16. Generic construction EMP

Attached as an Annexure.

17. Sectoral plans

17.1. Energy conservation and demand management

Based on the Western Cape Provincial Government: Draft White Paper on Sustainable Energy, Page 56 of 92.

Local Government's role may be seen as:

- Assessing the short to medium-term impacts of climate change in its respective areas by determining the degree to which existing systems can adapt in response to changed climatic conditions. This includes an assessment of the direct impact on natural resources, as well as secondary impacts on the socio-economic environment and the livelihood of communities.
- The Province together with local government, local partners and national government will be required to develop energy baseline studies and effective integrated sustainable energy strategies.
- Local government must work in cooperation with the PGWC so that the Provincial energy targets can be achieved. Areas of cooperation may include:

1. Increase energy efficiency in all municipal buildings: Embark on energy conservation measures to be applied in all local government owned and used buildings; audit of existing energy consumption in buildings; identification of potential measures for improved energy efficiency; systematic use of more efficient technologies and energy consumption practices.
2. Increase the public transport share of total transport modal shift; decrease the number of private vehicles into the town centre: focus on improving quality of public transport to the city centre; develop 'park and ride' facilities around the town centre; improve public transport within the city centre; and explore disincentives for private vehicles.
3. Assist in providing non-motorised transport: develop and implement a non-motorised transport strategy; bicycle plan, information and awareness campaigns to encourage the use of bicycle and pedestrian pathways.
4. Assist in installing solar water heaters in municipality owned housing.
5. Assist in improving energy efficiency in the residential sector through energy efficient water heater by-law legislation, facilitating of the creation of EE mass roll out businesses, information dissemination campaigns.
6. Assist in improving energy efficiency in industrial and commercial facilities: information dissemination campaign on efficient lighting use in partnership with organised business.
7. Embark on initiatives to drive renewable energy supply and reduce CO2 emissions.
8. Assist Province to support economic competitiveness and increasing employment through its energy strategies and initiatives.

9. Assist in meeting the Province's energy needs in a sustainable way thus fulfilling its constitutional and global responsibilities.
10. To promote and advance sustainable energy: Supporting local government to collect energy data to establish local government energy and climate change baselines and strategies, pass relevant legislation (EE building and efficient water heating bylaws) and initiate rollout programmes.

The successful implementation of this white paper also hinges on effective and supportive cooperation with and by all local governments in the Province. The PGWC will support the development of energy plans that collectively can contribute to the achievement of the targets set out in the White Paper. Local government is the sphere of government which can have the greatest impact on sustainability with respect to energy. For example, municipalities can pass by-laws or establish building approval guidelines which make it compulsory for all new buildings to be fitted with solar geysers.

17.2. Water conservation and demand management

Water is a scarce natural resource and is a critical factor in most developments and the maintaining of life and the environment. Using water more efficiently is a "green" strategy that reduces pressure on limited water resources in the country. The Water Services Development Plan for 2014/2015 already contains conservation and demand management strategies for the OLM jurisdiction area. The Environmental Management Section will support these strategies by integrating measures in relevant polices/strategies and EMS's being implemented within the OLM Departments. Implementing a water management plan successfully can result in the following benefits:

- Water resources are conserved for the benefit of all
- Financial savings can be made and unnecessary costs can be avoided
- Better water efficiency and being able to cope with less water is to be better prepared in times of drought.

Water management techniques that could be introduced at facilities and premises of the OLM to effect water savings include, among others:

- Repairing of water leakages
- Reducing the amount of water consumed by using more efficient equipment
- Making use of sustainable freshwater resources, e.g. rainwater harvesting
- Water efficient landscaping
- Water efficient irrigation systems

In order to create comprehensive water management plans for facilities of the OLM, the following actions are required:

a. Conduct a water use audit of each facility
b. Explore and evaluate water management options
c. Conduct life cycle cost analyses and cost-benefit analyses and budget for the plan
d. Develop the water management plan
e. Educate employees in water management
f. Implement the water management plan
g. Monitor the water management plan.

17.3. Water resource management

The National Water Act (NWA) requires that water resources be protected and managed to meet water quality requirements of ecosystems. At the same time, the NWA also requires that water be used for social and economic benefit. The correct management of water resources is therefore critical for sustainable environmental, economic and social development.

Although the OLM is not responsible for the management of water resources within its area of jurisdiction (the National Department of Water and Sanitation is the responsible authority) it is obliged under the National Environmental Management Act and the Constitution to ensure the provision of services to communities in a sustainable manner. It is therefore important to include sustainable water resource management in service delivery planning and execution.

The following service delivery components have the potential to contribute significantly to water resource management:

Table 16: Water resource management and municipal services

Municipal services	Potential positive contribution to water resource management
Town planning and building control	Incorporating buffer zones around water resources in town planning schemes and promote the establishment of green corridors. Requirements for best practices in storm water management such as attenuation ponds, grassy swales etc. as opposed to conventional storm water systems leading to release of polluted run-off and concentrated flows leading to erosion and negative impacts on aquatic biodiversity
Sanitation services	Maintaining water quality based on the effective provision of sanitation services. Fast response times to sewer leakages and pump station overflows
Environmental management	Control over alien invasive plant species will protect the ecological integrity of riparian zones and wetlands, as well as preserve water quantity
Roads	Environmentally friendly design of roads crossing wetlands and water resources
Waste management	Effective waste management services, control over illegal dumping and effective street cleaning services
Drinking water provision	Encouraging communities to use water effectively and prevent water wastage. Fast response times to water leakages

17.4. Climate change

The OLM should develop a climate change adaptation and mitigation strategy. Essential components of the strategy should include:

- Promote the use of renewable energy resources
- Promote the use of non-motorised transport

- Promote energy efficiency
- Promote urban greening
- Identification of the impact of climate change on local biodiversity
- Identification of the impact of climate change on water availability
- Prepare for the impact of increased temperatures and fire hazards
- Identification of the potential impact of sea level rises and beach/dune erosion and closure of estuary mouths.

17.5. Coastal and estuary management

According to the National Estuarine Management Protocol (NEMP) Regulations published in terms of the National Environmental Management: Integrated Coastal Management Act No. 24 of 2008 (ICMA), the Municipality is responsible for the management of an estuary if the estuary is solely situated within the boundaries of the Municipality (the definition of municipality in ICMA refers to a District municipality). A legal dispute regarding the responsibility of the Overstrand Local Municipality (OLM) for the management of the Klein Estuary was recently concluded in the case Abott vs Overstrand Municipality (99/2015) [2016] ZASCA 68 (20 May 2016). Recognising that the ICMA itself as well as the Constitution were in disagreement with the requirements of the NEMP Regulations, the Supreme Court of Appeal Judgement found that: "[...] any powers which the municipality may wish to exercise with regard to the estuary have to be assigned to it by national or provincial legislation" and that "the [Overstrand] municipality will only be authorised to manage the estuary under the provisions of ICMA, if it agrees, and has the capacity, to do so in accordance with s 156(4) of the Constitution". Thus, according to this judgement, no powers or duties regarding the management of the Klein Estuary had been assigned to the OLM, which means that the OLM "does not have any authority under ICMA to manage the estuary". This judgement also applies to all other estuaries located within the Overstrand Municipal area. Once this matter has been resolved the way forward in terms of coastal and estuary management can be determined. The municipality is however committed to fulfill its manadate as outlined in the Constitution.

Ramsar sites: Cape Nature is currently in the process of registering the Bot-Kleinmond Estuary as a Ramsar site.

17.6. Green procurement

Local authorities account for a significant portion of public purchases. Procurement by Local Government has a significant impact on the market with municipalities purchasing a wide range of products and services, from consumable goods to capital goods, infrastructure, construction and services.

Green procurement means purchasing environmentally friendly products or services that have a lesser or reduced effect on human health and the environment when compared to other products and services that serve the same purpose. The environmental attributes of such green products are the use of less toxic materials, energy and water efficiency and making use of recycled material. The introduction of green procurement thus has an added element of environmental consideration over and above the normal purchasing decisions, based mainly on price and quality. Environmental considerations should become part of the normal purchasing practice, consistent with the traditional factors such as product safety, price, performance and availability.

Green procurement provides for a mechanism to foster the demand for environmentally responsibly produced goods and services, giving suppliers appropriate incentives to develop environmentally sustainable practices.

1. Identification of environmentally friendly products and services

   Every product, whether conventional or green, always has an environmental impact. The life cycle assessment (LCA) is generally used as a scientific method to evaluate the environmental impact of a

product from its design to its disposal, taking into account all the steps in between, which may include raw material sourcing, manufacturing, packaging, transport, storage and utilization. Life cycle cost represents the true cost of a given product. A common misconception about "green procurement" is that it is more costly than conventional procurement. In reality, while some green products indeed cost more, many others have the same price and quality as non-green products. Furthermore, savings are made through a reduction in energy, water and disposal costs.

2. Potential products for green procurement

The following products will provide opportunities for green procurement:

2.1. Office paper: recycled paper percentage
2.2. Cleaning materials: low phosphate content, biodegradable, does not contain compounds associated with aquatic toxicity
2.3. Energy efficient appliances such as refrigerators
2.4. Phasing out mercury containing light bulbs
2.5. Procurement of pesticides and herbicides that does not contain Aldrin, Chlordane, DDT, Dieldrin, Endrin, Heptachlor, Mirex, Toxaphene or Hexachlorobenzene or any persistent organic compounds
2.6. Lead free paint and paint with low volatile organic compounds (VOCs)
2.7. Packaging materials: products with fewer packaging material such as bulk produce
2.8. Use of rechargeable batteries
2.9. Goods supplied by companies using renewable energy, who are actively recycling and have a good environmental track record
2.10. Building products with a low carbon footprint
2.11. Buying local products as opposed to imported ones due to reduced transport and consequent lower carbon footprints
2.12. Procure products from companies who receive waste associated with their products for the purposes of recycling e.g. computers and e-waste.

3. Procedure for the procurement of greener products and services

The EM Section in consultation with Supply Chain Management will review the standard list of supplies in order to identify potential green procurement opportunities. Annual targets will then be set for the procurement of greener goods. Targets will involve:

3.1. The number (or percentage) of items to be replaced with greener products

3.2. Identification of problematic products (with reference to severe detrimental impacts e.g. persistent organic compounds) for which replacements will be researched

17.7. Conservation plan

17.7.1. Ecosystem service based

The Overstrand Local Municipality (OLM) is richly endowed. The biodiversity is globally important, the area is scenically attractive and it is a sought-after area for people to live. The Cape (Fynbos) Floral Kingdom is the smallest of the world's six floral kingdoms and the richest per unit area. It is also the only floral kingdom that is confined to a single country. The Kogelberg is considered the hub of the Cape Floral Kingdom as it contains more species than anywhere else in the floral region. In addition to the fynbos, there are charismatic fauna which draws tourists from across the country and internationally. Walker Bay provides one of the world's best land-based whale watching opportunities. The African Penguin colony at Betty's Bay draws national and international tourists (90 000 per year; IDP Review, 2014/15) and cage diving to experience great white sharks is an adventure tourism opportunity with international appeal. The western most section of the OLM forms part of the UNESCO designated Kogelberg Biosphere Reserve, part of the world network of biosphere reserves under UNESCO's Man and the biosphere (MAB) Programme, consisting of 621 biosphere reserves in 120 countries (2016 statistics).

According to the Overstrand Environmental Management Framework (EMF), the following focus area are important in terms of ecosystem services:

a) Cape Hangklip Ecological Corridor
b) Coastal Dune Systems (Pringle Bay, Betty's Bay and Pearly Beach)
c) Palmiet Catchment and Coastal Plain
d) Botriver Estuary and Coastal Plains (Lamloch, Afdaks/Meerenvlei, Paddavlei)
e) Onrus/Vermont Wetland and Greenbelt System
f) Klein River Ecological Corridor
g) Danger Point Ecological Corridor
h) Franskraal Ecological Corridor
i) Hagelkraal Ecological Corridor
j) Urban Wetland and Riparian Systems
k) Urban Coastal Corridors
l) Special Management Areas: *In some cases, application/s should be made to the Minister to declare the listed "Environmental Management Focus Areas" that are located partially or wholly in the coastal zone, as "special management areas" in terms of section 23 of the NEM:ICMA. Such declared areas must then be managed in terms of the provisions of the NEM:ICMA and other relevant legislation.*

The climate and the scenic attractiveness draw people to the area. The age structure of the OLM population is atypical in that it shows an increase in the number of people post retirement age (Status Quo Report, Figure 6)[1]. The main economic sectors contributing to the Overstrand gross geographical product (GGP) between 1995 and 2004 were trade and catering, finance and business services, manufacturing, construction, government services and transport sectors. The Overstrand Local Municipality makes the biggest contribution to the Gross Value Added of the Overberg District Municipality, contributing 43% of the GGP of the Overberg District Municipality during the period 2000 to 2010 (IDP, 2012).

A part of the economy specifically services the tourist industry which is based on the unique attributes of the ecosystem. This links the ecosystem, social system and economic system of the area in a way which makes it essential that the three systems are managed as a single entity, the socio-ecological system (SES). Knowledge of the services offered by the ecosystem will provide guidance in managing this nexus.

This understanding of the links integrating the aspects of the SES indicates that the conservation plan needs to consider the sustainability of the social and economic systems together with the ecosystem. This is recognized in the planning documents The Millennium Ecosystem Assessment (MA, 2005) provides insight into the ecosystem services enjoyed by the SES. Ecosystem services are the aspects of ecosystems (including ecosystem organisation or structure as well as process and/or functions) that provide benefits utilized by people to produce human well-being (MA, 2005).

[1] *The Status Quo Report is annexed to this report*

Figure 4 illustrates the contribution of ecosystem services to the wider SES. It shows where decisions made in other compartments of the SES can influence the ability of the ecosystem to provide the benefits[2] to the SES. The influence of these decisions is not necessarily confined to the local and immediate, but may cross both scale and time. For instance, the Kogelberg reserve is located in the OLM but is of global importance, or a decision on the management of alien invasive plants may have implications for the water supply in the future.

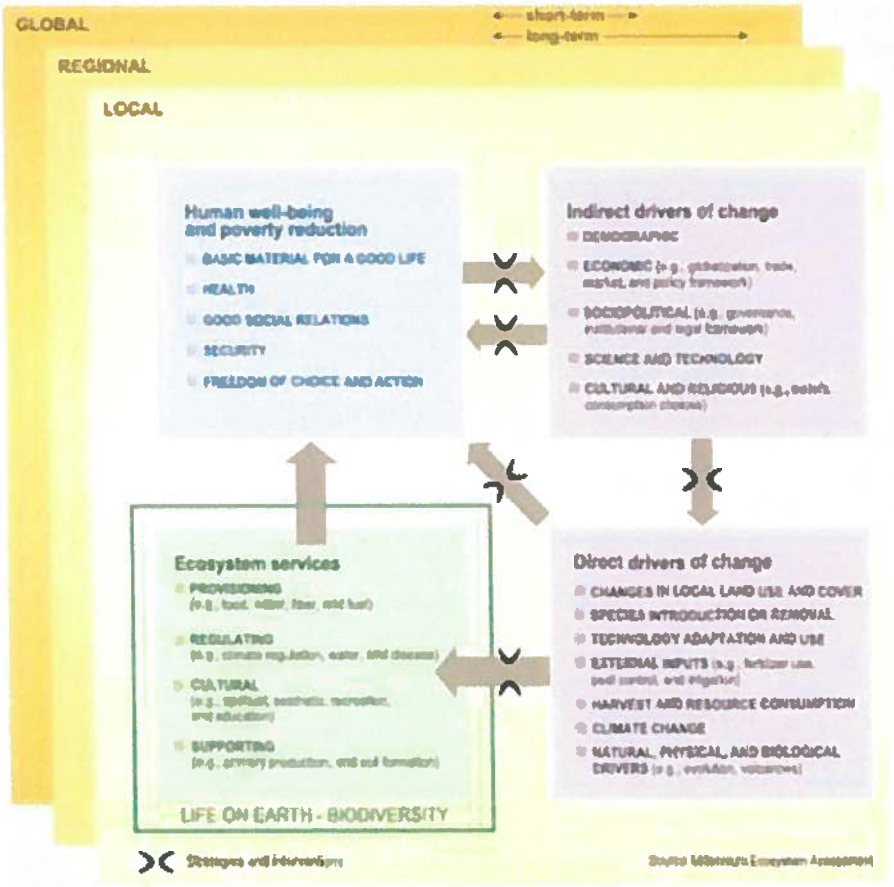

Figure 4: Illustrating the relationships between ecosystem services and the socio-ecological system and the ways in which decisions made in the SES may influence the provision of these services

Figure 5 provides some detail on how the various categories of ecosystem services influence human wellbeing. The provisioning services are the most easily valued. The regulating services provide the robustness of the ecosystem, the ability to cope with and recover from extreme events, for instance. The cultural services are non-tangible but important to society. Each of these relies on the supporting services for the quality of service that can be delivered and each category is underpinned by biodiversity[3].

[2] *Benefits are measured by ecosystem services, defined as the aspects of ecosystems that are utilized by people to produce human well-being (Fisher et al., 2008).*

[3] *Biodiversity: the variability among living organisms, including terrestrial, marine, and other aquatic ecosystems. Biodiversity includes diversity within species, between species, and between ecosystems (TEEB, 2010).*

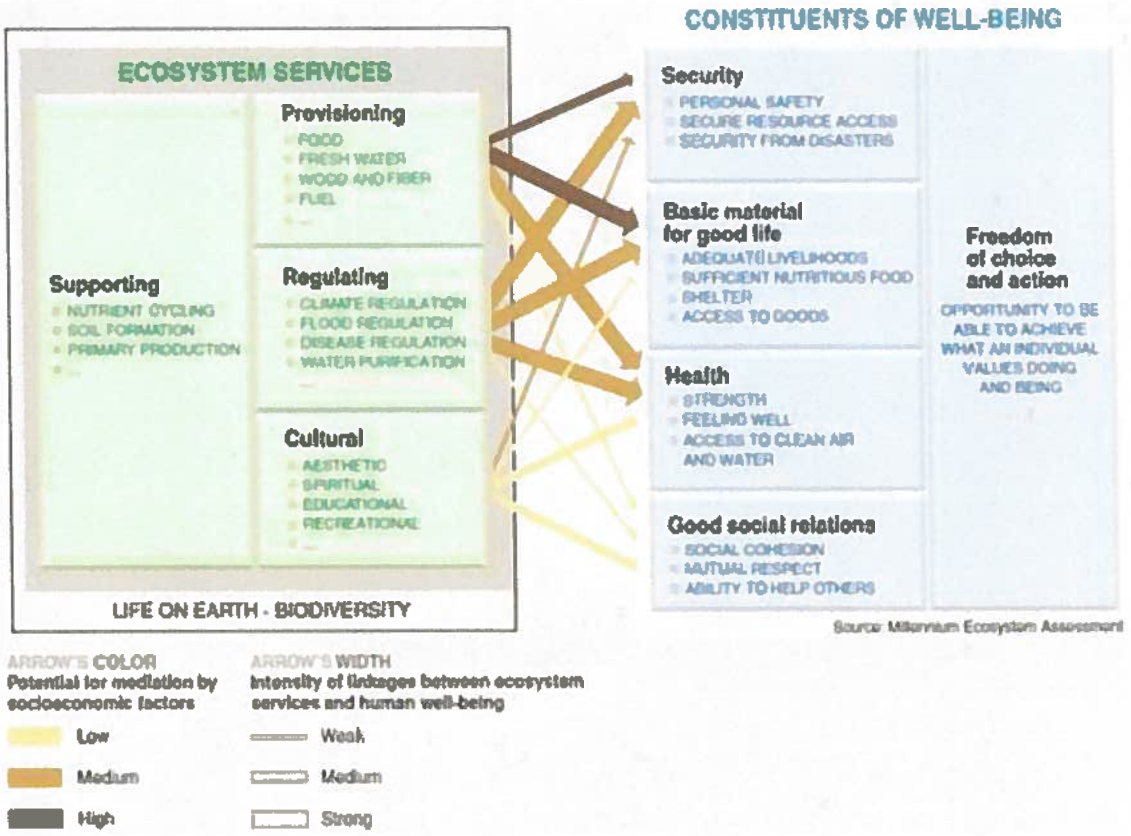

Figure 5: Illustrating the contributions of the various ecosystem services to human wellbeing

Ecosystem services are the benefits from the ecosystem on which society and the economy rely. This gives guidance as to where conservation priorities lie and to the levels of conservation which need to be implemented in specific areas. For more detail on ecosystem services please refer to the Status Quo Report.

The juxtaposition of areas of biodiversity and areas popular with residents and tourists means that the environmental management plan needs to cater for the range of management options. For instance, it may be the cultural services such as viewing the whales, penguins or sharks that draw tourists but the economy (which also provides infrastructural support to the tourism industry) requires the provisioning and regulating services if it is to be sustainable.

17.7.2. The environment of the OLM

17.7.2.1. Introduction

Increasingly, planners are giving recognition to the fact that we live in a complex social-ecological system and that we cannot continue development without taking the environment into consideration if the development is to be sustainable. The OLM has articulated the value of the public open space system as providing ecosystem services which meet the basic needs and enhance the quality of life in the metropolitan area in addition to providing protection to the biodiversity and the supply of ecosystem services. The open space system provides the robustness to ensure that the city is able to respond to the projected impacts of climate changes in particular.

Cape Town Metropolitan Municipality, in their Environmental Agenda 2009–2014, recognising the role of the environment in the life of the city and at the same time recognising the on-going environmental deterioration; have identified a number of very specific goals to be achieved during this period. These goals range through biodiversity, alien invasive control (both plants and animals), reduction in the carbon footprint, energy efficiency, adaptation to climate change, river health, water conservation, waste minimisation and a suite of others including conservation of heritage and communication with the public. In addition, the metro was instrumental in developing the Local Action for Biodiversity (LAB) under the auspices of the ICLEI-local governments for sustainability. The Nature Conservancy is collaborating with cities across the USA to restore natural systems for the benefit of people.

The Overstrand Local Municipality is home to an enormous wealth of biodiversity and is also a preferred tourist destination. As indicated above, the environment of the Overstrand Local Municipality makes an important contribution to its economy. In season whale watching in Walker Bay is very good and has put the area on the WWF's list of the top 12 whale viewing locations in the world. Shark cage diving is also a tourist attraction. These assets need to be managed sustainably if they are to continue to deliver the high-quality experience that tourists have come to demand.

The ecological infrastructure of the OLM supports high biodiversity with the Kogelberg Biosphere Reserve, for instance, being considered as possibly one of the world's most complex biodiversity hot-spots with 1 880 species of Fynbos having been recorded from the reserve, 77 of which are endemic to the reserve. Other features of the coast include Cape Hangklip at Rooi Els; the Betty's Bay African Penguin Colony at Stony Point; the Fernkloof, Walker Bay, Grootbos and Quoin Point Nature Reserves; the Agulhas Plain; the Betty's Bay Marine Protected Area; and the Walker Bay Whale Sanctuary Marine Protected Area. Underlying this is the scenic beauty, numerous trails and the charm of some of the towns in the Overstrand Local Municipality as well as the proximity to Cape Town.

These environmental attributes, if maintained, will continue to draw tourists into the Overstrand Local Municipality and provide business for the industries which support tourism in time to come.

There are, however, also threats to the environment. Alien invasive vegetation is an ever-present threat that needs on-going management. It is estimated that the damage from invasive species totals 5% of the global economy with impacts across sectors such as agriculture, forestry, aquaculture, transport, trade, power generation and recreation (Burgiel and Muir, 2010[4]). One of the impacts of the projected changes in climate is that the phenology of invasive species equips them to take advantage of change more effectively than other species. The implication of this is that, unless controlled, they will become increasingly common. A more direct effect of climate change projections for the Western Cape is that precipitation will decrease and temperatures will increase. Another dynamic which is currently being managed is the freshwater required to support the growth and development in the OLM.

The communities of the OLM have an historical relationship with its beaches, estuaries and the mountains. However, a potential threat challenging planners and conservation bodies is the on-going need for housing and infrastructure development, including potable water, as the space for further development is limited.

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[4] *Burgiel, S.W. and A.A. Muir. 2010. Invasive Species, Climate Change and Ecosystem-Based Adaptation: Addressing Multiple Drivers of Global Change. Global Invasive Species Programme (GISP), Washington, DC, US, and Nairobi, Kenya.*

Tourism is an important integrator between the conservation of the ecological infrastructure and the development and sustainability of the local economy. The direct contribution by tourism to the local economy of the OLM is 15.3% of the gross domestic product. The knock-on effect is much greater but difficult to measure (SEMF, 2013). For instance, amongst the characteristics that German tourists look for in a tourist destination are clean beaches and water, good nature protection, environmentally friendly accommodation, no noise pollution and accessibility by public transport (UNEP, 2009[5]). Meeting these requirements demands good environmental management and conservation.

Following the example set by the Strategic Environmental Management Framework (SEMF, 2013) the conservation plan needs to address the balance between preserving the unique environmental attributes of the OLM with the need for sustainable development including food security (agriculture), economic security, environmental management and ecosystem custodianship in the municipal area. In other words, it needs to address the socio-ecological system of the OLM.

17.7.2.2. Current conservation status

The OLM covers 170 750 ha, of which 65.5% (111 758 ha) remains natural (taken from SANBI BGIS - http://bgis.sanbi.org/municipalities/summaries.asp?muni=WC032).

The Cape Floral Kingdom is one of the richest areas for plants in the world. It represents less than 0.5% of Africa's surface area, yet is home to nearly 20% of the continent's flora. The Cape Floral Kingdom displays outstanding ecological and biological processes associated with the fynbos vegetation, which characterises it.

There are 23 land-based, formally protected areas in the Overstrand Local Municipality covering 40 959.8 ha (24% of the municipality). These are under a number of different management organizations as may be seen in Table 17. A number of these protected areas are included in the Cape Floral Region Protected Areas World Heritage Site, inscribed by UNESCO on the World Heritage List in 2004.These are indicated with an asterisks (*) in table 17. In addition to the formally protected areas there are informally protected areas and areas designated for possible future protection in the National Protected Areas Expansion Strategy (NPAES).

Table 17: Land-based formally protected areas in the Overstrand Local Municipality

Name	Category	Size
Agulhas National Park *	National Park	6031.5ha (3.53% of municipality)
Babilonstoring Nature Reserve	State Forest Nature Reserve	771.4ha (0.45% of municipality)
Brodie Link Nature Reserve*	Provincial Nature Reserve	114.6ha (0.07% of municipality)
Dyer Island Reserve	Island Reserve	15.7ha (0.01% of municipality)
Fernkloof	Local Authority Nature Reserve	1 801ha (0.81% of municipality)
Geyser Island Reserve	Island Reserve	1ha (0% of municipality)

[5] *UNEP, 2009. Sustainable coastal tourism: an integrated planning and management approach.*

Name	Category	Size
Hottentots-Holland Mountain Catchment Area	Mountain Catchment Area	2529.5ha (1.48% of municipality)
Houwhoek Nature Reserve*	State Forest Nature Reserve	2285.6ha (1.34% of municipality)
Kleinmond Coast and Mountain	Local Authority Nature Reserve	651.2ha (0.38% of municipality)
Kogelberg Nature Reserve*	State Forest Nature Reserve	18242.7ha (10.68% of municipality)
Kogelberg Sonchem Link Nature Reserve*	State Forest Nature Reserve	394ha (0.23% of municipality)
Maanschynkop Nature Reserve	Provincial Nature Reserve	415.6ha (0.24% of municipality)
Mt Hebron Nature Reserve*	State Forest Nature Reserve	742.9ha (0.44% of municipality)
Pearly Beach Nature Reserve	State Forest Nature Reserve	627.4ha (0.37% of municipality)
Penguin Nature Reserve	Cape Nature Reserve	84.7ha (0.05% of municipality)
Quoin Point Nature Reserve*	State Forest Nature Reserve	1149.7ha (0.67% of municipality)
Rooi Els Local Authority Nature Reserve	Local Authority Nature Reserve	4.7ha (0% of municipality)
Rooisand (Botrivier) Nature Reserve*	Provincial Nature Reserve	273.3ha (0.16% of municipality)
Salmonsdam Nature Reserve	Provincial Nature Reserve	801.5ha (0.47% of municipality)
Soetfontein Nature Reserve	State Forest Nature Reserve	54.3ha (0.03% of municipality)
Uilkraalsmond Nature Reserve	State Forest Nature Reserve	802.9ha (0.47% of municipality)
Voelklip Nature Reserve	Island Reserve	0.2ha (0% of municipality)
Walker Bay Nature Reserve	State Forest Nature Reserve	3586.6ha (2.1% of municipality)

23 reserves in Overstrand Local Municipality covering 40 959.8 ha (24% of municipality)

Source: http://bgis.sanbi.org/municipalities/summaries.asp?muni=WC032

17.7.3. General principles to be observed

The Integrated Spatial Development and Environmental Framework recognize the important role that the ecosystem plays in the social-ecological system of the OLM and propose general principles that take the conservation of the environment into account. In addition, the SEMF (2013) provides guidelines on suitable and unsuitable land uses and activities for the various ecosystems and localities in the OLM. These principles and guidelines should underpin planning decisions.

17.7.4. Conserving the biodiversity

The critical biodiversity areas of the Overberg, specifically for the OLM, are illustrated in Figure 6. These juxtaposed figures show how the conserved areas match the biodiversity areas. As may be seen, apart from the Kogelberg, the critical biodiversity areas are not well covered by the protected areas. Also, the areas of importance for conservation are shared with other LMs in the Overberg. This makes it important that the conservation plan for the OLM is not developed in isolation from those of the other LMs in the Overberg District Municipality.

In addition to the areas currently protected and the areas designated for possible future protection, important ecological and evolutionary process areas have been identified. These areas are important not only for conserving the very rich species diversity, but also for maintaining the ecosystem services such as reliable water yield, water quality, flood regulation, and coastal buffering and protection. These areas are not all formally protected but are, nevertheless, important for the delivery of ecosystem services to support the future growth and development of the OLM. The important ecological and evolutionary process areas in the OLM are described in Table 18.

A further mechanism to protect biodiversity is the adoption of various overlay zones, in terms of the current zoning scheme of Overstrand municipality.

Overstrand Municipal Overlay Zones

Overlay zones provides a mechanism for land use management whereby Council may give effect to specific guidelines contained in a spatial development framework or policy plan. These guidelines could (within specified areas) promote development, require a limitation of land uses, define additional, stipulate more or less restrictive development rules, or identify specific development rules. It provides a mechanism for elevating specific policy guidelines, as approved by Council, to land use regulations. An overlay zone will apply in addition to the base zone of a property. Three overlay zones has been compiled for the Overstrand municipal region namely a Heritage Protection overlay zone, Stanford overlay zone and an Environmental Management overlay zone.

Under the Environmental Management Overlay Zone (EMOZ) the following zones are proposed:

1) Protected Area Buffer EMOZ

Purpose: A protected area buffer 'norm' is required in terms of the National Environmental Management: Protected Areas Act 57 of 2003 (NEMPAA) to appropriately align land use and activities adjacent to protected areas. In these areas measures will be implemented to assist in protecting the integrity of protected areas from negative external impacts.

2) Mountain Catchment EMOZ

Purpose: To implement measures in unprotected priority mountain catchments that will assist with the protection and retention of the mountain catchment ecological and water provision function as well as the aesthetic natural character of the area.

3) Coastal Protection Zone EMOZ

Purpose: To implement measures that will assist with the protection of the natural coastline and estuaries as well as the conservation of the associated ecological functions and processes of this areas-in alignment with National Environmental Management: Integrated Coastal Management Act 24 of 2008.

4) Riverine EMOZ

Purpose: To implement measures that will assist in protecting, conserving and restoring the ecological functioning of the main river courses and associated wetlands.

5) Urban Sensitive Development EMOZ

Purposes:

- To identify viable conservation- worthy public open space areas (CWAs) for focussed conservation management interventions.
- To identify developed as undeveloped properties adjacent to CWAs for special environmental awareness strategies or development planning in order to minimise impacts on the CWAs; and
- To ensure that development design in urban areas will assist in maintaining a healthy environment through:
    - conserving critical elements of environmentally sensitive areas and associated ecological processes
    - retaining and enhancing areas of eco-cultural tourism and recreational values; as well as
    - retaining a 'sense of place'

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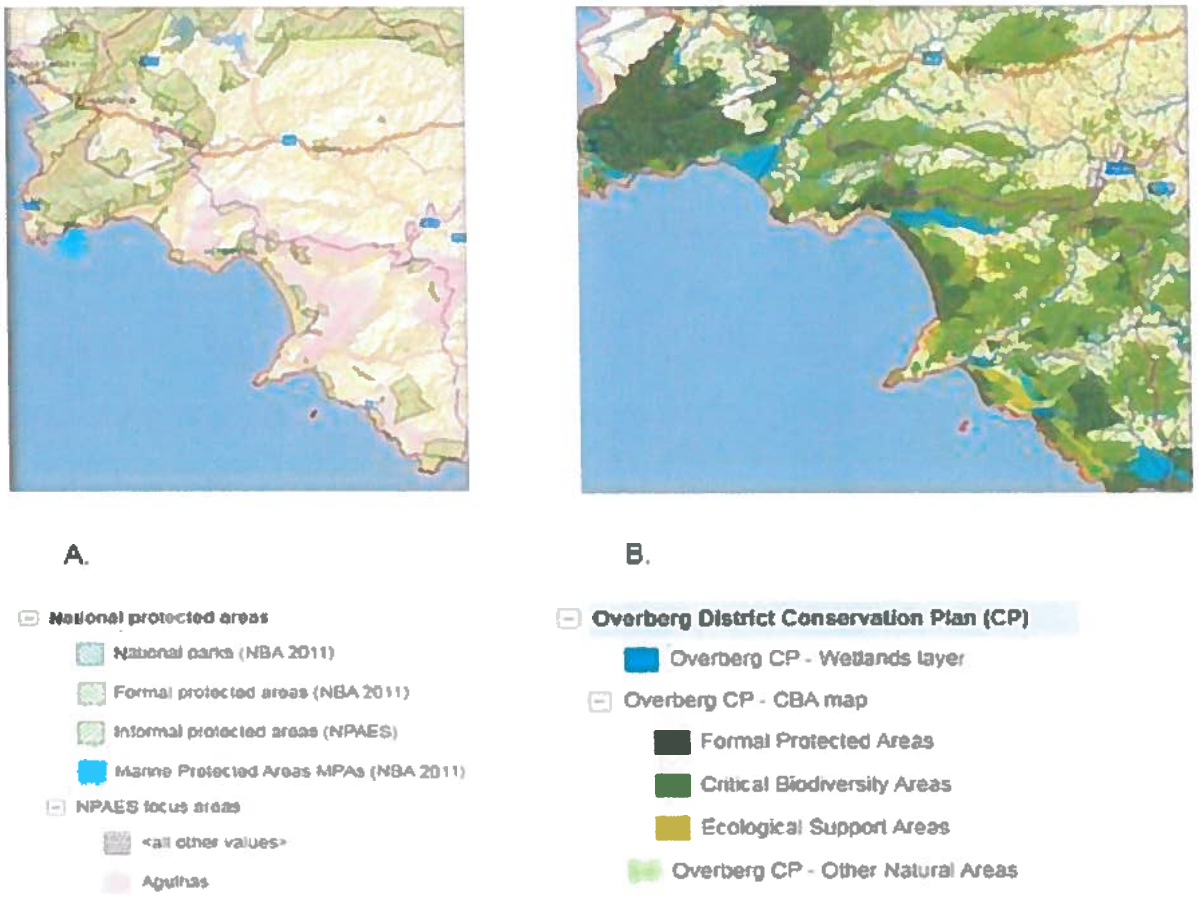

Source: SEMF, 2013

Figure 6: Five important Ecological and Evolutionary Process Areas within or partially within the jurisdiction of the Overstrand Local Municipality

Table 18: Important ecological and evolutionary process areas in the OLM

Process Area 2: Kogelberg – Hottentots Holland Mountains
The Kogelberg Biosphere Reserve is of exceptional conservation significance. It may be regarded as the 'floristic heart' of the Cape Floristic Region as it appears to have the highest plant species richness and endemism. An exceptional diversity of natural environments characterises the area, including marine and coastal environments, rare blackwater lakes, marshes, estuaries, rivers, and mountains bordering on a narrow coastal plain. • This ecological corridor is identified in the PSDF, as it provides for long-term evolution and migration across the landscape. It is also identified as an important upland-lowland gradient in the Cape Lowlands Renosterveld Plan. • It incorporates priority clusters identified in the Cape Lowlands Renosterveld Project (2003) where they occur on ecological gradients and have relatively high connectivity (fragments of Critically Endangered Renosterveld within 500m of one another), allowing interaction. • The mountains function as an important catchment area, performing a valuable ecosystem service. • The area provides tracts of natural habitat linking Protected Areas, namely: the Hottentots-Holland Nature

Reserve; the Theewaterskloof Nature Reserve; the Groenlandberg Nature Reserve; the Kogelberg Nature Reserve, and the Hottentots-Holland Mountain Catchment Area (HH MCA). All these reserves, with the exception of the HH MCA, form part of the Cape Floristic Region Protected Areas World Heritage Site.

Process Area 3: Bot River Estuary – Riviersonderend Mountains

This ecological corridor links the Bot River estuary on the coast to the Riviersonderend Mountains inland.

It is identified in both the PSDF and the Cape Lowlands Renosterveld Project (2003) as an important coast to interior corridor for ecological and evolutionary processes that would support the migration and exchange of inland and coastal biota.

The area accommodates a number of upland-lowland gradients identified in the Cape Lowlands Renosterveld Project (2003) that are important for ecological and evolutionary processes. It also accommodates soil gradients.

The area incorporates Cape Lowlands Renosterveld Project (2003) priority clusters where they coincide with ecological gradients and have relatively high connectivity, allowing interaction.

It accommodates a number of tracts of Endangered vegetation types as identified in the National Spatial Biodiversity Assessment (2004).

It accommodates a number of river corridors that provide important linkages between ecosystems, and provides links to the Klein Swartberg Mountain.

The area links tracts of intact vegetation preserved in Protected Areas, namely: the Theewaterskloof Nature Reserve; Groenlandberg Nature Reserve; Caledon Nature Reserve; Houwhoek Nature Reserve; Mt Hebron and Bot River Nature Reserves; Kogelberg Nature Reserve; Villiersdorp Nature Reserve; Riviersonderend Mountain Catchment Area.

Process Area 4: Coastal Corridor

The coastal corridor broadly accommodates the coastal zone and dynamic or mobile ecosystems found in that zone. It is important for animal and plant dispersal, providing linkages along climate gradients.

- The coastal corridor is identified in both the PSDF and the Cape Lowlands Renosterveld Project (2003) as being important for enabling the persistence of ecological and evolutionary processes.
- It links a number of protected areas, namely: Kogelberg Nature Reserve; Bot River Nature Reserve; Walker Bay Nature Reserve; Uilkraalsmond Nature Reserve; Pearly Beach and Groot Hagelkraal Nature Reserves; Quoin Point Nature Reserve; De Mond Nature Reserve; and De Hoop Nature Reserve. De Mond is an internationally recognized Ramsar site for its wetlands.
- It incorporates the shifting sand dunes along the coast (west of Cape Agulhas, at Quoin Point, and between Struisbaai and De Hoop).
- The area includes high endemism limestone habitats which are important from an evolutionary process perspective. It incorporates a number of estuaries and floodplains associated with the many rivers that empty into the sea along this coast (including the Palmiet, Bot, Klein, Uilkraals, Nuwejaars, Kars, Heuningnes, Sout and Breede), as well as numerous coastal wetlands.
- It provides a corridor for movement of threatened animal populations between coastal protected areas (e.g. for endemic and threatened mammals such as the bontebok and Cape mountain zebra between De Hoop and De Mond).

Process Area 5: Bredasdorp Mountains – Stanford/Gansbaai

This mountainous area forms an east-west corridor; tracts of natural habitat between the coast and the mountains provide a 'crest to coast' link.

- The lowlands - to - mountain area is identified in the Cape Lowlands Renosterveld Project (2003) as being an important coast to interior gradient for enabling the persistence of ecological and evolutionary processes.

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- The area incorporates priority clusters identified in the Cape Lowlands Renosterveld Project (2003) where they occur on ecological gradients and have relatively high connectivity (fragments of Critically Endangered Renosterveld within 500m of one another), allowing interaction.
- It accommodates a number of tracts of endangered vegetation types as identified in the National Spatial Biodiversity Assessment (2004).
- It incorporates a number of forest patches that are recognized as 'special habitat'.
- It accommodates a number of river corridors that provide important linkages between ecosystems.
- The area accommodates a number of upland-lowland gradients identified in the Cape Lowlands Renosterveld Project (2003) that are important for ecological and evolutionary processes. It also accommodates soil gradients.
- The area provides tracts of natural habitat linking Protected Areas, namely: the Babilonstoring Nature Reserve, the Maanschynkop Nature Reserve; the Fernkloof Nature Reserve, Walker Bay and Salmonsdam Nature Reserves.

Process Area 6: Agulhas-Bredasdorp Mountains

This ecological corridor provides a link between the Agulhas area and the Bredasdorp Mountains, incorporating a diversity of habitats and threatened ecosystems.

- It is identified in the PSDF as an important coast to interior corridor for ecological and evolutionary processes that would support the migration and exchange of inland and coastal biota.
- The area accommodates a number of upland-lowland gradients identified in the Cape Lowlands Renosterveld Project (2003) that are important for ecological and evolutionary processes.
- It incorporates a substantial area of Critically Endangered vegetation types in terms of the National Spatial Biodiversity Assessment (2004).
- It accommodates a number of 'special habitat' wetlands and enables ecological processes between these and adjacent terrestrial systems.
- The area incorporates some priority clusters identified in the Cape Lowlands Renosterveld Project (2003) that has relatively high connectivity (fragments of Critically Endangered Renosterveld within 500m of one another), allowing interaction.
- It also accommodates upland-lowland and soil gradients.
- The area provides tracts of natural habitat linking Protected Areas, namely: Heuningnes and De Mond Nature Reserves.

17.7.4.1. Vegetation

There are a number of threatened terrestrial ecosystems in the OLM. Table 19 lists these as critically endangered and vulnerable. The code after each type refers to the vegetation map from Mucina and Rutherford (2006).

Table 19: The threatened terrestrial ecosystems in the Overstrand Local Municipality

Name	Size
Critically endangered (CR)	
Elgin Shale Fynbos - *FFh 6*	13.6ha (0.01% of municipality)
Elim Ferricrete Fynbos - *FFf 1*	4247.3ha (2.49% of municipality)
Kogelberg Sandstone Fynbos - *FFs 11*	25952.9ha (15.2% of municipality)

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Name	Size
Overberg Sandstone Fynbos - *FFs 12*	44714.1ha (26.19% of municipality) Endangered and Vulnerable
Ruens Silcrete Renosterveld - *FRc 2*	41.5ha (0.02% of municipality)
Western Ruens Shale Renosterveld - *FRs 11*	29.8ha (0.02% of municipality)
6 critically endangered in the Overstrand Local Municipality covering 74999.2ha (43.9% of municipality)	
Endangered	
Agulhas Sand Fynbos - *FFd 7*	812.5ha (0.48% of municipality)
Hangklip Sand Fynbos - *FFd 6*	2403.8ha (1.41% of municipality)
Western Cape Milkwood Forest - *FOz VI3*	725.1ha (0.42% of municipality)
3 endangered ecosystems in the Overstrand Local Municipality covering 3941.5ha (2.3% of municipality)	
Vulnerable	
Agulhas Limestone Fynbos - *FFl 1*	10994.4ha (6.44% of municipality)
Cape Winelands Shale Fynbos - *FFh 5*	141.8ha (0.08% of municipality)
2 vulnerable ecosystems in Overstrand Local Municipality covering 11136.2ha (6.5% of municipality)	

Source: Mucina and Rutherford (2006), see Figure 7. The codes in blue refer to the map from http://bgis.sanbi.org/municipalities/summaries.asp?muni=WC032.

The unique attributes of the vegetation demand that special attention be given to the conservation in the overall planning of the OLM. The distribution and conservation status of vegetation types should underlie decisions on land use.

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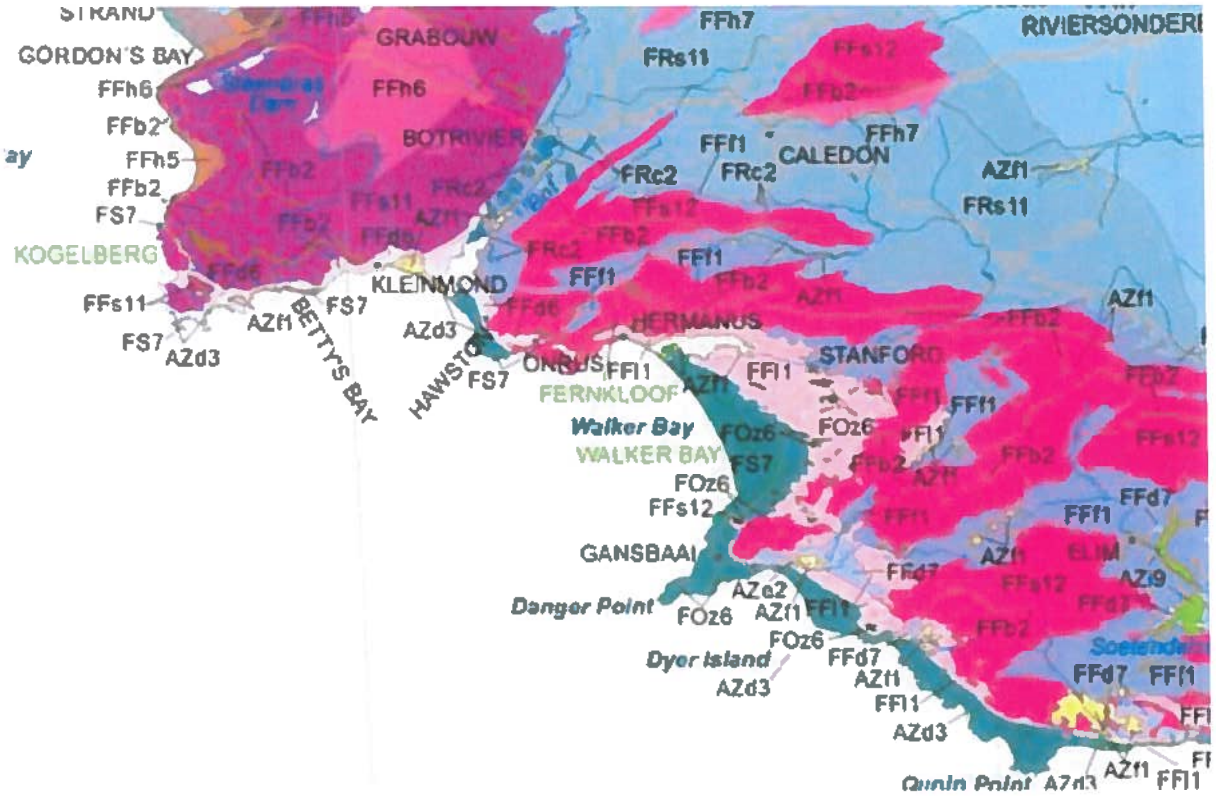

Source: Mucina and Rutherford, 2006). The legend, using the codes, is in ***Error! Reference source not found.***.

Figure 7: The vegetation of the Overstrand Local Municipality and adjacent areas

The Kogelberg is formally protected and forms the primary core of the Kogelberg Biosphere Reserve. Some of the other areas which are endangered are outside the formally protected areas. For instance, in the Bot River Valley (Ruens Silcrete Renosterveld - FRc 2) and in the Onrus River Valley (Elim Ferricrete Fynbos - FFf 1) there are some small areas of critically endangered vegetation types which are not formally protected.

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17.7.5. Rivers and inland water

- Overberg District Conservation Plan (CP)
  - Overberg CP - Wetlands layer
  - Overberg CP - CBA map
    - Formal Protected Areas
    - Critical Biodiversity Areas
    - Ecological Support Areas
  - Overberg CP - Other Natural Areas
- Biodiversity conservation plan boundaries
  - Overberg Conservation Plan
- Towns and boundaries
  - Local municipalities - LUDS
  - South African municipal boundaries 2009
- National rivers (NFEPA)
  - Rivers (NFEPA)
    - 1
    - 5
    - 10
- National protected areas
  - NPAES focus areas
    - <all other values>
    - Agulhas

Figure 8: The Freshwater Ecosystem Priority Areas (FEPA), conservation areas and National Protected Area Expansion Strategy (NPAES) of the Overstrand LM

The OLM has a number of rivers and wetlands identified as FEPAs (Figure 8) but as may be seen from the figure the protected areas (with the NPAES) tend to run between the rivers without specifically protecting them. This may be a legacy of the farms having been established before the conservation priorities. The SEMF (2013) and the SDF identify the inland waters for special protection as they are important corridors for biodiversity. In addition, the availability of freshwater in the OLM is identified as a possible constraint to future development, with water conservation and demand management being proposed in order to conserve resources. Certain rivers (e.g. the Klein River) are becoming enriched through agricultural runoff and WWTW effluent. This is part of the reason that the Klein Estuary has been classified as Class C when the desired state is Class B.

The SDF states that all rivers (main stems and tributaries) are river corridors and so should have a minimum buffer of 32 meters on each side. Generally speaking, the river tributaries are in better condition than the main stem rivers (SEMF, 2013). With rivers that need to be remediated in order to improve their Present Ecological State PES, it would be more cost effective to target the tributaries for protection. Sub- catchments in high water yield areas should be maintained in as good condition as possible.

The SEMF (2013) recommends that the rivers be managed as linear open space systems with conservation objectives in mind. Two areas of particular importance are the free-flowing Rooi Els River and 'Die Oog' at Stanford. The Rooi Els should be kept pristine, although footpath access should be maintained. The SEMF (2013) states that, as a free-flowing river, there should be no in-stream obstructions.

The country has few free-flowing rivers. A free flowing river is defined as a river without a dam or other obstruction. The Rooi Els is a free flowing river in the OLM that has been identified as a flagship free flowing river and should receive top priority to maintain its free flowing character (NFEPA Atlas, 2011[6]).

17.7.5.1. Recommendations

- The free-flowing integrity of the Rooi Els must be protected, but with pedestrian access.
- The important tributaries of rivers in areas with high runoff (the 'water factories') are given some form of protection to prevent further deterioration. These need to be identified and prioritized. One basis for prioritization is whether the river falls within one of the Ecological and Evolutionary Process Areas. The following attributes may also provide a basis for this prioritization:
    - Provides an important contribution to the flow of the main stem
    - The water quality is acceptable to good, or may be remediated
    - Not too much alien invasive vegetation in the sub-catchment
    - It may be necessary to create conservancies or some other form of public-private partnership in the selected river valleys to achieve this.
    - This planning might start with the Klein and the Bot as these rivers both have important estuaries.
- The Bot River valley has some critically endangered vegetation types (Mucina and Rutherford map) which need to be considered for conservation.
- In instances where the river valley forms a route between the coast and the mountains, the valley may form or contribute to the open space corridor as planned in the IDF.

[6] *NFEPA Atlas, 2011. Atlas of freshwater ecosystem priority areas in South Africa: Maps to support sustainable development of water resources. WRC Report TT 500/11.*

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- The nutrient enrichment through agricultural runoff and WWTW effluent is countered with the establishment of appropriate ecological infrastructure such as constructed wetlands in places downstream of where the enrichment is occurring. This will provide a polish and should, over time, improve the water quality. In this way it should be possible to bring the Klein Estuary up from a Class C to a Class B.

Table 20: Objectives and targets for the conservation plan

Objective	Target
Rooi Els River – Pedestrian access that will not cause erosion or other degradation	Design, budgeting and application for authorisations to be undertaken in the next financial year with construction / modification to begin the following financial year
Klein river and estuary – improvement of the water quality • Stanford WWTW is undergoing construction • Upgrade ecological infrastructure (Riparian buffers, wetlands, etc.) – Survey existing riparian ecological infrastructure and plan for rehabilitation or constructed ecological infrastructure as required. – Form partnerships with WfW, WfWet as appropriate and prepare budgets. – Apply for the necessary authorisations. – Begin work on priority areas	• Ensure that the operation of the WWTW is improved once the construction phase is completed • Year 1 - Prioritise areas in better condition that can respond most quickly to rehabilitation • Year 2 – begin work on priority areas
The 'water factories' have been identified	• Year 1
• Desktop study with ground-truthing as necessary to assess the level of protection that these have. • Start negotiations to improve the level of protection where necessary	• Should start late in year 1
Bot River – endangered vegetation types	Year 1 – understand the level of protection afforded to endangered vegetation types in the Bot River valley and plan for improvement where necessary. Start negotiations with landowners
On-going Where the river valleys form corridors between the coast and the mountains, these should be planned into the linear open space systems	

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17.7.6. Estuaries

There are seven estuaries in the OLM.

Table 21: The types and condition of the estuaries in the OLM

Name	Type	Health (NBA assessment[7])	Condition (Whitfield & Baliwe, 2013[8])	Current Health category (NBA, 2013[9])
Bot/Kleinmond	Estuarine lake	Fair	Fair	C (B) (SA and CAPE Protection)
Buffels (Oos)	Temporarily closed estuary	Good	Good	B (B)
Klein	Estuarine lake	Good	Fair	C (B) (SA and CAPE Protection)
Onrus	Temporarily closed estuary	Poor	Fair	E (D)
Palmiet	Temporarily closed estuary	Good	Good	C (B) (SA and CAPE Protection)
Rooi Els	Temporarily closed estuary	Good	Good	B (B)
Uilkraals	Temporarily closed estuary	Fair	Good	D (C) (CAPE Protection)

Current Health category as rated in the NBA (2013) is accompanied by the recommended ecological category (in brackets) as well as whether the estuary rates for special protection by national (SA) and/or CAPE programmes.

The estuaries of the Bot/Kleinmond and the Klein are of particular importance as they are the most important nursery areas for fish between the Breede and west of Cape Point. These two estuarine lakes are also important recreation areas.

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[7] *http://bgis.sanbi.org/municipalities/summaries.asp?muni=WC032*

[8] *Whitfield, A.K. & Baliwe, N.G. 2013. A century of science in South African estuaries: Bibliography and review of research trends. SANCOR Occasional Report No. 7: 289 pp.*

[9] *Turpie, J.K., Wilson, G. & Van Niekerk, L. 2012. National Biodiversity Assessment 2011: National Estuary Biodiversity Plan for South Africa. Anchor Environmental Consultants Report No AEC2012/01, Cape Town. Report produced for the Council for Scientific and Industrial Research and the South African National Biodiversity Institute.*

The Bot and the Uilkraals estuaries are both important bird habitats. The Bot is potentially a Ramsar site. The Uilkraals estuary is in a D class as the flow has been reduced as a result of the Kraaibosch Dam upstream.

17.7.6.1. Recommendations

- Plan to improve the class of both the Bot and the Klein from C to B. This is not a quick job, but the estuaries are valuable from the fish recruitment and recreational points of view.
- Consider listing the Bot as a Ramsar site. The Bot River and Estuary need to be managed with the principle of conservation of both the terrestrial and aquatic systems in mind. From the aquatic aspect, the flow and water quality of important tributaries should be managed. From the terrestrial aspect, landowners need to be aware of endangered vegetation types on the land and to protect these.
- Residences adjacent to the Onrus estuary that is not connected to the waterborne sewage system should be targeted for future connection to the system, as the seepage from the septic tank outlets reaches the river and impacts on the quality, particularly the pathogen levels, and the safety of bathers. The situation becomes most acute over the Christmas period with the influx of tourists at a time of low flow in the river.

Table 22: Recommendations for Ecological Services

Objective	Target
Klein River and estuary – improvement of the water quality. • Stanford WWTW is undergoing construction • Upgrade ecological infrastructure (Riparian buffers, wetlands, etc.) • Survey existing riparian ecological infrastructure and plan for rehabilitation or constructed ecological infrastructure as required. Form partnerships with WfW, WfWet as appropriate and prepare budgets. Apply for the necessary authorisations. • Begin work on priority areas	• Ensure that the operation of the WWTW is improved once the construction phase is completed. • Year 1 - Prioritise areas in better condition that will respond most quickly to rehabilitation and apply for authorisations. • Year 2 – begin work on priority areas
Work with the appropriate department in the OLM to design and upgrade the treatment of sewage infrastructure for the residences adjacent to the Onrus estuary.	• Year 1 – Obtain commitment from the OLM, budget for the design and installation of the infrastructure. • Year 2 – design and begin construction. Construction possibly should be undertaken at the low tourist season, so may need to go into year 3.
Consider listing the Bot River estuary as a Ramsar site – work with the country representative to see how the Bot River fits the Ramsar profile.	Start in year 2, but is likely to run into year 3.
. Identification of the specific management authority between OLM and Cape Nature is in process since a large portion of the catchment area of the Palmietriver falls within the Kogeberg Biosphere Reserve.	The EMP process for the Palmiet River should be completed by the relevant authority.

17.7.7. Open space system

The public open spaces of the OLM comprise a complex of different types of management. One identified need is the necessity to preserve the open space connection between the coast and the mountains in the towns of the OLM. This may take the form of walking of mountain bike trails, golf courses, or other open spaces. In addition, here are some areas of specific interest such as Hoy's Koppie in Hermanus and 'Die Oog' in Stanford which form part of the open space system and that need to be conserved for their heritage value. Stanford provides a sensitive environment with high amenity values. Another open space with high amenity value is the coastal path at Hermanus. This is well used and gives access to a substantial length of rocky coastline with some beach area. The rocky areas are home to black oystercatchers, listed as 'near threatened' in the IUCN Red List. The Vermont Salt Pan is another area with a high amenity value. One of its attributes is that it supports birds, including flamingos.

The dune systems along the coast need to be protected. Areas of specific importance are those towards the west of the OLM, particularly between Rooi Els and Betty's Bay. These dune systems and beaches need to be managed on a sustainable basis, with appropriate amenities where these are required.

The correct setback should be observed for all developments along the coast and estuaries. In addition, developments on areas designated for the NPAES (), for instance inland from the Walker Bay Nature Reserve, should be carefully controlled so that they remain available for the establishment of conservation areas if required.

The interface between urban development and the natural areas needs to be carefully planned, especially the development against the mountains and against the coast.

Open space systems provide the opportunity to conserve ecosystems that are not in formal conservation areas. They also provide for biodiversity corridors and should, as far as possible, be designed to fulfil these dual roles. Where appropriate they should be protected from urbanization. This is particularly important for areas identified for the National Protected Areas Expansion Strategy (NPAES, Figures 2A and 4). The urban edge needs to be clearly defined in each population centre to prevent urban sprawl. Urban densification should be done in such a way as to avoid impacting on the sense of place. Of importance in this respect is the coastal road from Rooi Els eastwards through the OLM (the R44 and R43). Development along the road needs to be controlled in order to preserve the scenic nature of the drive.

17.7.7.1. Recommendations

- Coastal areas
    - The sensitive dune systems between Rooi Els and Betty's Bay need to be protected from developmental impacts. The integrity of the stabilizing vegetation needs to be preserved.
- River Valleys
    - Pedestrian access with interpretive signs needs to be sensitively developed for the Rooi Els River, estuary and environment. The importance of maintaining free-flowing rivers should be stressed in the signage.
    - The Bot River and estuary form a focal point in the river systems. The linear open space of the river system could be developed into a tourist route.

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- Nature reserves
  - The formally protected areas are proclaimed under several different pieces of legislation. To assist with managing their usage by visitors it would help if there was a cohesive management system covering the different areas. In this way it will be easier for both the people using the reserves and the staff patrolling them to comply with the management requirements.
  - Betty's Bay. There is a range of features which may be connected through open space development. These include in the east, the Harold Porter Botanical Gardens and the Dawidskraal area with the Vlei system towards the west and the amenities at the Stoney Point penguin colony on the coast.
- Open space systems within urban areas
  - In addition to managing the open space system with the security of users and conservation of biodiversity in mind, areas of historic or archaeological interest should be integrated into the systems. Specific examples are, for example, Malkopsvlei in Betty's Bay, Hoy's Koppie and other features of interest in Hermanus and Die Oog in Stanford. The Vermont Salt Pan may also be considered in this category.
- The coast road
  - The R44 (west of the Bot River) and the R43 (east of the Bot River) should be managed as scenic drives. This entails restricting development along the roads so that road users may enjoy the natural environment.
- Rocky shores
  - Manage the rocky shores for an appropriate interface between the coast and the urban development. For areas likely to be subjected to heavy tourist pressure, such as the whale-viewing facility at Die Kelders, there should be public amenities and public access needs to be restricted to areas where the environment will not be damaged through excessive pressures.

Table 23: Recommendations for open spaces

Objective	Target
Betty's Bay – the development of pedestrian and / or cycle tracks between the Harold Porter Botanical Gardens, the Dawidskraal area, the vlei system and the amenities at the Stoney Point Penguin Colony	Year 1 – plan, obtain authorisations as necessary and budget Year 2 – implement the plan
Coastal dune systems in the West of the OLM need to be protected from development impacts. In addition, the vegetation stabilising the dunes needs to be preserved from destruction	Year 1 – assess the state of protection of the dune systems in the Pringle Bay – Betty's Bay area and, where necessary, design interventions, apply for authorisations and budget interventions as required
Rooi Els River – develop as a public open space system with signage explaining the importance of the river	Design, budgeting and application for authorisations to be undertaken in the next financial year with construction / modification to begin the following financial year

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Objective	Target
Conduct an audit of the interfaces between the urban areas with the mountains and the coast	Beginning with Hermanus in the next financial year, plan to have this audit completed by the end of year 2 Where an interface needs attention, plan and budget for the intervention
The open space systems in each of the towns between Betty's Bay and Hermanus should cater for access between the coast and the mountains. This should form part of the strategy for adapting to climate change projections	Year 2 – Begin planning, with Hermanus being the top priority Year 3 – continue planning as necessary and begin implementation in Hermanus

On-going –

Nature reserves – continue with on-going negotiations to bring the nature reserves in the OLM together under a common form of management

Plan open space systems to include areas of heritage and historical importance as well as for biodiversity conservation

Manage the R43 and the R44 as scenic drives through the control of development along the roads

Most of the recommendations listed under this section will be addressed through the GIS overlay zone process. These will include environmental, heritage and scenic drive overlays.

17.7.8. Threats to the environment

17.7.8.1. Climate change

Climate change is the longer-term overarching threat. This will impact on the availability of surface water, the future distribution of vegetation types and the invasiveness of alien vegetation. The appropriate response of the OLM to the projected changes is to develop adaptive (coping) strategies. Those which will be immediately applicable are outlined below.

17.7.8.2. Alien invasive vegetation

The phenology of certain plants enables them to take advantage of certain conditions or changes in conditions more effectively than other plants, giving them the potential to outcompete plants with a more conservative phenology. Thus they become invasive. The situation is exacerbated when the plant is removed from its natural environment with the pests and diseases that keep its growth in check.

Alien invasive vegetation is a threat from two perspectives. Firstly, it grows more aggressively than the indigenous vegetation and so will outcompete the indigenous plants, eventually replacing them. Secondly, alien invasives have been shown to evapo-transpire more water than indigenous vegetation. With the climate change projected decrease in rainfall, allowing alien invasive vegetation to get a foothold in natural areas is likely to cause water supply problems in the future.

17.7.8.3. The future distribution of vegetation types

The projected changes in climate are expected to alter the distribution pattern of vegetation (Midgley et al, 2002[10]). The planning of open space and other developments needs to be sensitive to the likelihood of vegetation needing to migrate with the changing conditions. This adds importance to the requirement repeatedly articulated in the Integrated Spatial Development and Environmental Framework that the open spaces need to effectively connect the coast and the mountains.

17.7.8.4. The increasing urban footprint

The on-going in-migration of people combined with the limited space for further urban expansion is a situation which needs careful management if it is not to impact negatively on the natural environment of the OLM.

Table 24: Recommendations about threats to the environment

Objective	Target
Prepare adaptation strategies for climate change projections. This means the preparation of a strategy. Lead may be taken from strategies already developed for, e.g., Cape Town From the conservation point of view, aspects to consider are the response of the flora and fauna to the climate change projections (the needs of baboons may be a particular case in point), the likely increase in aggressiveness of alien invasive vegetation, Likely changes in the pattern of fire in the fire-prone fynbos, etc.	The development of the strategy should start in the next financial year While floods are dramatic, droughts are more difficult to deal with and preparation for these events should be in place, as far as possible, before they occur
Alien invasive vegetation – this has implications for the future freshwater provision in the OLM	The clearing of alien vegetation is on-going in the OLM. This should continue as it is important to control alien vegetation Areas may be prioritised by both their impact on biodiversity and their impact on water resources
The increasing urban footprint – in-migration from the East Cape will probably not stop until the East Cape can offer the same economic opportunities as the West Cape. This needs to be addressed from the national level On-going in-migration into the OLM will place increasing demands on the infrastructure and available space for urban growth. As discussed above, the environment is an important part of the SES of the OLM and needs to be protected	Planning for this is in hand in the OLM.

[10] *Midgley GF, L Hannah, D Millar, MC Rutherford, and LW Powrie, 2002. Assessing the vulnerability of species richness to anthropogenic climate change in a biodiversity hotspot. Global Ecology and Biogeography 11(6) 445-451.*

18. Standard operating procedures

18.1. Integrated environmental management

Context: In the context of integrated environmental management (IEM), screening determines whether or not a development proposal requires environmental assessment, and if so, what level of assessment is appropriate. Screening is thus a decision-making process that is initiated during the early stages of the development of a proposal.

Responsibility: The user department must ensure that all planned capital and operational projects adheres to the relevant legal requirements.

Screening will be the responsibility of the Environmental Management Section.

Scope: The following projects must be screened before implementation:

1. Capital projects:

1.1. New road infrastructure and upgrading of existing infrastructure
1.2. New storm water infrastructure and upgrading of existing infrastructure
1.3. New drinking water infrastructure and upgrading of existing infrastructure
1.4. New sanitation infrastructure and upgrading of existing infrastructure
1.5. New housing projects
1.6. Construction activities in nature reserves
1.7. Construction activities on the coastline
1.8. Incinerators at WWTWs
1.9. Installation of storage tanks for hazardous substances
1.10. New waste management facilities and upgrading of existing waste management infrastructure
1.11. New borrow pits or the utilization of existing borrow pits
1.12. Construction activities within water courses, wetlands or within 500m of a wetland or estuary
1.13. Removal of indigenous vegetation
1.14. Abstraction of water – from surface or ground water
1.15. Closure of landfill sites

2. Operational projects

2.1. Cleaning up of sewage spills (in order to prevent damage to water resources)
2.2. Removal of blockages from sewer pipelines (in order to ascertain whether sewer lines will be opened up in water resources/wetland areas)
2.3. Disposal of sewage sludge

Methodology (a): The Environmental Management (EM) Section must screen all projects being submitted for the annual budgeting process as well as the IDP. In terms of emergency procedures as listed above under Operational projects, the EM Section must be informed as soon as the problem has been identified.

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18.2. **Outcome**: The EM Section must advise the relevant department in writing regarding the outcome of the screening assessment Requirements for the storage of pesticides, herbicides, fungicides, rodenticides and adjuvants

These requirements are standards that are incorporated in SANS 10206:2005 (The handling, storage and disposal of pesticides). These requirements give guidance on precautions to be taken when handling and storing pesticides, herbicides, fungicides, rodenticides and adjuvants.

18.2.1. Positioning of storerooms or storage areas

1. The storeroom or storage area must preferably be a separate building and be at least 10 m from where fuel or other flammable materials are stored.
2. If the storeroom or storage area is part of a complex, the storeroom or storage area must be totally sealed off from the rest of the complex. If flammables are stored there, the storeroom or storage area must be built with fire-resistant walls.
3. The storeroom or storage area must be sited away from rivers, dams and boreholes.
4. The storeroom or storage area should be situated where it can be supervised.
5. Ease of access for delivery and dispatch must be kept in mind.
6. The need to approach the building from all sides in case of a fire must be taken into consideration. A clearing of 5 m around the storeroom or storage area must be provided, where possible.

18.2.2. Security

1. The storeroom or storage area must be secured against entry by unauthorised persons and against burglary.
2. Only authorised personnel must have access to and control over the keys and be allowed into the storeroom or storage area.
3. Security lighting is recommended.

18.2.3. Construction

1. The floor must be of a smooth screeded concrete and with a slight slope so that any run-off drains into the reservoir/sump (of a suitable size to receive all toxic effluent).
2. The roof must be leak free, and be insulated in order to maintain the temperature of the storeroom or storage area at a reasonable level.
3. The walls must preferably be of concrete or brick and mortar and be fire-resistant.
4. The doors must preferably be steel doors with an effective locking system.
5. The windows must be adequate to allow enough light into the store to be able to read product labels. If this light is insufficient, it must be supplemented with artificial lighting.
6. The floor area must be bunded to a height of 200 mm, all joints sealed and the door raised 200 mm to accommodate the bunding in order to contain spills and prevent floodwater running into the storeroom or storage area.
7. Vents must be located in the upper and lower walls and in the roof. The lower vents must be above bunding level.
8. The disposal of contaminated water must be in accordance with municipal requirements.

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18.2.4. Separation and segregation

1. The storeroom or storage area may only be used for storing pesticides, herbicides, fungicides, rodenticides and adjuvants and, if relevant, packaging materials and equipment used for the application of poisons.
2. Herbicides and all phenoxy compounds must be stored separate from other pesticides.
3. A separate, secure room or lockable cupboard for Group I hazardous substances must be provided. A licence is necessary for keeping these pesticides (listed in the Hazardous Substances Act, 1973, and classified in SANS 10304-1: 2002).
4. Special storage requirements apply to flammable liquids, as laid down in the General Safety Regulations in Government Notice No R. 1031 dated 30 May 1986, promulgated under the Occupational Health and Safety Act, 1993 (Act 85 of 1993). The approval of emergency management services must be obtained.
5. The storeroom or storage area must be equipped with either shelving that is non-absorbent or pallets.
6. A separate bunded facility must be provided for preparation, dilution and mixing operations. Water from this facility must be drained into a separate reservoir/sump.

18.2.5. Reservoir

1. A reservoir/sump of suitable size to receive all toxic effluent must be installed and maintained. The reservoir/sump must not have any natural outlet to a sewerage system, stormwater drains, streams or water sources, and must be at least as impermeable as reinforced concrete.
2. The contents of the reservoir/sump must be emptied by a registered company handling hazardous substances.

18.2.6. Repacking and washing facilities

1. To repack or clean damaged or soiled containers, a separate part of the storeroom or storage area must be provided with a bunded area. The floor must be sloped and drain into the reservoir/sump.
2. For contaminated vehicles and equipment, a bunded wash bay that drains into the reservoir/sump must be provided. This reservoir/sump must be impermeable to rain water.

18.2.7. Signs, notices and labels

18.2.7.1. External signage

1. At each entrance to a storeroom or storage area, one or more full-size primary hazard warning diamond(s), as detailed in SANS 10232-1:2000 (Transport of dangerous goods – Emergency information systems Part 1: Emergency information system for road transport), must be displayed.
2. If more than one type of pesticide set out in SANS 10304-1:2002 (The classification of pesticides) is stored in one area, a full-size multi-load warning diamond must be displayed.

18.2.7.2. Internal signage

1. For each separate storeroom or storage area for poison and/or flammable substances located within a main store, a full-size primary hazard warning diamond, as detailed in SANS 10232-1:2000 must be displayed.
2. Symbolic safety signs that comply with SANS 1186-1:2003 (Symbolic safety signs Part 1: Standard signs and general requirements) must be used as needed in the store to regulate safety on the premises, including the following:

   - No smoking
   - No naked flames

- No fires

18.2.7.3. General signage

1. All safety signs must be relevant and appropriate, bear the skull and crossbones, and be so positioned that they are –
   - clearly visible at all times
   - not subject to misinterpretation
   - not subject to damage during normal operations
   - legible from a distance of 8 m.
2. All signs displayed must be in English and in at least one other official language (the one most commonly used in the area).
3. All employees must be made aware of the meaning of all safety and information signs.

18.2.7.4. Labels

1. All packages and containers must be clearly, indelibly and correctly labelled.
2. The expiry dates on poison containers must be clearly visible.

18.2.7.5. Inventory

An inventory of all containers of pesticides, herbicides, fungicides, rodenticides and adjuvants on the premises must be kept in an area away from the storeroom or storage area. The inventory must be available at all times.

18.2.7.6. Equipment

1. Suitable fire extinguishers, together with vermiculite or sand to absorb leakage, and suitable empty containers, shovels and brooms, must be available and easily accessible in a clearly demarcated area outside the storeroom or storage area.
2. An appropriate number of sets of clean protective equipment must be kept in an easily accessible and clearly demarcated area for use in an emergency.

18.2.7.7. Empty containers

1. Empty containers present a risk to human health and the environment.
2. Empty containers must be immediately rinsed three times. The rinse water must be emptied into the spray can and not into a drain or onto the ground.
3. Empty containers, including used spill kits, must be kept under lock and key until they can be disposed of in a safe manner at a registered hazardous landfill site.
4. Empty containers must not be reused for any purpose, not even for the same product. (Reason: different batch numbers, and if the container was triple-rinsed there could be water in the container which could then contaminate the poison.)
5. To ensure that empty containers are not reused, a number of holes must be punched into the containers to render them useless.

18.2.7.8. Disposal of pesticides, herbicides, fungicides, rodenticides and adjuvants

Surplus pesticides, herbicides, fungicides, rodenticides and adjuvants and empty containers and materials used for the cleaning of spillages and leaks must be disposed of in accordance with SANS 10206:2005 (The handling, storage and disposal of pesticides).

18.2.7.9. Material safety data sheets

1. A material safety data sheet (MSDS) must be on site before poisons can be stored or issued.
2. An MSDS must be available to all users and auditors.
3. Every depot using poisons must have copies of MSDSs on site.

19. References

Maps generated from the BGIS_SANBI online facility unless stated otherwise.

TEEB (2010) The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A synthesis of the approach, conclusions and recommendations of TEEB.

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eon
CONSULTING

Building 25, Thornhill Office Park
Bekker Road, Vorna Valley
South Africa

PO Box 12389, Vorna Valley
Midrand, 1686, South Africa

T +27 (0)11 564 2300
F +27 (0)86 674 3516

info@eon.co.za
www.eonconsulting.co.za

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