MINIMUM ENVIRONMENTAL STANDARDS FOR SPATIAL DEVELOPMENT FRAMEWORKS (SDFs)

Consultation Presentation

NATIONAL SPLUM (SPATIAL PLANNING & LAND USE MANAGEMENT) FORUM
24 AUGUST 2018

Host: KZN DRDLR (PROVINCIAL SPLUM)
Venue: Omono Hotel, Durban

PRESENTATION OUTLINE

THE PRESENTATION IS ORGANISED AROUND ALL THE TECHNICAL OUTPUTS AS FOLLOWS:

1. **CONTEXT**
   - **Purpose of the Minimum Environmental Standards**

2. **STEPS IN IMPLEMENTING THE STANDARDS**
   - **Step 1: Understanding the Environmental Status Quo**
   - **Step 2: Overlaying the Spatial Datasets**
   - **Step 3: Identify Compatible/Incompatible Land Uses or Activities**
   - **Step 4: Identify Potential Spatial Constraints and Opportunities**
   - **Step 5: Guidance on Valuation of Ecological Assets**
   - **Step 6: Guidance on How To Resolve Land Use Conflicts**
   - **Step 7: Guidance on Procedures for Exclusions from EIA Requirements on certain Listed Activities**

CONTEXT
Purpose of the Minimum Environmental Standards

❑"Standards" → Minimum requirements for environmental features/attributes, that should be included in SDFs

❑To proactively integrate environmental management aspects into the development/review of SPLUMA-compliant Municipal SDFs, to ensure that *environmental planning* and *developmental planning* have the same outcomes, in terms of sustainability.

❑Ultimately, these Standards are a policy guideline designed to:
- Streamline pertinent environmental considerations/concerns into spatial planning, specifically at local Municipality level;
- Regulate the effect of development activity upon the environment; and
- To simplify approval/authorisation processes thereby making things easier for Municipalities.

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❑ 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;

– the Table also includes the Sub-criteria (main sub-categories, components and constituents of the key environmental features); and

– Municipalities may take the liberty to (re)organise (aggregate/disaggregate) Environmental Criteria, as long as all the Criteria are considered.

Step 1: Understanding the Environ. Status Quo
Table 1: Criteria to be included in the Minimum Standard

Criteria (Features/Land Use)	Sub-Criteria
1. Environmental Resources	Protected Areas (PAs)
	Critical Bio-diversity 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, Dongas & Erosion, Sink holes, Mass earth movements, Extreme weather prone areas)
	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 Heritage Areas, Cultural landscapes, Heritage Protection Overlay Zones (or their equivalent), Archaeological sites & Paleontological sites)
4. Agric. Resources	High potential agricultural land
5. Mining	Mine tailings, current and past mining areas, acid-mine drainage affected features, degraded lands
6. Infrastructure	Utilities Infrastructure (e.g. railways, roads, pipelines, waste water treatment facilities, renewable/non-renewable energy infrastructure)
7. Land use/cover	Current land use/cover

Step 1: Understanding the Environ. Status Quo
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.

Step 1: Understanding the Environ. Status Quo
Determine if there is Mapable Data for each Criterion Listed

❑ The Municipality should then determine if there is Mapable 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 7 (see Annexures).

❑ One of the outcomes of this part of the process is the identification of gaps (i.e. instances where there is no existing mapable data for identified environmental criteria).

Step 1: Understanding the Environ. Status Quo
Specific Links for Mapable Data on each Environmental Criterion

Criteria (Features/Land Use)	Sub-Criteria	Specific links where data can be found	
1. Environmental Resources	Protected Areas (PAs)	https://egis.environment.gov.za/	
	Critical Bio-diversity Areas (CBAs)	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	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
		City of Cape Town http://bgis.sanbi.org/CapeTown	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		

Step 1: Understanding the Environ. Status Quo
Specific Links for Mapable Data on each Environmental Criterion

Criteria (Features/Land Use)	Sub-Criteria	Specific links where data can be found
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/
	Heritage Protection Overlay Zones	
	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>
7. Land use/cover	Current land use/cover	https://egis.environment.gov.za/

Step 1: Understanding the Environ. Status Quo
Unmapped Criteria: Advice on What & How they can 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 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.
	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 mvmts.	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.
	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.

Criteria (Features / Land Use)	Unmapped Sub-Criteria	Advice on what and how they must be mapped
3. Cultural and heritage resources	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.
	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.
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, to assess accuracy of the image mapping.
	Acid-mine drainage affected	Field on-site mapping using GIS equipment such as a GPS to identify areas. Aerial photography can also be used for mapping.
	Degraded lands	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.

Step 1: Understanding the Environ. Status Quo
Ensure that Criteria/Features should 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 various national documents and provincial tools.

❑ Municipalities should embed the practice of establishing buffer zones into the SDF process and Land Use Schemes (Land Use Zoning).

❑ Biodiversity Policy and Strategy for South Africa: Strategy on Buffer Zones for National Parks" (2012) → Municipal SDF process could be used to establish a system of integrating environmental buffer zones to enhance environmental protection.

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Step 2: Overlaying the Spatial Datasets

Criteria (Features/Land Use)	Sub-Criteria	Overlay Order
1. Environmental Resources	Protected Areas (PAs)	3.1
	Critical Bio-diversity Areas (CBAs)	3.2
	Ecological Support Areas (ESAs)	3.3
	Strategic Water Source Areas (SWSAs)	3.4
	Nature-based tourism or scenic features	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
	Industrial pollution sites	3.5

Criteria (Features/Land Use)	Sub-Criteria	Overlay Order
3. Cultural and heritage resources	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	3.6
4. Agricultural resources	High potential Agric. 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
	RE/non-RE infrastructure	2.1
	Waste water treatment facilities	3.8
7. Current land use/cover	Current land use/cover	4.0

NB: When overlaying datasets in GIS, **points** should always sit on top, followed by **lines**, then **polygons** at the bottom.
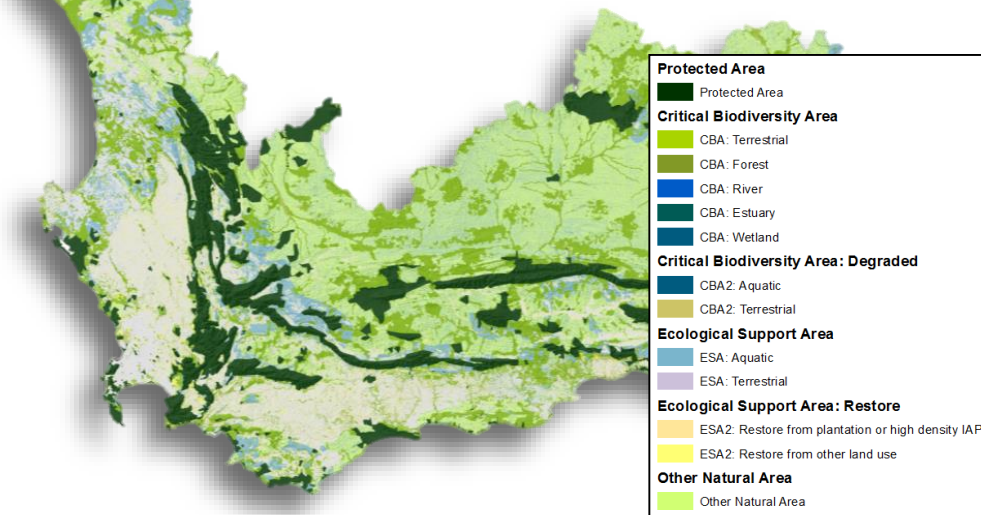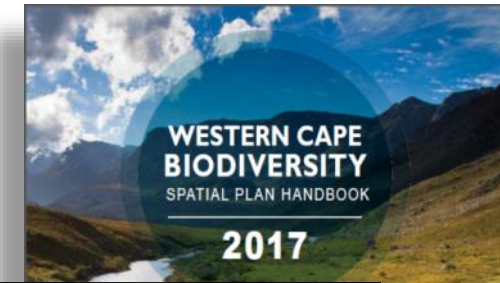
CBA Map As The Primary "Green" Informant

What is a CBA Map?

– Map of Critical Biodiversity Areas (CBAs) & Ecological Support Areas (ESAs)

– **A spatial plan for ecological sustainability**

– For the landscape as a whole – terrestrial and aquatic elements

CBA maps speak directly to Minimum Environ. Standards on a number of fronts:

– It is based on best available science

– It considers targets, thresholds and limits of acceptable change are built-in

– It uses the same principles and a consistent approach across all provinces

WESTERN CAPE BIODIVERSITY SPATIAL PLAN HANDBOOK 2017

Leipoldtville

Protected Area
- Protected Area

Critical Biodiversity Area
- CBA: Terrestrial
- CBA: Forest
- CBA: River
- CBA: Estuary
- CBA: Wetland

Critical Biodiversity Area: Degraded
- CBA2: Aquatic
- CBA2: Terrestrial

Ecological Support Area
- ESA: Aquatic
- ESA: Terrestrial

Ecological Support Area: Restore
- ESA2: Restore from plantation or high density IAP
- ESA2: Restore from other land use

Other Natural Area
- Other Natural Area

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- Some land uses are innately compatible, while others are completely incompatible

- Municipality must ensure that the 'from to' land use changes are compatible.

- Compatibility/Incompatibility Matrix → a Guideline of how Municipalities can determine compatible/incompatible uses

- The Matrix is a Guideline → it should not substitute for bold preservation of environmental resources and hazards (e.g. protecting a river flood plain as a no-development area).

SUB-CATEGORY	Arable Lands	Agricultural Infrastructure	Livestock & Game Ranching	Forestry / Plantations	Proclaimed Nature Areas	Other Nature Areas	Open Space	Low Impact Tourism	High Impact Tourism & Resorts	Rural Residential	Eco-estates	Other Residential	Urban Influence	Low Impact & General	High Impact	Mining - Quarrying & Open Cast	Mining - Prospecting	Transport Services	Roads & Rail	Water, Sewage, catchment transfer	Linear (pipelines, powerlines, canals)	Other Utilities
Protected Area	N	N	R	N	Y	R	R	R	N	N	R	N	N	N	N	N	N	N	R	R	N	N
CBA: River	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CBA: Estuary	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CBA: Wetland	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CBA: Forest	N	N	R	N	Y	Y	Y	R	N	N	N	N	N	N	N	N	N	N	R	N	N	N
CBA: Terrestrial	N	N	R	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	R	N	R	N
CBA: Degraded	N	N	N	N	R	R	R	R	N	N	N	N	N	N	N	N	N	N	R	N	R	R
ESA: Foredune	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	R	N	N	N
ESA: Forest	N	N	R	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	R	N	N	N
ESA: Corridor	N	N	Y	N	Y	Y	R	R	N	N	N	N	N	N	N	N	N	R	R	R	N	R
ESA: Coastal Resource	N	N	R	N	Y	Y	R	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ESA: Endangered Ecosystem	N	N	R	N	Y	Y	Y	R	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ESA: River	N	N	R	N	Y	R	R	R	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ESA: Estuary	N	N	R	N	Y	R	R	R	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ESA: Wetland	N	N	R	N	Y	Y	R	R	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ESA: Watercourse Protection	R	R	R	R	Y	Y	R	R	N	N	R	N	N	N	N	R	R	R	R	R	R	R
ESA: Water Source Protection	R	R	R	R	Y	Y	R	R	N	N	R	N	N	N	N	R	R	R	R	R	R	R
ESA: Water Recharge	R	R	R	R	Y	R	R	R	N	N	N	N	N	N	N	R	R	R	R	R	R	R
Ecological Support Area2	R	R	R	R	R	R	R	R	R	N	R	R	R	R	R	R	R	R	R	R	R	R
ONA: Natural to Near-Natural	R	R	R	R	Y	Y	Y	Y	Y	Y	Y	R	Y	R	R	R	R	Y	Y	Y	Y	Y
ONA: Degraded	Y	Y	Y	Y	R	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	R	R	Y	Y	Y	Y	Y
NN: No Natural Remaining	Y	Y	Y	Y	R	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	R	R	Y	R	Y	Y	Y
Environmental Hazards	R	R	Y	Y	Y	R	Y	R	R	R	R	R	R	R	R	R	R	R	R	N	R	R
Cultural and heritage resources	N	R	R	R	Y	R	R	Y	N	N	N	N	N	N	N	N	N	N	R	R	R	R
Agricultural resources	Y	Y	Y	Y	R	R	R	R	R	R	R	R	R	R	R	N	N	R	R	R	R	R
Mining	N	N	N	R	R	R	R	R	R	N	R	N	R	R	Y	N	R	N	Y	Y	Y	Y
Infrastructure	R	R	R	R	R	R	R	Y	Y	R	R	R	R	Y	N	Y	R	N	Y	Y	Y	Y

Y = Yes: Permissible land uses that are unlikely to compromise the Environmental objective/s

R = Restricted: Land-uses that may compromise the Environmental objective/s and are only permissible under certain conditions

N = No: Land-uses that will compromise the Environmental objective/s and are not permissible

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Step 4: Identify Potential Spatial Constraints and Opportunities

❑ 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.

❑ On the basis of this Standard, the Municipality must, among other things, enable the following:

– Facilitate a desirable and sensible spatial orientation of complimentary land uses and developments to ensure a quality, efficient and effective living environment;

– Curb undesirable developments due to incompatible land use patterns;

– Identify, negate (and/or manage) any possible negative impacts of developments (environment, visuals, aesthetic, etc.); and

– Protect productive and conservation-worthy resources (e.g. high potential agricultural land, wetlands).

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Step 5: 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.

❑ Consequently, Municipalities should NOT use monetary valuation techniques. Why?

– Environmental assets are priceless and should not be looked at through an economic/ business lens, lest they may be undervalued;

– Highly scientific methods would not be suitable to most Municipalities where there are capacity/expertise constraints;

– 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;

– 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.

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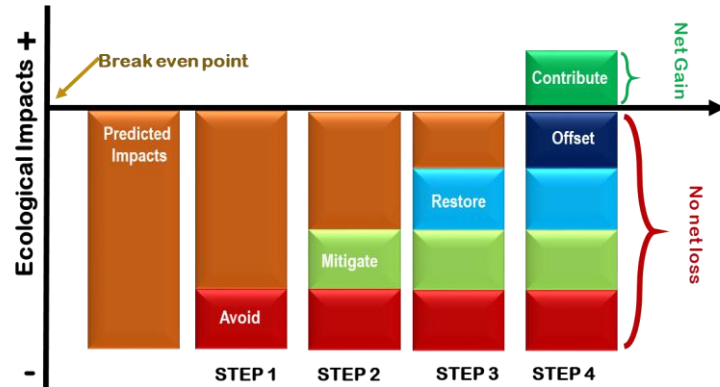
- ❑ **Mitigation Hierarchy** → Integrate the Mitigation Hierarchy into the EIA process. **Offsets** should be implemented to address long-term residual impacts that cannot be avoided. **NB**: Offsetting should be well thought through, right from the beginning.
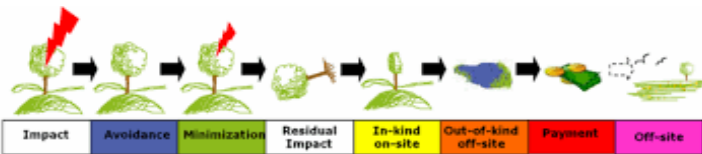
- ❑ **Fundamental Principles**: Any land use change needs to be **acceptable, reasonable, <u>justifiable</u>, <u>equitable</u> and explicit.** The Municipality should not seek to maximise revenue at the expense of ecological infrastructure regulating against flooding or impact by storm surge.

- ❑ **Full Cost Accounting (White Paper)** → The Municipality must underline to the developer/s, both the infrastructure cost (in construction and operation) and the financial cost of maintaining the area.

- ❑ **Institutional Architecture Reconfiguration** → Environmental function + Planning function into one (i.e. WC Model), thus minimising the typical disjuncture and avoiding certain conflicts before they even occur.

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PARAMETERS FOR EXCLUSION OF LISTED ACTIVITIES
Contextual Discussion

❏An SDF that meets the minimum environmental standards and adopted in the prescribed manner by the Minister (or an MEC, with the concurrence of the Minister) responsible for Environment may allow for the exclusion of EIA requirements for any activities listed under *Regulations R982, R983, R984 & R985* and promulgated in terms of S24(5) of NEMA.

PARAMETERS FOR EXCLUSION OF LISTED ACTIVITIES
NEMA and Environmental Authorisations

❑ An important point on dealing with this issue is Section 24(2)(c) and (e) of NEMA. S24 (2) which states: The Minister, or an MEC with the concurrence of the Minister, may identify:

(c)   *Geographical areas based on environmental attributes, and specified in spatial tools or environmental management instruments, adopted in the prescribed manner by the Minister or an 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;*

(e)   *Activities contemplated in paragraphs (a) and (b) 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.*

❑ S2 of SPLUMA refers to the process of developing an SDF & the following should be noted:

- ✓ *S12(1)(d) states that an SDF must guide planning & development decisions across all sectors of government.* *The import of this is that an SDF must be compiled in such a way that it can also assist the relevant environmental authorities in taking certain decisions.* *Therefore, should there be areas of environmental concern which need protection, such areas should be defined, described and mapped in the SDF as environmental sensitive areas.*

- ✓ *SPLUMA S21 (j) highlights the significance of* *strategic assessment of environmental pressures & opportunities* *within the municipal area, including spatial location of such environmental sensitivities where applicable*

❑The foregoing implies that if a SDF has been prepared in a manner that meets the minimum environmental standards that are acceptable to the Minister or the MEC then it becomes an environmental management instrument with identified activities for exclusion spatially represented and adopted in the prescribed manner by the Municipality in terms of SPLUMA.

❑The approval of the proposed exclusions by the Minister must be carried out in the prescribed manner in terms of the Instrument Regulations and NEMA.

❑ For an SDF to help achieve the objective of guiding the process of excluding certain activities linked to development zones, the SDF should explicitly state that intent as one of its objectives.