

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

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**NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998
(ACT NO. 107 OF 1998)**

CONSULTATION ON MINIMUM STANDARDS FOR THE CONSIDERATION OF ENVIRONMENTAL ASPECTS IN THE PREPARATION AND REVIEW OF MUNICIPAL SPATIAL DEVELOPMENT FRAMEWORKS (SDFs) IN TERMS OF SECTION 23A AND SECTION 24(3) OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998

I, Nomvula Paula Mokonyane, Minister of Environmental Affairs, hereby, in terms of section 23A and section 24(3) of the National Environmental Management Act, 1998, publish for public comment, the Minimum Standards for the Consideration of Environmental Aspects in the Preparation and Review of Spatial Development Frameworks (SDF), as contained in the Schedule hereto. The Standards aim to provide guidance regarding the identification and integration of environmental aspects within spatial development planning.

Members of the public are invited to submit to the Minister, within 45 days from the date of the publication of this Notice in the *Gazette*, written comments or inputs to the following addresses:

By post to: The Director-General:
 Department of Environmental Affairs
 Attention: Ms D Fischer
 Private Bag X447
 PRETORIA
 0001

By hand at: Reception, Environment House, 473 Steve Biko Road, Arcadia, Pretoria, 0083
By e-mail: DFischer@environment.gov.za

Any inquiries in connection with the Notice can be directed to Mr Simon Moganetsi at Tel: 012 399 9308.

Comments received after the closing date may not be considered.



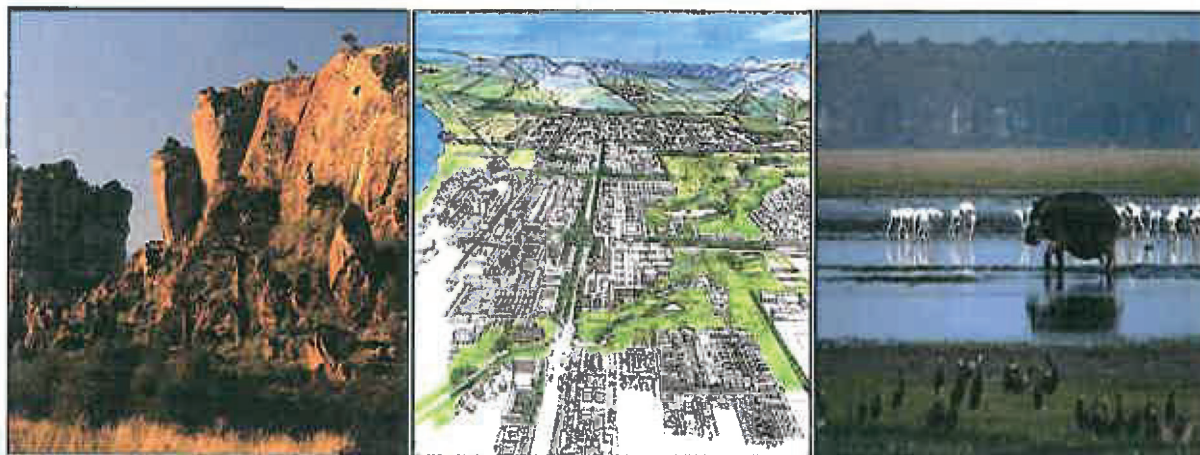
**NOMVULA PAULA MOKONYANE
MINISTER OF ENVIRONMENTAL AFFAIRS**

SCHEDULE



**MINIMUM STANDARDS FOR THE CONSIDERATION OF
ENVIRONMENTAL ASPECTS IN THE PREPARATION/REVIEW
OF MUNICIPAL SPATIAL DEVELOPMENT FRAMEWORKS
(MUNICIPAL SDFs)**

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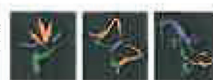


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JANUARY 2019

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TABLE OF CONTENTS

SECTION A: CONTEXT (PURPOSE OF THE MINIMUM ENVIRONMENTAL STANDARDS)	5
1 CONTEXT: PURPOSE OF THE MINIMUM ENVIRONMENTAL STANDARDS	5
SECTION B: STEPS IN IMPLEMENTING THE STANDARDS IN PREPARATION/REVIEW OF SDFS	8
2 STEPS IN IMPLEMENTING THE STANDARDS	8
2.1 STEP 1: UNDERSTANDING THE ENVIRONMENTAL STATUS QUO	8
2.1.1 LIST ALL ENVIRONMENTAL CRITERIA (FEATURES/LAND USES) IN THE MUNICIPAL AREA	8
2.1.2 GIVE A BRIEF DESCRIPTION OF EACH CRITERION/FEATURE	9
2.1.3 DETERMINE IF THERE IS SPATIAL DATA FOR EACH CRITERION IDENTIFIED	9
2.1.4 SPECIFIC LINKS FOR SPATIAL DATA ON EACH ENVIRONMENTAL CRITERION	9
2.1.5 UNMAPPED CRITERIA: ADVICE ON WHAT AND HOW THEY MUST BE MAPPED	11
2.1.6 ENSURE THAT CRITERIA/FEATURES INCLUDE BUFFERS WHERE APPROPRIATE	13
2.2 STEP 2: OVERLAYING THE SPATIAL DATASETS	14
2.3 STEP 3: IDENTIFY COMPATIBLE/INCOMPATIBLE LAND USES OR ACTIVITIES	15
2.4 STEP 4: OBJECTIVES, TARGETS, INDICATORS & STRATEGY	16
2.5 STEP 5: RESOLUTION OF LAND USE CONFLICTS	18
SECTION C: GUIDELINES (BEST PRACTICE)	21
3 GUIDELINES (BEST PRACTICE)	21
3.1 GUIDELINE1: VALUATION OF ECOLOGICAL ASSETS	21
3.2 GUIDELINE2: PARAMETERS FOR EXCLUSIONS FROM EIA REQUIREMENTS ON CERTAIN LISTED AND SPECIFIED ACTIVITIES	21
3.3 GUIDELINE3: APPLICATION OF MINIMUM STANDARDS WITHIN THE FRAMEWORK OF A LAND USE SCHEME	23
SECTION D: ANNEXURES	25
4 ANNEXURES	25

LIST OF TABLES

Table 1: Criteria to be included in the Minimum Standard	8
Table 2: Specific Links Where Data Can Be Found	9
Table 3: Unmapped Criteria: Advice on what and how they must be mapped	11
Table 4: Overlaying the Spatial Datasets	14
Table 5: Matrix showing compatible and incompatible land uses	16
Table 6: Standard Descriptions of Features/Sub-criteria	25

LIST OF FIGURES

Figure 1: Objectives, Targets and Indicators	17
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ABBREVIATIONS & ACRONYMS

CBAs	Critical Biodiversity Areas
DEA	Department of Environmental Affairs
DRDLR	Department of Rural Development and Land Reforms
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
ESAs	Ecological Support Areas
GPEMF	Gauteng Provincial Environmental Management Framework
GIS	Geographical Information Systems
GPS	Global Position System
LUS	Land Use Scheme
MEC	Member of Executive Council
MSDF	Municipal Spatial Development Framework
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NDP	National Development Plan
PAs	Protected Areas
RSA	Republic of South Africa
SANBI	South African National Biodiversity Institute
SDF	Spatial Development Framework
SEMA	Specific Environmental Management Acts
SPLUMA	Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013)
SWSAs	Strategic Water Source Areas
UNESCO	United Nations Education, Scientific and Cultural Organisations

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Section A: Context (Purpose of the Minimum Environmental Standards)

1 Context: Purpose of the Minimum Environmental Standards

Municipalities are obliged, in terms of the Spatial Planning and Land Use Management Act No. 16 of 2013 (SPLUMA) to incorporate environmental aspects into their spatial development frameworks (SDFs). The Minimum Environmental Standards contained in this document (the "Standards") give guidance to Municipalities to fulfil that duty. The purpose of the Standards is to proactively integrate environmental management aspects into the development/review of SPLUMA compliant **Municipal Spatial Development Frameworks** (MSDFs) to ensure that environmental and developmental planning achieve mutually reinforcing outcomes, in terms of sustainability. The Standards provide a conduit through which pertinent environmental considerations/concerns can be streamlined into spatial planning, specifically at local Municipality level. Ultimately, these Standards are designed to *regulate the effect of development activities upon the environment*, and equally important, to *simplify approval/authorisation processes for Municipalities*¹. These Standards were developed taking into consideration, *inter alia*, relevant provisions of the Constitution of the Republic of South Africa, 1996 (the Constitution), SPLUMA, NEMA, specific environmental management acts (SEMA) and relevant policy instruments such as the National Development Plan (NDP). The most pertinent provisions of SPLUMA and NEMA for the purposes of these Standards are the following:

- In terms of **SPLUMA**:
 - Section 12(1)(m) provides that the national and provincial spheres of government and each municipality must prepare SDFs that take cognisance of any environmental management instrument adopted by the relevant environmental management authority;
 - Section 21(j) provides that a municipal SDF must include a strategic assessment of the environmental pressures and opportunities within the Municipal area (including the spatial location of environmental sensitivities, high potential agricultural land and coastal access strips, where applicable);
 - Section 24(1)(b) states that a land use scheme must take cognisance of any environmental management instrument adopted by the relevant environmental management authority, and must comply with environmental legislation.

¹ If a Municipal SDF is compliant to the Minimum Environmental Standards – incorporates both environmental and planning aspects – it has the capability to integrate various Plans (e.g. Environment, Human Settlements, Infrastructure, Transportation Planning, Waste Management Plans, etc.) into one Municipal SDF. Sufficient environmental input into SDFs will then result in Municipalities only having to develop one Plan.

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- In terms of **NEMA**, Section 24(2) in relevant parts, provides that the Minister of Environmental Affairs (Minister), or a Member of the Executive Council (MEC) with the concurrence of the Minister, may identify –
 - activities which may not commence without environmental authorisation from the competent authority;
 - geographical areas based on environmental attributes, and specified in spatial tools or environmental management instruments, adopted in the prescribed manner by the Minister or MEC, with the concurrence of the Minister, in which specified activities may be excluded from the requirement to obtain an environmental authorisation from the competent authority;
 - activities contemplated in paragraphs (a) and (b) of section 24(2) that, based on an environmental management instrument adopted in the prescribed manner by the Minister or an MEC, with the concurrence of the Minister, may be excluded from the requirement to obtain an environmental authorisation from the competent authority.

The above illustrates that SPLUMA and NEMA provide a framework that can lead to congruence between environmental planning and spatial planning objectives. An SDF that meets the minimum environmental standards would not lead to automatic exclusions *from the requirement to obtain an EA*. If a Municipal SDF has been prepared in a manner that meets the minimum environmental standards that are acceptable to the Minister or the MEC responsible for environment, and is subjected to the prescribed public consultation processes, it may be considered as an environmental management instrument which can, in specific instances and on a case-by-case basis, be used for purposes of excluding some of the activities identified in terms of NEMA from the requirement to obtain an environmental authorisation (EA). Incorporating minimum environmental standards into SDFs will not automatically lead to such exclusions, but could form the basis for identifying specific activities that currently require an EA to be excluded from that requirement, if sufficient information (e.g. specific zones where the exclusions are applicable and the mitigation standards that must be met) is provided.

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Section B

- STEPS IN IMPLEMENTING THE STANDARDS -

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Section B: Steps in implementing the Standards in preparation/review of SDFs

2 Steps in Implementing the Standards

2.1 Step 1: Understanding the Environmental Status Quo

The first vital step is for Municipalities to have a good understanding of their Environmental Status Quo. From Section 2.1.1 up to Section 2.1.6 the document provides a full elaboration of the requisite steps that a Municipality should follow in undertaking a comprehensive Status Quo Analysis on all relevant environmental criteria/features within a Municipal spatial jurisdiction.

2.1.1 List all Environmental Criteria (Features/Land Uses) in the Municipal Area

The Municipality must undertake an exercise of compiling a list of relevant Environmental Criteria existing within their spatial jurisdiction. This should be inclusive of both the **key features** (e.g. rivers, wetlands, forests) as well as **land uses** that have environmental impacts (e.g. agricultural resources, mining resources).

Table 1 provides a list of the proposed Environmental Criteria, derived through *extensive literature review, robust discussions and stakeholder consultations*. It represents a “menu” of the most significant environmental features that are likely to be found at a Municipal planning sphere. Municipalities should use this list as a guide (starting point) to identify (spatially locate), those criteria existing within their jurisdiction and consider them during the SDF preparation/review process. In addition to the **Environmental Criteria**, the Table also includes the **Sub-criteria** (main sub-categories, components and constituents of the key environmental features). **NB:** Municipalities may take the liberty to re-organise (aggregate/disaggregate) Environmental Criteria, as long as all the Criteria are considered. However, focus should be given to mapable (spatial) environmental criteria².

TABLE 1: CRITERIA TO BE INCLUDED IN THE MINIMUM STANDARD

Criteria (Features/Land Use)	Sub-Criteria
1. Environmental Resources	Protected Areas (PAs) Critical Biodiversity Areas (CBAs) Ecological Support Areas (ESAs) Strategic Water Source Areas (SWSAs) Nature-based tourism or scenic features
2. Environmental Hazards	Natural hazards (e.g. floodplains, Drought & Erosion, Sink holes, Mass earth movements, Extreme weather prone areas, Steep slopes) Man-made hazards (e.g. waste landfill sites, industrial pollution sites)
3. Cultural and heritage resources	Cultural landscapes or features (e.g. Burial sites, Cultural World Heritage Sites (UNESCO), National heritage sites, Provincial Heritage Areas, Local

² Each SDF should also have a **land use/cover base map** depicting topographical features (i.e. mountains, rivers, etc.) as some of these features may not be captured in the criteria. **Nature-based Tourism or Scenic areas** can be quite spacious. Consequently, Municipalities will need to do a fine-scale mapping in order to include them into their SDFs. Alternatively, Municipalities can map their **tourism nodes**.

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4. Agricultural resources	Heritage Areas, Cultural landscapes, Archaeological & Paleontological sites
5. Mining	High potential agricultural land
	Mine tailings, current and past mining areas, acid-mine drainage affected features, areas contaminated/degraded by mining
6. Infrastructure	Utilities infrastructure (e.g. railways, roads, pipelines, waste water treatment facilities, renewable/non-renewable energy infrastructure)

2.1.2 Give a Brief Description of each Criterion/Feature

Having compiled the list, the Municipality should write-up brief descriptions of each Environmental Criterion (both the environmental features and land uses), identified in 2.1.1. Municipalities should/can draw from the pre-determined descriptions (see Table 6 in Annexures) and use it as a guide. Customisations should cover such aspects as the exact condition, location, spatial extent and significance of the environmental feature. Moreover, descriptions should be pegged at the sub-criteria level, to provide finer detail about the environmental features.

2.1.3 Determine if there is Spatial Data for each Criterion identified

The Municipality should then determine if there is *spatial data* for each criterion, as identified in 2.1.1. It is prudent that the Municipality makes use of existing and readily available data/information, to avoid wastage of resources and/or time in 'reinventing the wheel'. Some of the freely available GIS-based datasets are presented in Table 2. One of the outcomes of this part of the process is the identification of gaps (i.e. instances where there is no existing *spatial data* for identified Environmental Criteria). In terms of **Scale**, in contentious, high pressure areas, Municipalities should go down to a *Cadastral boundary level*, but in other parts (e.g. rural areas), *a scale of 1:50 000 might be good enough*.

2.1.4 Specific Links for Spatial Data on each Environmental Criterion

For the datasets that are available, Table 2 presents the specific links where the data can be accessed.

TABLE 2: SPECIFIC LINKS WHERE DATA CAN BE FOUND

Criteria (Features/Land Use)	Sub-Criteria	Specific links where data can be found
1. Environmental Resources	Protected Areas (PAs) Critical Biodiversity Areas (CBAs)	https://egis.environment.gov.za/ Gauteng http://bgis.sanbi.org/gauteng Limpopo http://bgis.sanbi.org/limpopo North West http://bgis.sanbi.org/Projects/Detail/179 Mpumalanga http://bgis.sanbi.org/MBSP KZN http://bgis.sanbi.org/Projects/Detail/22

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			Eastern cape [waiting for the latest CBA map] Northern Cape http://bgis.sanbi.org/Projects/Detail/203 Western Cape http://bgis.sanbi.org/Projects/Detail/194 Free State http://bgis.sanbi.org/Projects/Detail/180
		Ecological Support Areas (ESAs)	Same links as CBAs (above)
		Strategic Water Source Areas (SWSAs)	CSIR David Le Maitre < DLMaitre@csir.co.za >
		Nature-based tourism or scenic features	
2. Environmental Hazards	Natural Hazards	Floodplains	
		Dongas & Erosion	
		Sink holes	
		Mass earth movements	
		Extreme weather prone areas	
		Steep slopes	
	Man-made Hazards	Waste landfill sites	
		Industrial pollution sites	
3. Cultural and heritage resources	Burial sites		http://www.sahra.org.za/
	Cultural World Heritage Sites (UNESCO)		
	National heritage sites		https://egis.environment.gov.za/ http://www.sahra.org.za/
	Provincial Heritage Areas		
	Local Heritage Areas		http://www.sahra.org.za/
	Cultural landscapes		http://www.sahra.org.za/
	Archaeological sites & Paleontological sites		http://www.sahra.org.za/
4. Agricultural resources	High potential agricultural land		http://www.arc.agric.za/Pages/Home.aspx Anneliza < AnnelizaC@daff.gov.za >
5. Mining	Mine tailings		Department of Mineral Resources (DMR)
	Current and past mining areas		
	Acid-mine drainage affected features		
	Areas contaminated/degraded by mining		
6. Infrastructure	Railways		
	Roads		
	Pipelines		
	Waste water treatment facilities		
	Renewable/non-renewable energy infrastructure		
7. Current land use/cover	Current land use/ cover		https://egis.environment.gov.za/

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2.1.5 Unmapped Criteria: Advice on what and how they must be mapped

If there is a significant Environmental Criterion that is unmapped, the Municipality should budget for and undertake an exercise of mapping those specific Environmental Criteria³. This can be done in-house or out-sourced to service providers with the requisite competences (e.g. GIS, Cartography, Remote Sensing).

TABLE 3: UNMAPPED CRITERIA: ADVICE ON WHAT AND HOW THEY MUST BE MAPPED

Criteria (Features/Land Use)	Unmapped Sub-Criteria	Advice on what and how they must be mapped
1. Environmental Resources	Nature-based tourism or scenic features	GIS equipment such as GPS can be used to identify areas in the field and transfer data onto laptop to create vector points or polygon areas for the identified sites.
2. Environmental Hazards	Floodplains	Satellite imagery mapping using medium resolution imagery such as Landsat or Sentinel. This requires Image Classification techniques, using Raster analysis software (e.g. ENVI which is compatible with ArcGIS). Site verification should be done to assess accuracy of the image mapping.
	Dongas & Erosion	Satellite imagery mapping using medium resolution imagery such as Landsat and Sentinel. This requires Image Classification techniques, using Raster analysis software (e.g. ENVI which is compatible with ArcGIS). Site verification should be done to assess accuracy of the image mapping.
	Sink holes	On-site mapping of the feature (including the buffer area) using GIS equipment such as GPS. Sink holes could also digitized from Aerial photographs.
	Mass earth movements	Weather satellite monitoring – satellite imagery
	Extreme weather prone areas	Weather satellite monitoring – satellite imagery. When areas are identified, "hotspot mapping" can be done through a desktop exercise to show extreme weather prone areas.
	Waste landfill sites	GIS equipment such as GPS used to identify areas in the field and transfer data into laptop to create vector points or polygon areas for the sites. Aerial photos can also be used to map waste landfill sites.
3. Cultural and heritage resources	Industrial pollution sites	GIS equipment such as GPS used to identify areas in the field and transfer data into laptop to create vector points or polygon areas for the sites.
	Burial sites	Field on-site mapping using GIS equipment such as a GPS to identify areas and be able to acquire coordinates of site. The site co-ordinates can be transferred into shapefile to show the different locations. Aerial photos can also be used to map burial sites.
	Cultural World Heritage Sites (UNESCO)	Field on-site mapping using GIS equipment such as a GPS to identify areas and be able to acquire coordinates of sites. The site co-ordinates can be transferred into shapefile to show the different locations.

³ These features only need to be mapped if they will have a significant impact/influence on the SDF and the spatial outlook of the Municipality.

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	National heritage sites	Field on-site mapping using GIS equipment such as a GPS to identify areas and be able to acquire coordinates of site. The site co-ordinates can be transferred into the laptop as a shapefile, to show the different locations.
	Provincial Heritage Areas	Field on-site mapping using GIS equipment such as a GPS to identify areas and be able to acquire coordinates of site. The site co-ordinates can be transferred into the laptop as a shapefile, to show the different locations.
	Local Heritage Areas	Field on-site mapping using GIS equipment such as a GPS to identify areas and be able to acquire coordinates of site. The site co-ordinates can be transferred into the laptop as a shapefile, to show the different locations.
	Cultural landscapes	Field on-site mapping using GIS equipment such as a GPS to identify areas and be able to acquire coordinates of site. The site co-ordinates can be transferred into the laptop as a shapefile, to show the different locations.
	Archaeological sites & Paleontological sites	Field on-site mapping using GIS equipment such as a GPS to identify areas and be able to acquire coordinates of site. The site co-ordinates can be transferred into the laptop as a shapefile, to show the different locations.
4. Agricultural resources	High potential agricultural land	Medium (e.g. Landsat and Sentinel) and high resolution imagery (e.g. SPOT, Quickbird) can be used to identify land cover and land use areas which should be avoided on the basis of Agricultural use/potential. This should include such as plantations and agricultural hubs. Such agricultural land tends to be in close proximity to water source areas (rivers and dams).
5. Mining	Mine tailings	Satellite imagery mapping using medium resolution imagery such as Landsat and Sentinel. This requires Image Classification techniques, using Raster analysis software (e.g. ENVI which is compatible with ArcGIS). Site verification should be done.
	Current and past mining areas	Take the point data and overlay that with the cadastre layer so that the full extent of the mine can be shown. This is especially important for underground mines which have small physical footprints but can extend throughout the entire cadastre underground.
	Acid-mine drainage affected features	Field on-site mapping using GIS equipment such as a GPS to identify areas. Aerial photography can also be used for mapping.
6. Infrastructure	Areas contaminated/ degraded by mining	Satellite imagery mapping using medium resolution imagery such as Landsat and Sentinel. This requires Image Classification techniques, using Raster analysis software (e.g. ENVI which is compatible with ArcGIS). Site verification should be done to assess accuracy of the image mapping.
	Waste water treatment facilities	Field on-site mapping using GIS equipment such as a GPS to identify areas. Aerial photography can also be used for mapping.
	Renewable/non-renewable energy infrastructure	Field on-site mapping using GIS equipment such as a GPS to identify areas. Aerial photography can also be used for mapping.
7. Current land use/ cover	Current land use/cover	Municipalities should use the 2014 land cover, but if a province has more recent land cover data, they can use that layer.

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2.1.6 Ensure that Criteria/Features include buffers where appropriate

The Municipality should consider appropriate buffer zones around/along key features, to insulate areas of environmental sensitivity from adverse external impacts. Although there is no specific national law/legislation that provides directives on the exact standards/extent of buffer zones for various environmental features, guidance can be deduced from the buffer guideline for some environmental features which the Institute of Natural Resources (INR) prepared. Buffering on various Land Use Scheme features might also be represented by Open Space Systems in other instances (e.g. the Durban Metropolitan Open Space System (D'MOSS)).

Some of the national-level guidance on buffer-setting that can be domesticated includes, for example, the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEM: PAA). Through this Act, the Minister for Environmental Affairs may declare an area as a protected environment in order to regulate such an area as a buffer zone. Based on NEM: PAA, the Department of Environmental Affairs (DEA), developed a framework called "Biodiversity Policy and Strategy for South Africa: Strategy on Buffer Zones for National Parks" (2012). The policy stipulates that the government will use the Municipal SDF process to establish a system of integrating environmental buffer zones to enhance environmental protection.

A select few processes through which the environmental protection could be entrenched by way of buffer zones (within the context of Municipal SDFs) are as follows:

- **Provincial EMFs/Environmental Management Tools:** Many of the Provincial Environmental Management Frameworks contain useful guidelines on buffer-setting for key land uses and environmental features in the Province (and by extension Municipalities). Examples include, the Gauteng Provincial Environmental Management Framework (GPEMF) and Western Cape Biodiversity and Spatial Planning Hand Book (2017). It is important that the process of developing an SDF incorporates the appropriate information on buffers for identified environmental features in a Municipality;
- As part of the Status Quo Analysis phase of the Municipal SDF process, Municipalities should embed an analysis of the environmental features in their spatial jurisdictions and where existing national or provincial guidelines for buffer-setting exist, these should be indicated;
- **Use of Land Use Schemes:** As an example, Rustenburg has used a Land Use Scheme to determine a 200 metre buffer zone of low impact development around an environmental feature of 'Hills and Ridges; and
- **Municipal By-Laws:** Another way of ensuring that criteria/features include buffers, where appropriate, would be through Municipal By-Laws. This has been successfully

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implemented in Cape Town, where By-Laws provide for an intermediate business zone between high intensity non-residential uses and residential areas.

It is, therefore, important that the SDF processes accentuate the aspect of environmental protection by adhering to guidelines for buffer zones and applying them through the Land Use Scheme, as well as enforcing them through Municipal By-Laws.

2.2 Step 2: Overlaying the Spatial Datasets

The order in which shapefile layers are arranged in GIS determines what is ultimately depicted on the output map. Within a data frame (dataset), the layers positioned at the top will draw over those listed below them, and so on, down the list. However, it is possible to move layers around to adjust/modify their drawing order (i.e. what is ultimately projected on the map). As a general rule, when overlaying datasets in GIS, **points** should always be the first step in the hierarchy, followed by **lines**, then **polygons** at the bottom. The services represented by lines and topography lines should always be the first layer in a map layout. Rural and urban transect areas follow, together with utilities infrastructure such as rail and road networks linking settlements towards and within the urban and rural areas. Settlements (built-up areas) should then follow. When considering the sites for potential agriculture, the sensitive landscapes layer/s (Protected Areas (PAs), Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs), Strategic Water Source Areas (SWSAs), Nature-based tourism or scenic features) are important as this highlights areas to be avoided by development. Table 4 presents the proposed datasets overlaying structure, which Municipalities can adopt and adapt. **NB: Overlay order (top to bottom) 1-top layer and 10-bottom layer. Polygons layers at the bottom followed by line layers then points on top.**

TABLE 4: OVERLAYING THE SPATIAL DATASETS

Criteria (Features/Land Use)	Sub-Criteria	Overlay Order
1. Environmental Resources	Protected Areas (PAs)	3.1
	Critical Biodiversity Areas (CBAs)	3.2
	Ecological Support Areas (ESAs)	3.3
	Strategic Water Source Areas (SWSAs) ⁴	3.4
	Nature-based tourism or scenic features ⁵	1.1
2. Environmental Hazards (Natural & Man-made)	Floodplains	3.5
	Dongas & Erosion	3.5
	Sink holes	3.5
	Mass earth movements	3.5
	Extreme weather prone areas	3.5
	Waste landfill sites	3.5

⁴ Only show the outline of this feature as they are quite large and they also contain CBAs within them.

⁵ This will depend on spatial extent of these features. If these are large areas, then it makes sense to overlay the CBAs and PAs over them, but if these are smaller units, the proposed order should prevail. Alternatively, the Municipalities should simply include the Tourism Nodes.

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3. Cultural and heritage resources	Industrial pollution sites	3.5
	Burial sites	3.6
	Cultural World Heritage Sites (UNESCO)	3.6
	National heritage sites	3.6
	Provincial Heritage Areas	3.6
	Local Heritage Areas	3.6
	Cultural landscapes	3.6
	Heritage Protection Overlay Zones (or their equivalent)	3.6
	Archaeological sites & Paleontological sites	3.6
4. Agricultural resources	High potential agricultural land	3.9
5. Mining	Mine tailings	3.7
	Current and past mining areas	3.7
	Acid-mine drainage affected features	3.7
	Degraded lands	3.7
6. Infrastructure	Railways, roads, pipelines	2.2
	Waste water treatment facilities	2.1
	Renewable/non-renewable energy infrastructure	3.8
7. Current land use/cover	Current land use/cover	4.0

2.3 Step 3: Identify Compatible/Incompatible Land Uses or Activities

For each criterion/feature – the Standards indicate what land uses are compatible and which are not. This predetermined, pre-existing Compatibility/Incompatibility Matrix should be used by Municipality as a guidance on compatibility of land use. Notwithstanding, CBAs must stay in largely natural ecological condition and ESAs must retain ecological processes, which often requires at least semi-natural ecological condition.

Before any land use change, the Municipality must ensure that the 'from-to' land use changes are compatible, in order to maintain sustainability. Table 5 (**Compatibility/Incompatibility Matrix**) provides guidance on how Municipalities can determine compatible and incompatible land uses, based on prevailing environmental conditions. It uses a 3-scale spectrum of:

- **Permissible:** land uses that are unlikely to compromise the environmental objectives;
- **Restricted:** land uses that may compromise the environmental objective and are only permissible under certain conditions; and
- **Not Permissible:** land uses that will compromise the environmental objective and are not permissible.

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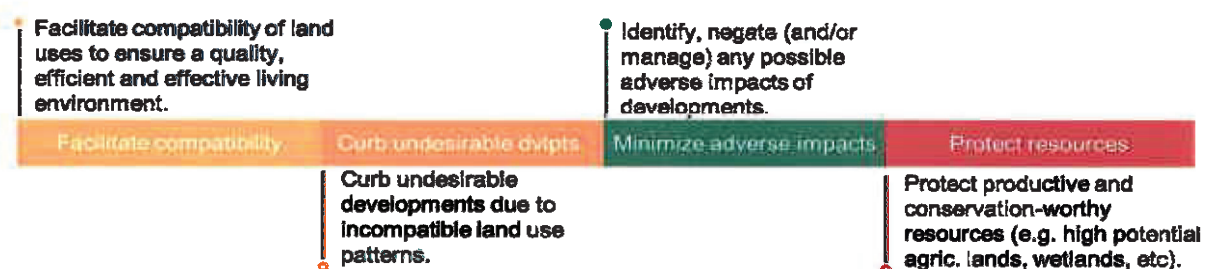
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TABLE 5: MATRIX SHOWING COMPATIBLE AND INCOMPATIBLE LAND USES

	Agriculture			Open Space			Tourism		Residential			Business	Industrial			Transport & Utility					
	Agricultural Infrastructure	Livestock & Game Ranching	Forestry/Plantations	Recreational Nature Areas	Other Nature Areas	Open Space	Low Impact Tourism	High Impact Tourism & Resorts	Rural Residential	Ecotourism	Other Residential	Urban Influence	Low Impact & General	High Impact	Mining - Quarrying & Open cut	Mining - Processing	Transport Services	Roads & Rail	Water, Sewage Collection/Transfer	Power (Fossil/Fire, power lines, solar)	Other Utilities
SUB-CATEGORY	Green = Compatible land-use that does not compromise the environmental objectives and are only permissible under certain conditions							Yellow = Restricted land-use that may compromise the environmental objectives and are only permissible under certain conditions							Red = Not a land-use that will compromise the environmental objectives and are not permissible						
Protected Area (PA)	N	N	R	N	Y	R	R	R	N	N	R	N	N	N	N	N	N	R	R	N	N
Critical Biodiversity Area (CBA)	N	N	R	N	Y	Y	R	N	N	R	N	N	N	N	N	N	N	R	R	N	N
Designated Area (DA)	R	R	R	R	Y	R	R	R	N	R	R	N	N	N	N	R	R	R	R	R	R
Environmental Resources	R	R	Y	Y	Y	Y	Y	R	R	R	N	R	R	R	N	R	R	R	N	R	R
Cultural and Heritage Resources	N	R	R	R	Y	Y	Y	N	Y	Y	N	N	N	N	N	N	R	R	N	R	R
Agricultural Resources	Y	Y	Y	Y	R	R	R	N	R	R	N	N	R	N	N	N	R	R	N	R	R
Mining	N	N	N	R	R	R	Y	N	R	R	N	N	R	N	Y	Y	R	R	R	R	R
Other	R	R	R	R	R	Y	Y	R	R	Y	R	R	Y	R	N	N	Y	Y	Y	Y	Y

Be that as it may, the Matrix (which is a Guideline) should not substitute for bold and committed mapping of environmental resources and hazards (e.g. reserving a river flood-plain as a no-go development area). In cases where existing tools that provide sufficient to provide decision making guidance are available (e.g. D'MOSS in eThekweni), such tools could be used in tandem with the Matrix.

Based on the **Compatibility/Incompatibility Matrix**, the Municipality should identify current and future challenges to its environment, with particular attention to their spatial implications. Where possible, an area could have a suite of potential/actual complimentary land uses, as opposed to just one land use. There is therefore a need to find synergies between biodiversity, environmental conservation, land-use/development and sustainable livelihoods. On the basis of these Standards, the Municipality must, among other things, enable the following:



2.4 Step 4: Objectives, Targets, Indicators & Strategy

The 'domestication' of international instruments into national and provincial policies and plans cumulatively provide the framework for defining Municipal Environmental Objectives, Targets (how much of each feature is needed to conserve it), and Indicators/Measures. To that end, Municipalities should consult such provincial instruments, as well as draw from the RSA Constitution and the National Development Plan (NDP) – which sets the country's

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strategic direction. In addition, the local objectives and targets should be girded by NEMA Principles, and SPLUMA Principles. The “domestication” should be in accordance to the Environmental Criteria existing within the Municipal jurisdiction. Equally importantly, the Municipality should develop a Strategy (or Strategies) to achieve the set Objectives and Targets, with the Municipal performance being measured against the predetermined Indicators/Measures. This cascading applicability of various SDFs is fundamental in that it helps to achieve environmental Objectives/Targets from National, through Provincial, Regional and down to Municipal levels. The fact that each sequentially more detailed SDF has to align with the Objectives/Targets of the one above, is pertinent to achieving national, provincial and local Objectives and/or Targets. The diagram below depicts the vital linkages (correlations) between the Objectives, Targets, Indicators and Strategies.

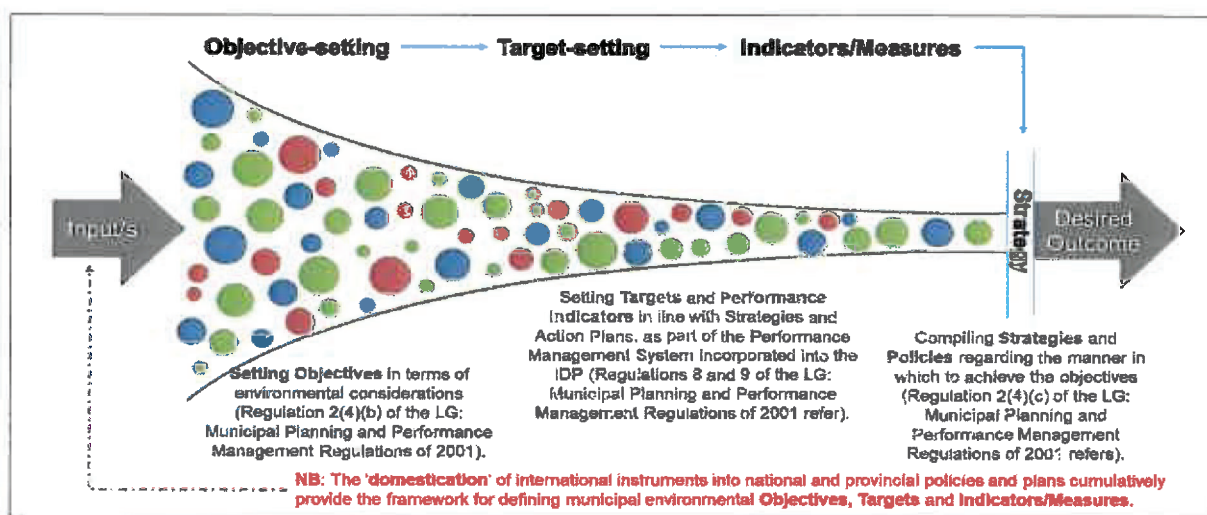


Figure 1: Objectives, Targets and Indicators

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2.5 Step 5: Resolution of Land Use Conflicts

One of the biggest challenges in integrating/harmonizing/aligning environmental and development planning is land use competition. As such, conflict will arise in the development and implementation of SDFs. Areas of land use competition/conflict relate to such land uses as urban use vs. agricultural use, agricultural use vs. mining use, conservation vs. development, CBA vs. National Mineral Resource. Conflict might be on the basis of political socio-economic desires which might be disparate to environmental concerns. In such instances, principles-based conflict resolution and decision making should be adopted. Fundamentally, conflict resolution must adhere to the SPLUMA / NEMA principles. Some of the fundamental principles that should guide conflict resolution are as follows:

- **Fundamental Principles:** Any land use change needs to be tested against a number of principles (e.g. *Ecological Sustainability; Justifiability (in the Municipal context); Promotion of Equity; Promotion of Accessibility of public places/resources; Desirability; Public Interest; Municipal Priorities*, etc.). A Municipality should not seek to maximise revenue at the expense of key ecological infrastructure (e.g. features regulating against flooding, or storm surge impacts). It is important to consider if the development (or land use change) is **desirable** — qualitative attributes that make a particular development attractive or non-attractive. In most cases, while many areas are developable, the degree of desirability differs in terms of costs, location, long-term viability, etc. The Municipality must determine what is **ecologically sustainable** and what is **justifiable**. This has not been determined at a National level, hence it is one major issue that the Municipality should grapple with. National government has proposed some foundational strategic permutations of what is 'ideal', but what is "justifiable" should be considered on a case-by-case basis within the context of the Municipality. Be that as it may, justifiability should be viewed in conjunction with the promotion of "equity and granting public access". In some instances, the Municipality should determine whether it is justifiable to sacrifice national conservation targets to achieve socio-economic development, public access, etc. There might be need for sustainable compromises, depending on the objectives the Municipality seeks to achieve.
- **Mitigation Hierarchy (Avoid, Mitigate, Restore, Offset):** use it in Option Analysis, to guide the land use allocation debate. Weigh the competition by looking at alternative ways to use that land, in order to avoid conflict. The Municipality should not rush to just offset. Instead, the Mitigation Hierarchy should be used to explore if there are any possibilities of avoiding the impact, before considering offsetting or even a trade-off.
- **Offsets:** Where possible, environmental damage should not happen, but if it does, offsets should be implemented. Offsetting should be well thought through, right from the beginning. Offsets should be considered proactively — they are not for sorting out environmental damage that has already occurred. Instead, offsets are for determining if a project/ program which will cause environmental damage can be mitigated through an "Offset", which would need to be in place prior to the project/ program commencing. **NB:** There are certain situations where offsetting (nor any

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- engineering mitigation) is not appropriate and should not be considered (e.g. delineated "red areas" that are at high risk).
- **Full Cost Accounting:** Municipalities must understand, both the infrastructure cost (in construction and operation) and the financial cost post-development (maintenance) of a land use change.
 - **Institutional Architecture Reconfiguration:** In the long term, Municipalities should consider, where possible, integrating (amalgamating) the planning function and the environmental function into one. This model has been successfully implemented in the Western Cape, albeit at provincial level. It goes a long way in minimising the typical disjuncture and helps avoid certain conflicts before they even occur.
 - **High Quality Discussion and Debate:** Land use conflict should be resolved via debate by stakeholders, with a view to arriving at an agreed view, but most importantly, sustainable outcome. The mitigation hierarchy must inform how that debate must happen. The concept of 'Strategy' could be used to temper the rigidity of the mitigation hierarchy – in instances where calculated risk has been/should be taken (e.g. Water Front), the Municipality should consider the recoverability of the Capital Cost⁶. Therefore, in those cases, there should be explicit Strategy to maximise the benefits.
 - **Win-Win (re)solutions:** The Municipality should always seek/support development options that can be regarded as win-win solutions in that they meet both developmental and environmental objectives simultaneously.
 - **Fixing Data Errors:** Part of the problem is mapping errors. By just fixing some of the mapping issues/queries, land use competition could be addressed. Thereafter, the Municipality can meet with the different role players to assess the legitimacy of the issues and also whether the issues could be easily resolved.
 - **Integrate, Harmonise and Align Disparate Legislations:** Analyse the SDF vs. other legislations specifically to understand, from a spatial perspective, where there are conflicts. Conflict resolution can be done by integrating, harmonising and aligning disparate legislations and spatial planning systems (e.g. an SDF and EMF developed separately). In some cases, the Municipality will end up with two separate planning documents, albeit with a common view and 'speaking the same language' (case of Saldana Bay, Western Cape). However, if the integration is done at the development stage, the Municipality can end up with one document with incorporates both the SDF and EMF (case of Mossel Bay). Ideally, the EMF and SDF must eventually have/use the same map.
 - **Buffers:** some conflicts could be resolved by referring/adhering to the buffer guideline prepared by the INR – it should be implemented to buffer environmental features.

⁶ Water Front recovers the development and maintenance cost many times over and the Municipality is able to manage that situation.

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Section C

- GUIDELINES (BEST PRACTICE) -

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Section C: Guidelines (Best Practice)

3 Guidelines (Best Practice)

3.1 Guideline1: Valuation of Ecological Assets

Box 1: Guidance on Valuation of Ecological Assets

The idea of putting monetary value on environmental/ecological assets (in order to resolve competing and conflicting interests), is complex, controversial and has been highly contested. Moreover, the subjective element undercutting monetary valuation techniques would pose a danger to uniformity and standardisation, thereby making land use conflict resolution and decision making difficult. Consequently, having considered a range of valuation methods and techniques, Municipalities should not use monetary valuation techniques. Environmental assets are priceless and should not be looked at through an economic/ business lens, lest they may be undervalued. In addition, highly scientific methods would not be suitable to most Municipalities where there are capacity/expertise constraints. As such, instead of attempting to put monetary value on ecological/environmental assets, there is need for high quality discussion that considers socio economic, ecological/environmental and cultural factors. Therefore, on a case by case basis, a Municipality can determine the importance of ecological assets, taking into consideration the local existing conditions and predetermined priorities. Notwithstanding the aforementioned limitations/risks, in cases where sufficient capacity and resources exist to undertake monetary evaluation of environmental assets in a responsible manner that does not compromise environmental protection, a Municipality could take the liberty to make a case to responsible/relevant environmental Authorities (e.g. DEA), regarding the use and/or selection of scientific valuation tools/methods, which authority will then make the necessary determinations.

3.2 Guideline2: Parameters for exclusions from EIA requirements on certain Listed and Specified Activities

The purpose of the discussion in this section is to give guidance on how a municipal SDF that has been prepared in compliance with the Minimum Environmental Standards can provide a good framework for the identification of activities and areas that can be excluded from the requirement to obtain environmental authorisations. It is emphasised however that the objective of such as an SDF is not to provide automatic or blanket exclusions. Such exclusions are to be done on a case by case basis and with due regard to the established procedures and processes.

The NEMA requires that an environmental authorisation is obtained before any activity which has been identified in terms of NEMA as Listing Notices, can commence⁷. The activities identified in the NEMA Listing Notices apply throughout the Republic. However, as already noted, the Minister, or an MEC with the concurrence of the Minister, may, in terms of section 24(2)(c) and (e) identify activities in the Listing Notices that are excluded from the requirement to obtain an environmental authorisation from the competent authority in specified geographic areas. Such a list of activities must be based on an environmental management instrument or spatial development tool adopted by the Minister or an MEC, with the concurrence of the Minister.

⁷ Section 24, 24D of NEMA

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The rationale for the exclusion of activities from the requirement to obtain environmental authorisation is to reduce the legislative burden on the sector where there are no issues of concern, such as areas that are of least concern from a biodiversity conservation perspective.

A SDF could be adopted as an instrument which could support the exclusion of activities from the need obtain and environmental authorisation if they have been prepared in a manner that meets the approval of the MEC and Minister. The SDF would also need to indicate that it is intended to provide the basis of such exclusions. Prior to such adoption, notice must be given in the Government Gazette indicating the intention to adopt the SDF as an instrument to support an exclusion of identified activities.

The road map to development of an SDF that can facilitate exclusions of certain activities can be summarised as a 3-step process:

- a. A strategic assessment of the environmental pressures and environmental sensitivities which are then taken into consideration and aligned with land use measures according to the environmental management tools employed in the municipality. This may include environmental management zones identified in the relevant Environmental Management Framework of the municipality in line with the applicable management guidelines.
- b. The SDF must be prepared and presented in accordance with the requirements of an environmental management instrument. Areas of compatible land uses must be properly zoned and spatially represented and activities for exclusion per zone identified. Incorporating minimum environmental standards into SDFs will not automatically lead to such exclusions, but could form the basis for identifying specific activities that currently require EA to be excluded from that requirement, if sufficient information (e.g. specific zones where the exclusions are applicable and the mitigation standards that must be met) is provided.
- c. The third step would involve consultation on the proposed exclusions in the prescribed manner.

As mentioned above, exclusion of activities should be done on a case by case basis and the following principles should apply:

- The embodiment of the principle of spatial sustainability through the protection of high potential and unique agricultural land through land use mechanisms in support of food security as a national norm, preservation of land for production and enablement of environmental supportive agricultural practices;
- Striving for sustainability through the protection of biodiversity and ecological functioning; and

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- Introduction of special land use parameters in spatially demarcated areas which acknowledges levels of acceptable change and support a level of economic development.

3.3 Guideline3: Application of Minimum Standards within the Framework of a Land Use Scheme

In considering how Minimum Environmental Standards can be enforced through Municipal spatial planning, cognisance should be taken of the SPLUMA requirements for Land Use Schemes as a tool that gives effect to SDFs and in particular, an enabler for environmental management.

SPLUMA s24(2)(b) states that a land use scheme must, inter alia

“take cognisance of any environmental management instrument adopted by the relevant environmental management authority and must comply with environmental legislation”

To that effect, Land Use Schemes (LUS) must, in terms of section 24(2)(g) of SPLUMA, give effect to SDFs and Integrated Development Plans (IDPs). It is important for Municipalities to observe this fundamental aspect.

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Section D
- ANNEXURES -

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Section D: ANNEXURES

4 Annexures

TABLE 6: STANDARD DESCRIPTIONS OF FEATURES/SUB-CRITERIA

Features/Sub-criteria	Brief Description ⁸	Why it should be mapped... (Desired Management Objective)
Protected Areas (PAs)	An area of land or sea that is formally protected in terms of the Protected Areas Act and managed mainly for biodiversity conservation. Includes state-owned Protected Areas and contract Protected Areas.	Must be kept in a natural state, with a management plan focused on maintaining or improving the state of biodiversity. A benchmark for biodiversity.
Critical Biodiversity Areas (CBAs)	<ul style="list-style-type: none"> An area that must be maintained in a good ecological condition (natural or near-natural state) in order to meet biodiversity targets. CBAs collectively meet biodiversity targets for all ecosystem types as well as for species and ecological processes that depend on natural or near-natural habitat that have not already been met in the protected area network. One of five broad categories on a CBA map, and a subset of biodiversity priority areas. CBA Map includes: classified & mapped ecosystem types, species of special concern, landscape-scale ecological corridors, unique or special habitats or features, areas of importance for ecological processes, ecological infrastructure. 	CBA map should form the 'green layer' that Municipalities should consider as baseline information.
Ecological Support Areas (ESAs)	<ul style="list-style-type: none"> An area that must be maintained in at least fair ecological condition (semi-natural/moderately modified state) in order to support the ecological functioning of a CBA or protected area, or to generate or deliver ecosystem services, or to meet remaining biodiversity targets for ecosystem types or species when it is not possible or no necessary to meet them in natural or near-natural areas. One of five broad categories on a CBA map, and a subset of biodiversity priority areas. ESA Map also includes: Other Ecological Support Areas, Other Natural Areas, and Core 1 and Core 2 from the Broad Provincial Spatial Planning Categories. 	Should be maintained in a functional, near-natural state. Some habitat loss is acceptable, provided the underlying biodiversity objectives and ecological functioning are not compromised.
Strategic Water Source Areas (SWSAs)	An area that supplies a disproportionate amount of mean annual run-off to a geographical region of interest. In South Africa, Strategic Water Source Areas make up only 8% of the country's land area but deliver 50% of mean annual run-off.	
Nature-based tourism or scenic features	Includes a broad range of tourist and recreational and ecotourism facilities in support of sustainable rural tourism, businesses and communities, as well as to provide for the recreational and leisure needs of rural/urban dwellers. Broad categories are: low impact facilities (e.g. camp sites, hiking and mountain biking trails, zip-lines, etc); and high impact facilities (golf courses, golf estates, polo estates, polo fields).	
Natural hazards (e.g. floodplains,	Natural Hazards are naturally occurring physical phenomena caused either by rapid or slow onset	

⁸ By and large, the descriptions draw from the definitions provided in the Lexicon of Biodiversity Planning in South Africa, First Edition, Beta Version (SANBI, 2016).

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geo-hazards)	events which can be geophysical (earthquakes, landslides, tsunamis and volcanic activity), hydrological (avalanches and floods), climatological (extreme temperatures, drought and wildfires), meteorological (cyclones and storms/wave surges) or biological (disease epidemics and insect/animal plagues, infestation and invasive species.). A Natural Hazard is any natural event that has the potential to endanger human life, the economy and property. Some natural hazards can be provoked or affected by anthropogenic processes (e.g. land-use change, drainage and construction).	
Man-made hazards (e.g. waste sites, industrial pollution sites, and chemical contamination)	Man-made Hazards are events that are caused by humans and occur in or close to human settlements. This can include environmental degradation, pollution and waste sites, chemical contamination, and industrial accidents.	Spatially locating pollution sites enables stakeholders to integrate disaster management / avoidance directly into planning at a local level.
Cultural landscapes or features	Refers to "a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values." A cultural landscape can be thousands of acres or a tiny homestead. It can be a grand estate, industrial site, park, garden, cemetery, campus, and more. There are primarily four types of cultural landscapes, although any given landscape may fall under more than one typology: Designed Landscapes; Ethnographic Landscapes; Historic Sites; and Vernacular Landscapes.	Cultural landscapes are an invaluable legacy and should thus be safeguarded. They provide scenic, economic, ecological, social, recreational, and educational opportunities helping communities to better understand themselves. Neglect and inappropriate (incompatible) development pose a risk to such shared heritage. Some land use decisions threaten the survival and continuity of the same. The ongoing care and interpretation of these sites improves society's quality of life and deepens a sense of place and identity for future generations.
Agricultural resources	This Criteria includes all forms of agriculture, including but not limited to: intensive agriculture (high potential and unique agricultural lands); forestry or timber plantations; irrigated crop cultivation (horticulture, orchards, vineyards); dry-land crop cultivation; space extensive agricultural enterprises; extensive agriculture (livestock farming, game farming).	
Mining resources	This refers to all concentrations or occurrences of material of intrinsic economic interest in or on the earth's crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction.	
Infrastructure	By and large, this encompasses Utilities Infrastructure (e.g. railways, roads, pipelines, waste water treatment facilities, renewable/non-renewable energy infrastructure)	