.5 ha protected to 1 852 649.5 ha in 2017, from 1 828 435.0 ha in 2011. 	Increase the protection category of all ecosystems Western Cape Increase in the total extent of areas formally protected, particularly in lower categories	Improving 

⁷ Compared to the 2011 WCBSP data.

Indicator	Quantification	Target/ Desired State	Trend
Biodiversity priority areas	<ul style="list-style-type: none"> • Loss of 19 270ha of CBAs⁸ 	<p>No loss of CBAs</p> <p>Increase in the number of CBAs secured in new/expanded protected areas</p>	<p>Declining</p> 
Habitat degradation	<ul style="list-style-type: none"> • 16.2% increase in degraded land between 2009 and 2014. 	<p>Reduction in the extent of degraded land</p> <p>Increase in the extent of areas rehabilitated, or restored where possible</p>	<p>Declining</p> 
Species threat status (Species)	<ul style="list-style-type: none"> • 50 species have deteriorated in their IUCN Red List threatened status, particularly within the Critically Endangered and Endangered categories • 58 species have improved in their IUCN Red List threatened status 	<p>Reduction in the Red List status of species across all categories, particularly within the Critically Endangered and Endangered categories</p>	<p>Declining</p> 
Invasive alien species	<ul style="list-style-type: none"> • Appropriate comparable data to assess this for the reporting is currently not available 	<p>Reduction in the number, population density and extent of distribution of invasive alien species across all biological groups</p>	<p>Insufficient data</p> 

⁸ This loss took place between 2011 and 2013/14. Due to inconsistencies in data sources, this extent of loss should not be treated as absolutely accurate. Regardless, it is incontrovertible that habitat loss continues to erode our biodiversity priority areas, and greater effort is required to mainstream and safeguard the priorities identified in the 2017 Biodiversity Spatial Plan. In addition, significant effort should be made to procure the next time-step with which to compare the 2013/14 land cover information, as well as a development and environmental authorisation tracking tool to enable reporting on legal versus illegal land conversion.

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ANNEXURE A

Table A1: Important treaties, legislation and strategic tools to conserve biodiversity in the Western Cape.

Response	Legislation and Treaties	Date	Description / Purpose
International Responses	Convention on Wetlands of International Importance (RAMSAR)	1975	Convention to protect Wetlands of International Importance
	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	1975	An international agreement between governments aimed at ensuring that international trade in specimens of wild plants and animals does not threaten their survival.
	Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)	1983	Convention to support the Conservation of Migratory Species of Wild Animals
	Convention on Biological Diversity (CBD)	1992	Convention to protect Biological Diversity
National Responses	National Environmental Management Act 107 of 1998 (NEMA)	1999	To provide for co-operative, environmental governance by establishing principles for decision-making on matters affecting the environment
	World Heritage Conservation Act 49 of 1999	1999	To protect World Heritage sites in South Africa and facilitate the administration thereof.
	National Environmental Management Protected Areas Act 57 of 2003	2003	To provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes.
	National Biodiversity Strategy and Action Plan (NBSAP)	2005 and 2015	To act as the national policy driver to achieve the objectives of the CBD within a sovereign state.
	National Environmental Management Biodiversity Act 10 of 2005 and associated regulations and Norms and Standards	2005	To provide for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998.
	National Protected Areas Expansion Strategy (PEAS)	2008	To promote cost effective expansion of protected areas for ecological sustainability and increased resilience to climate change.
	Guideline regarding the determination of bioregions and the preparation and publication of bioregional plans.	2009	To inform the consistent determination of Bioregions and the preparation and publication of Bioregional Plans.
	NEMA Environmental Impact Assessment (EIA) Regulations	2010, 2014 and 2017	To regulate the procedure and criteria as contemplated in Chapter 5 of the Act relating to the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to environmental impact assessment, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts, and for matters pertaining thereto
	Spatial Planning and Land Use Management Act 16 of 2013 (SPLUMA)	2013	To provide a framework for spatial planning and land use management in the Republic.

	Wetland offsets: a best-practice guideline for South Africa	2014	To provide guidance to the design and implementation of wetland offsets in South Africa.
	Draft National Biodiversity Offset Policy	2017	To provide guidance to the design and implementation of biodiversity offsets in South Africa.
	National Spatial Biodiversity Assessment (NSBA)	2017	To assess the state of South Africa's biodiversity based on best available science, with a view to understanding trends over time and informing policy and decision-making across a range of sectors
	Species specific Biodiversity Management Plans	Various	A range of Biodiversity Management Plans focusing on the management of species including species endemic or near endemic to the Western Cape e.g. Cape Mountain Zebra, Bontebok, African Penguin, Geometric Tortoise etc.
Provincial Responses	Biodiversity Bill	2017	The Amalgamation of the Western Cape Nature Conservation Board Act 15 of 1998 and the Western Cape Nature Conservation Laws Amendment Act 3 of 2000 into a singular Biodiversity Act, currently being vetted by the State Legal Adviser.
	Western Cape Biosphere Reserves Act 6 of 2011.	2011	To have oversight and ensure that biosphere reserves: Conserve, maintain and rehabilitate biodiversity Promote sustainable development, research and education
	Provincial Guideline on Biodiversity Offsets - Western Cape Government	2015	To provide guidance to the design and implementation of biodiversity offsets in Western Cape Province.
	Provincial Biodiversity Strategy and Action Plan (PBSAP) 2016	2016	The PBSAP is a ten-year strategy that aligns with the National and Provincial Medium Term Strategic Frameworks 2014-2019 as well as the NBSAP. It acts as the provincial policy driver to achieve the objectives of the NBSAP and the CBD.
	The PBSAP Implementation Plan (March 2017)	2017	A strategic framework, which prioritises and coordinates the collective efforts of the DEA&DP and CapeNature with specific actions and outputs over a five-year horizon.
	Various private landowner initiatives, including Stewardship Programme and Sector Projects (e.g. Biodiversity & Wine, Agulhas Biodiversity Initiative, Rooibos etc.)	Various	To facilitate private landowner conservation and sector-specific business initiatives that take meaningful cognisance of biodiversity within the Western Cape Province or parts thereof.
	Various biodiversity sector plans (Districts and City of Cape Town)	2010	To assess the state of biodiversity within a District or Metropolitan Municipality based on best available science, with a view to understanding trends over time and informing policy and decision-making across a range of sectors
	Western Cape Biodiversity Framework Update	2014	
	Western Cape Biodiversity Spatial Plan (and associated	2016	To assess the state of biodiversity within the Western Cape Province based on

	Land Use Guideline Handbook)		best available science, with a view to understanding trends over time and informing policy and decision-making across a range of sectors
	Western Cape Biodiversity Economy Strategy (BES)	2016	To recognise the importance of natural resources and systems in driving the improvement of people's lives and the growth of the economy in the Western Cape.
	Establishment of Biosphere Reserves	2016	To conserve and restore the unique biodiversity and sense of place in the Biosphere Reserve, while supporting the sustainable management of the region and the delivery of benefits to local communities.
	BES - Biodiversity Economy Programme (2017 -2025)	2017	Specific targets, indicators, and actions to set in motion key identified biodiversity economy value chains in a programmatic approach
	Guidelines for the sustainable harvesting of wild honeybush	2017	To ensure resilience of wild populations of honeybush and to reduce impacts due to overharvesting and physical effects on the natural resource
	2016 Ecosystem Guidelines for Environmental Assessment in the Western Cape	2016	Planning and decision-support tool to inform sound decisions environmental assessment through proactive, biodiversity-inclusive land-use planning.
	Western Cape PEAS		To expand the protected area network in the western Cape and regularise existing protected areas.
	Protected Areas Management Plans	various	To ensure protection, conservation and management of the protected area in a manner that is consistent with the objectives of NEM:PAA
Local Authority Responses	City of Cape Town 2016 - 2026 Local Biodiversity Strategy and Action Plan	2016	To plan for City's contribution to biodiversity conservation and links with the international, national and provincial biodiversity plans.
	City of Cape Town Bioregional Plan	2015	To inform land-use planning and decision-making by a range of sectors whose policies and decisions impact on biodiversity.
	Biodiversity Network (BioNet), City of Cape Town	2016	To assess the state of biodiversity within the City of Cape Town based on best available science, with a view to understanding trends over time and informing policy and decision-making across a range of sectors
	Coastal Management Programmes: Eden District, West Coast, Overberg Districts and City of Cape Town	2013 - 2016	Inform and guide the management of the coastal zone, including terrestrial, freshwater and marine resources.

Department of Environmental Affairs and Development Planning
Leeusig Building, 3rd Floor, 1 Dorp Street, Cape Town, 8001
Private Bag X9086, Cape Town, 8000
Telephone: +27 (0)21 483 4091 / Facsimile: +27 (0)21 483 3016
Email: enquiries.eadp@westerncape.gov.za



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