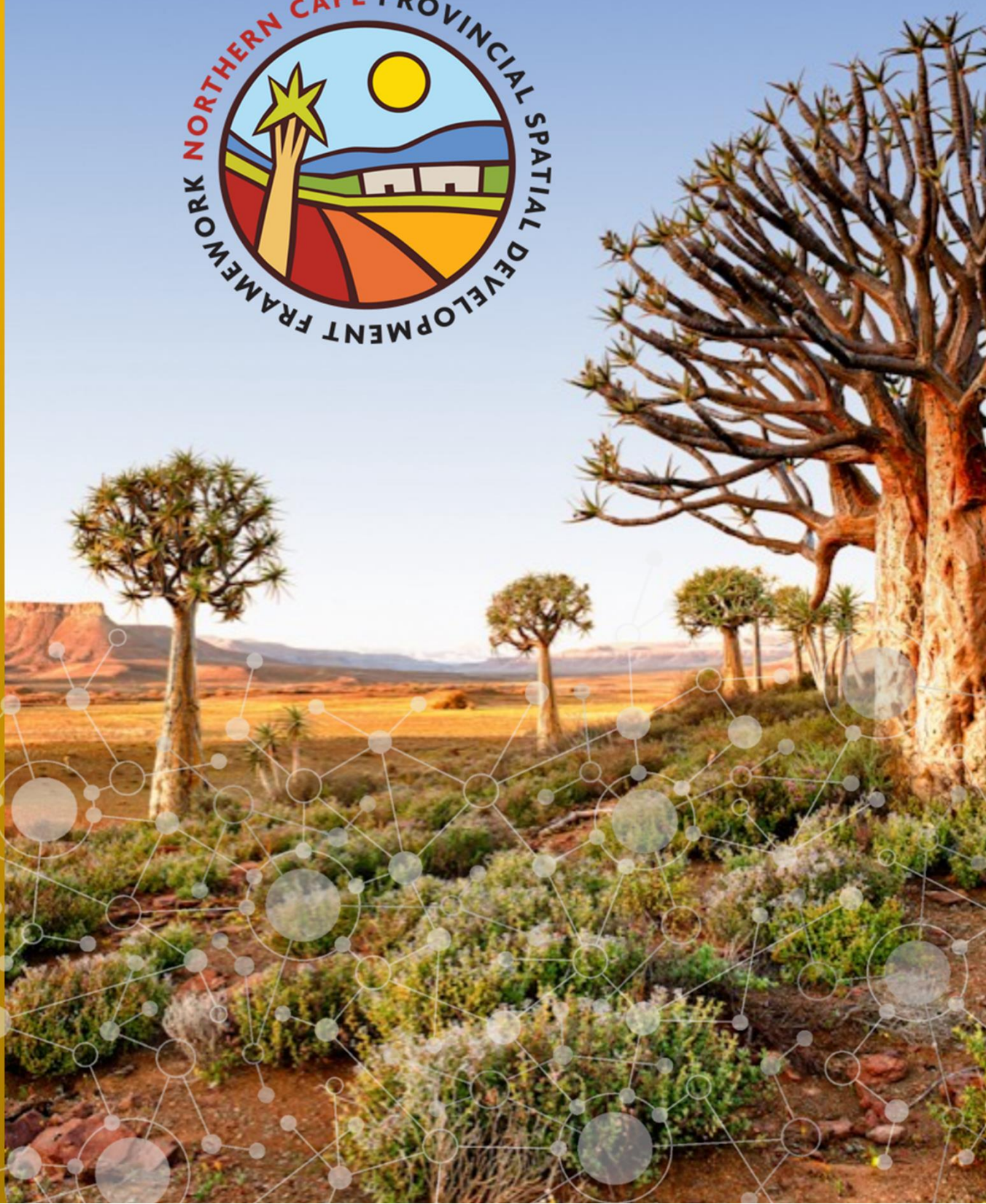
PLANNING TOOLKITS

NORTHERN CAPE

PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK



IMPLEMENTATION TOOLKITS

IMPLEMENTATION GUIDELINES (TOOLKITS)

1.1 TOOLKIT D1 BIOREGIONAL LAND-USE CLASSIFICATION

TOOLKIT SYNOPSIS

The purpose of this toolkit is to inform the land-use classification to be undertaken throughout the Northern Cape in terms of the bioregional planning approach advocated by the PSDF (refer to Chapter 5). This applies to the preparation of the following:

a) SDFs prepared by the district and local municipalities.
b) Biosphere reserve plans to be prepared by the Department of Co-operative Governance, Human Settlements and Traditional Affairs and the Department of Environment and Nature Conservation.
c) Tourism plans to be prepared by the various spheres of government.
d) Detailed farm plans to be prepared by landowners.

The key objective of the land-use methodology is to create a standard land-use framework for the province as a whole which cascades from broad, generic guidelines on the provincial level (refer to Chapter 6) to detailed farm (or landscape) planning on the local level.

1.1.1 LAND-USE CLASSIFICATION

As described in Chapter 6, a fundamental phase of bioregional planning is to undertake appropriate land-use classification throughout the planning area in accordance with a classification system that is based upon a structure of interrelated cores, corridors and matrices. UNESCO's biosphere reserve zoning model was adopted as a basis for the land-use classification to be undertaken in terms of the bioregional planning methodology.

In terms of this model, the classification system includes core nature areas that feature representative samples of the region's characteristic biodiversity. Ideally such sites, which may already be designated as protected areas, should be linked by corridors of natural or restored natural plant cover to permit migration and adaptation to global change. Both the core sites and corridors should be nested within a matrix of mixed land-uses and ownership patterns (refer to Chapter 5).

1.1.2 SPATIAL PLANNING CATEGORIES: A MECHANISM FOR LAND-USE CLASSIFICATION

As described in Chapter6, a comprehensive set of *Spatial Planning Categories* (SPCs) was developed. These SPCs are generally consistent with UNESCO's MAB Programme and include all land zonings that are provided for under the existing Zoning Scheme Regulations. The designation of SPCs does not change existing zoning or land-use regulations or legislation. SPCs merely help to clarify and facilitate coherent decision-making that can lead to better zoning, laws and regulations. The SPCs, furthermore, provide a framework in terms of which land-use decisions can be standardised throughout the province. It is advisable that all zoning scheme regulations be aligned with the SPCs. The SPCs are to be applied in land-use classification at all levels of planning in the Northern Cape (refer specifically to the preparation of IDPs and SDFs) (refer to Toolkit D2).

1.1.3 GENERAL ASPECTS OF SPC DESIGNATION

The primary applications of the SPCs include the following:

a) The SPCs provide a system in terms of which all land units or entities within the province will eventually be recorded in a spatial data repository (such as SPYSIS), facilitating effective administration of land-use issues.
b) The SPCs can be used to indicate both the *status quo* of official land-use and the desired land-use of all land within a planning area. In addition, they identify specific types of land-uses that are not included in the existing Zoning Scheme Regulations, providing for a non-statutory and more detailed land-use classification.
c) The SPCs indicate desired land usage which might in certain instances be aligned with the current zoning of properties and in other instances differ from that.
d) Existing Zoning Scheme Regulations are to be amended/upgraded in order to include these new concepts. It is envisaged that the Model Land Use Scheme developed by DRDLR (2019) will contain certain new overlay zonings in this regard.
e) The SPCs facilitate decision-making regarding applications for a change in land-use. In this regard, it is important to note that an SPC designation which differs from the current zoning, implies that any new development will be considered a diversion from the *status quo*, requiring that applications will have to be considered by the relevant authorities in accordance with specific guidelines. For example, an application for the construction of new farm buildings within a tract of natural vegetation on the farm, implies a change in land-use from Category C.a (Extensive Agriculture) to Category D.r (Farmstead). Consequently, the applicant will be required to ensure that the application conforms to the relevant place-specific planning and design principles. This implies that the relevant authority will then be able to evaluate the application objectively and make an appropriate decision.

1.1.4 APPLICATION OF SPCS IN NATURAL LANDSCAPES

SPC A and SPC B and, to an extent, SPC C. areas primarily relate to the *natural landscape*, which contains the *inhabited (human-made) landscape* (SPC C.b, D, E, and F).

Natural and human-made places are not homogeneous. A classification is required to describe the different characteristics and functions of different types of natural landscapes in order to develop a common language that can be used for spatial planning purposes throughout the province. Differentiation is, for example, made between Category B.a and B.b describing a higher and lower order status. If SPCs areas were well mapped in the municipal SDFs, it would be possible for both the applicant and the officials involved in evaluating the application, to make objective decisions at an early stage of planning.

SPC B designation illustrates the following:

a) Extent of the area that contains conservation-worthy habitats or habitat units.
b) Extent of land, which should, ideally, be rehabilitated to improve the quality of the natural landscape and/or to promote biodiversity conservation.

SPC B.a and SPC B.b areas are primarily private property. The designation of SPC B.a and B.b areas does not imply that it is necessarily undesirable to undertake any development within such areas. Such designation is rather an indication that one must proceed with caution. SPC B.a and B.b provide an explanation of the nature and extent of the landscape characteristics of the particular area and

present a basis for the evaluation of development proposals in proper context. SPC B.b designation, therefore, essentially represents an ideal, the achievement of which represents a challenge to the authorities, planners, developers and landowners. SPC B.b designation does not take away any of the landowner's rights, nor does it grant any rights. It merely indicates that the particular tract of land is of importance to biodiversity conservation and, consequently, to the well-being of the people of the area, and that due care should be taken in the management of the land. The above ideal could be achieved through the implementation of innovative strategies, such as the establishment of a *Special Management Area* (refer to Toolkit D11), which could be required as a condition of approval for rezoning or development rights on a property.

1.1.5 APPLICATION OF SPCS IN HUMAN-MADE LANDSCAPES

As stated previously, the human-made landscape is contained within the natural landscape. The symbiotic relationships between the two landscape types need to be understood and managed. SPC C (Agriculture), SPC D (Urban), SPC E (Industry), and SPC F (Surface Infrastructure) are land-use types that form part of the human-made landscape.

The classification of the landscape in accordance with the SPCs will assist decision-making regarding which type of land-use is considered desirable, or undesirable, in a particular place and what the reasons are for such a decision. For example, it is quite clear that it would be undesirable (in fact it should be impossible) to approve the establishment of an SPC E.c (Light Industry) within an SPC A.a (Statutory Conservation Area). Under exceptional circumstances it may, however, be permissible to establish SPC E.c in an SPC B.b area (Ecological Corridor/Area).

On the other hand, the establishment of an SPC E.a area (Agricultural Industry) within an SPC C (Agricultural Area) will not have to be approached with the same caution as the latter example, because the proposed alternative land-use (agriculture-related) will not be foreign to its setting. Similarly, an application to establish an SPC D.q (Resorts and Tourism-related areas) within an SPC B.a area would be more acceptable than the establish of a SPC E.d (Extractive Industry) within an SPC B.a area.

In accordance with the SPCs, aspects of the above nature can now be considered by road engineers and managers on provincial, district and local planning spheres much more objectively than was previously the case. In addition, such decisions can be taken in accordance with the requirements of bioregions, *neighbourhood areas* and biosphere reserves, and in collaboration with the authorities and communities of such entities.

It is important to recognise that SPCs can facilitate a better understanding of the nature and quality of our landscapes and should serve as an important instrument in the preparation of IDPs and in environmental education. However, SPCs do not provide a quick-fix, blueprint planning type of solution which requires little judgement and thought.

1.1.6 MAPPING OF SPCS

SPC mapping on the provincial scale is very broad (course grain). Vast areas are, for example, indicated as SPC B.b (Ecological Corridors), and C.a (Extensive Agriculture), which may give the impression that these areas are homogeneous. However, at closer inspection, one may find that these areas, in fact, include intensive agricultural sites, small settlements, surface infrastructure etc., which are too small to be indicated on that scale.

The intention is that finer grain mapping is to be undertaken at the district and local spheres of government. Provincial SPC mapping should be considered as a first-cut, broad-brush mapping, which provides the overarching framework within which refinement is to be undertaken. Such refinement lies in the hands of district and local municipalities in collaboration with landowners and other stakeholders. Accordingly, it is imperative that society has to empower itself to develop a greater understanding of the qualitative nature of the environment (places) within which it lives. Such empowerment can be achieved through education and debating the meaning of the things that make up our life-world. In order to achieve success in this regard, it is necessary to put into place policies, strategies and programmes, which would help facilitate a process of working together to achieve common goals.

1.1.7 PREMISE FOR SPC DESIGNATION: A SYSTEM OF VALUES AND ETHICS

A primary aim of PSDF and the municipal SDFs is to provide guidance to local authorities, developers, land owners and individuals to help preserve the qualities of the places where they live, to restore degraded places, and to create high quality places within the context of sustainable development. The SPCs incorporate both normative (qualitative value) and biophysical considerations. The municipal SDFs provide an ideal opportunity for municipalities to lay down guidelines and standards for qualitative spatial planning, design and development for their areas of jurisdiction.

Whilst it is recognised that the preparation of such guidelines and standards is a complex task, which cannot be fully described in a toolkit of this nature, it is nevertheless considered important to provide some rule of thumb principles, which can assist municipalities to prepare coherent SDFs. In this regard, the SPCs are to be the basis of land-use designation that would, in addition to functional considerations, also reflect the qualitative dimension of places.

The above objective can be achieved through the classification of landscapes in accordance with specific values and ethics, and the application of a phenomenological approach to describe landscape characteristics. As described in Chapter 6, environmental integrity is of fundamental importance for sustainable development and is largely influenced by land-use decisions. In turn, land-use decisions are influenced by specific values, norms and ethics.

A general problem in this regard, is that the strong moral values, norms and ethics required for coherent decision-making are often not given the necessary priority, or are over-ruled by rules-based systems, resulting in, amongst others, non-sustainable land-use, development of low-quality settlements, uncontrolled and rural sprawl, etc. These phenomena are evident throughout the Northern Cape.

Therefore, in order to reverse the cycle of environmental degradation and non-sustainable development, it is imperative that a system of agreed-upon values, norms, and ethics be applied as the premise for all land-use decisions. A good spatial development plan should build on a strong value system, which recognises that each place and the things that collectively shape the environmental character of such a place have intrinsic, instrumental and systemic values. These values need to be carefully considered when contemplating the current and future use of any particular place.

UNESCO's MaB Programme subscribes to the notion that ethical values form the basis of decision-making and action in accordance with an ideal accepted in a given moral system. It is accepted that, what makes ethical values different from all other values, is their overriding character. They articulate an imperative or a 'must' that cannot be escaped by anyone who subscribes to them and they are converted into practice through principles and rules (UNESCO, 2010).

The promotion of human well-being and the enhancement of the integrity of the natural environment are encapsulated in a global moral system and sound ethical values. The principles and rules through which these values should be given effect, include the just and efficient use of resources (capital) in accordance with legislative and official policy frameworks.

UNESCO (2010) and the UN (2010) argue that *if the imperative or 'must do' that flows from an ethical value is denied, then that value and its importance itself is denied*. Such a denial is therefore not a matter of arbitrary choice. Accordingly, as is stated in the latter publication, the ethical domain is circumscribed not only by the value choices made by humans, but also by the critical weighing of the expected consequences of their choices**.**

The approach advocated by the MaB Programme is, in essence, a strategic value-based and pro-active one. In accordance with this approach the core interests and objectives, required to attain sustainable development, are identified and it is demonstrated how best to achieve it. Such objectives should include the role that innovation, technology and design can play in improving efficiency and, in so doing, improving the quality of the environment and human well-being.

In order to achieve the above, it is important that each place within the province be evaluated in accordance with a coherent value system that takes into consideration the unique mixture of values of that particular place, and a code of environmental, social, cultural and economic ethics. Environmental, social, cultural, and economic ethics appropriate to the Northern Cape should allocate an equally important place to the conservation of nature on the one hand, and the improvement of the quality of life of people living in the environment on the other hand.

Since the dawn of culture, humans have modified the natural environment because no civilised humans can live in pure, pristine nature. However, due to *inter alia* explosive population growth and human greed, things changed, and nature has come under severe pressure of inappropriate land-use and over-exploitation of resources.

Thus, it is clear that all existing and future land-use should be regulated in accordance with a code of ethics that recognises that we have a moral obligation towards the conservation of the environment and that our very existence depends on our decisions pertaining to the use of our environment and its resources.

The ultimate challenge of ethics is the conservation of life on Earth. However, life is not the only criterion of value. A 'mere thing' can also be something to be respected. There is value wherever there is creativity (Rolston, 1994:174). The World Heritage Convention recognises the importance and value of natural environments and manifestations, and cultural (human-made) features that are of global conservation-worthiness and makes provision for their protection. Accordingly, the following three values are to be used to categorise landscapes:

1.1.7.1 INTRINSIC, INSTRUMENTAL AND SYSTEMIC VALUE

The United Nations World Charter for Nature states that '*every form of life is unique, warranting respect regardless of its worth to man'* (Rolston, 1994). Natural ecosystems thus have intrinsic and systemic value that is independent of human use (i.e. instrumental value) and that are worthy of protection. The above values are to be determined for each planning area in accordance with the following basic questions:

a) Intrinsic Value: What is the good of the place or thing?
b) Instrumental Value: What is the place or thing good for?

c) Systemic Value: What is the contribution of the place or thing to the health of the system that contains it?
d) Current Status: What is the current status of the place or thing?
e) Vision: What could the place or thing look like, or be good for, if it was restored to pristine form?

These values are to be determined during the municipal SDF processes in a collaborative, participative process with all relevant stakeholders, representing an adequate mix of local, indigenous and scientific knowledge. The significance of the unique mix of current and potential values of a place should be duly recorded and properly translated into concrete, practical guidelines for the different stages of planning, design, decision-making, implementation and management of projects and plans. It is also envisaged that the determination of the value of places will not be a once-off event, but rather an on-going process. In practice, places are categorised in accordance with a continuum ranging from the 'least modified' to the 'most modified' (refer to Figure 1).

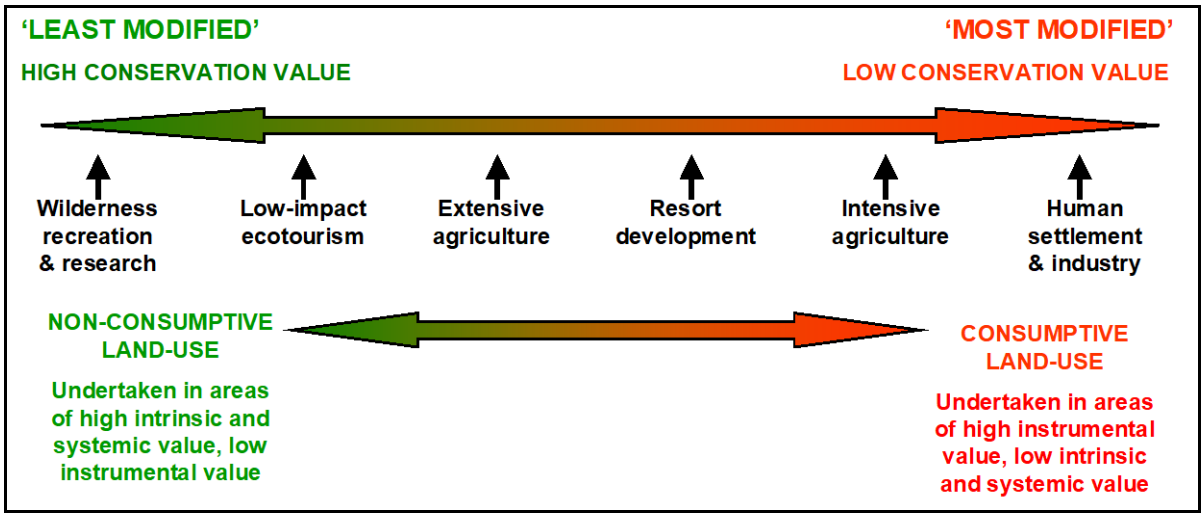


Figure 1: Land-use continuum.

By organising land-use in terms of a continuum, a simple geometry generally emerges, namely compact settlements, encircled by productive rural landscapes, and a connected matrix of nature areas stretching across the planning area. With this geometry, human populations can exist side-by-side with productive rural areas and fully functional ecosystems.

The biosphere designation model provides an ideal mechanism for the spatial delimitation of core areas (least modified areas), buffer areas, and transition areas (most modified areas). As illustrated by Figure 1, the concept implies the following:

1.1.7.1.1 LEAST MODIFIED AREAS

This category is generally represented by pristine wilderness and natural areas that have high intrinsic and systemic value, with relatively low instrumental value (considering their low-impact and non-consumptive land-uses). Such areas have the following functions and value:

a) Representing benchmarks for environmental health and self-sustaining ecosystems.
b) Providing secure refugia for source populations and biodiversity.
c) Allowing natural processes to continue without human interference (unlike management of other protected areas, wilderness management is essentially the management of human use

and influences to preserve naturalness and solitude, not the management, alteration or control of the natural processes themselves).

d) Providing opportunities for solitude or primitive and unconfined types of recreation.

e) Containing ecological, geological, or other features of scientific, educational, scenic, historical or cultural value.

f) Providing ecosystem functions, e.g. the provision of clean water from catchments, etc.

The intrinsic and systemic value of any natural environment is largely dependent upon the collective value of its components, and that any habitat fragmentation will have a negative effect on the value of the system as a whole.

1.1.7.1.2 MOST MODIFIED AREAS

This category represents the most modified end of the continuum referred to above, and generally represents the most intensively developed cultural landscape, accommodating dense urban settlements and consumptive human activities.

In such areas little of the natural environment remains and the intrinsic and systemic natural value is generally low. However, the instrumental value of such areas may be high due to their direct contributions to the industries and industry-related developments that form a part of the economic base of the area. A most important aspect is that even the most modified cultural landscapes can have environmental integrity, and that this integrity is influenced *inter alia* by the manner in which people settle and utilise the environment.

In this regard, it is important to recognise that the *spirit of place* is manifested in *location, spatial configuration,* and *settlement boundaries* (Norberg-Schulz, 1984). Primary *structural properties,* such as the way buildings are constructed, etc. must be preserved in order to retain a particular *local quality* and protect the *atmosphere* of a place (Norberg-Schulz, 1984). In order to ensure that the intrinsic and systemic value of the human-made environment of the Northern Cape is restored and conserved in the long-term, it is suggested that the five principles of critical regionalism, namely sense of place, sense of history, sense of craft, sense of nature and sense of limits (Kelbaugh, 1997) be used to guide all future development and restoration (refer to Toolkit D12).

1.2 TOOLKIT D2 BIOREGIONAL PLANNING CONTENTS OF SPATIAL DEVELOPMENT FRAMEWORKS

TOOLKIT SYNOPSIS

As stated previously, key determinants of successful land-use planning and management is the extent to which all spheres of government co-operate and co-ordinate their activities. Accordingly, the PSDF is based upon and gives effect to the concept of integrated development planning, which is understood as *a participatory planning process aimed at integrating sectoral strategies, in order to support the optimal allocation of scarce resources between sectors and geographic areas and across the population in a manner that promotes sustainable growth, equity and the empowerment of the poor and marginalised* (Forum for Effective Planning and Development, 1995). Accordingly, a key objective of the PSDF is to support the district and local municipalities in the preparation of their SDFs prepared in terms of the Local Government Municipal Systems Act 32 of 2000.

This toolkit summarises the aspects to be addressed in the SDFs of district and local municipalities in terms of the bioregional planning approach advocated by the PSDF. It should be read together and be merged with the relevant stipulations of the Local Government Municipal Systems Act, the Northern Cape Planning Spatial Planning and Land-Use Management Bill, the Spatial Planning and Land Use Management Act (SPLUMA) and the NSDF, and the Guidelines for Preparation of Spatial Development Frameworks.

1.2.1 ABRIDGED FUNCTIONS OF A BIOREGIONAL SDF

Together with the functions stipulated in the above statutes and guidelines SDFs prepared for the district and local municipalities of the Northern Cape are to achieve the following:

a) Promoting sustainable development throughout the planning area.
b) Inform any future municipal demarcation with the aim to reconcile municipal boundaries with defined bioregional parameters.
c) Land-use classification of any planning area in a standard format in accordance with defined *Spatial Planning Categories* (SPCs), which are based on a broad spectrum of environmental parameters and a system of values and ethics.
d) Facilitate spatial patterns that provide for integrated, efficient and sustainable settlements throughout the planning area.

District Municipalities are *inter alia* responsible for detailed delimitation of bioregions (refer to Toolkit D7), preparation of a district-wide land-use classification plan in accordance with a set of primary SPCs (refer to Toolkit D1 and Chapter 1), and the formulation of strategies for sustainable development and land management in the district as a whole. In addition, they are to manage the relationship between local municipalities to ensure the integrated management of bioregions (specific reference is made to areas where the municipal boundaries do not correspond with bioregional parameters, giving rise to overlapping, and necessitating close co-operation between the relevant local municipalities).

Local municipalities are to delimit neighbourhood areas as fine-grain planning units ensuring constructive community participation (refer to Toolkit D8), undertake detailed land-use classification in accordance with the SPCs and *Sub-Categories* (refer to Toolkit D1 and Chapter 1), formulate and implement detailed sustainable development strategies and projects, and establish sustainable public-private partnerships by making use of models such as the SDI (refer to Toolkit D10).

1.2.2 ABRIDGED CONTENT OF A BIOREGIONAL SDF

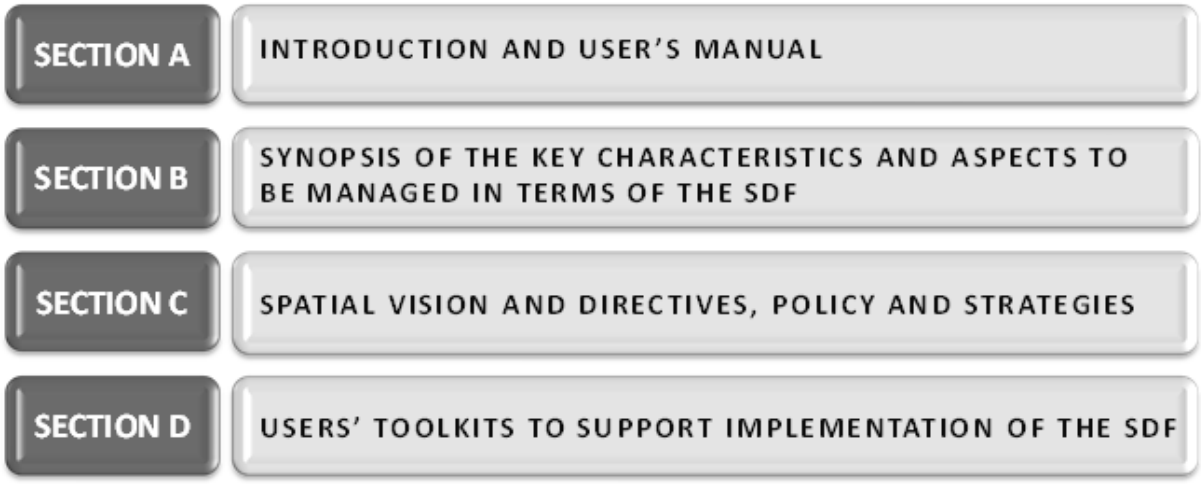


Figure 2: Typical structure of a bioregional SDF.

Together with the functions stipulated in the above statutes and guidelines, SDFs prepared for the district and local municipalities of the Northern Cape are to address the following:

a) The availability and extent of vacant land that could be utilized to address the various needs of the relevant settlement and its inhabitants.
b) Environmental constraints that impact upon the future use of any such vacant land.
c) Potential opportunities on vacant land for development or any other appropriate forms of land-use that address the various needs of the relevant settlement and its inhabitants.
d) Appropriate land-use classification of the relevant settlement with the objective to ensure the sustainability of such land-uses and the compliance thereof with the vision, goals, and objectives set for the area.
e) Spatial structuring elements to be imposed to ensure that any future urban renewal and restructuring, development projects, and associated land-uses to be undertaken in the relevant settlement comply with the criteria and principles of 'good place-making'. These spatial structuring elements include (refer to Toolkit D13):
    (i) Appropriate outer limits for outward spread of the relevant town under the present growth rate and in terms of the current and predicted availability of resources.
    (ii) Activity corridors that abut primary transport routes and provide opportunities for mixed-use development.
    (iii) Activity streets that provide viable opportunities for local business and community facilities.
    (v) Nodes that occur at intersections of activity corridors and streets which are designated for concentrations of a particular use.
    (vi) Precincts, or special use areas, dominated by primary community-based activities and land-uses that influence settlement pattern and growth.
    (vii) A Municipal Open Space System (MOSS) which consists of a contiguous network of natural corridors and public open spaces focused on promotion of the well-being of the people of the area and the integrity of the environment as a totality.

1.3 TOOLKIT D3 OPERATING THE SPYSIS

TOOLKIT SYNOPSIS

As stated in Chapter 6, a key dimension of land-use management as contemplated by the PSDF and the associated 'package' of municipal SDFs and other land-use policy is a comprehensive *Spatial Planning Information System* (SPYSIS). The purpose of such a system is to facilitate land-use planning and governance throughout the province in terms of standard formats and procedures.

The Northern Cape SPYSIS is an information system comprising an integrated set of components for collecting, storing and processing data and for delivering information, knowledge and digital products. It combines hardware, software, infrastructure and trained personnel organised to facilitate effective land-use planning throughout the province though the implementation of the SPCs and Sub-Categories. It provides for the standardisation of spatial data in a coherent manner to promote the utilisation of spatial information for all applicable end-users. The implementation of GIS software will ensure geo-referencing, standardisation, and coordination of spatial data in digital format.

The SPYSIS is to be used by all concerned, including all spheres of government, planners, developers, sectoral institutions, and the broad Northern Cape community. Prospective users are to register at spisys.co.za

1.3.1 KEY ASPECTS OF THE SPYSIS

A key dimension of land-use management as contemplated by the PSDF and the associated 'package' of municipal SDFs and other land-use policies is a comprehensive Spatial Planning Information System (SPYSIS). The purpose of such system is to facilitate land-use management, integrated planning and governance throughout the province in terms of standard formats and procedures adopted by the Northern Cape sectoral departments. These standards and norms provide structure to spatial planning and will ensure that municipalities have direct control in terms of land-use management in space.

The Northern Cape SPYSIS is an information system comprising an integrated set of components for collecting, storing, disseminating and processing of data made available by the relevant sectoral departments. The main function of the system is to deliver information, knowledge and automating certain processes to assist municipalities and government to spend more time on service delivery with the use of the latest up-to-date information to ensure proper and effective decision making. It combines hardware, software, infrastructure and trained personnel organised to facilitate effective land-use planning throughout the province though the implementation of the SPCs and Sub-Categories (refer to Chapter 6 and Toolkit D1). It provides for the standardisation of spatial data in a coherent manner to promote the utilisation of spatial information for all applicable end-users in the environment of spatial planning and land-use management. The implementation of SPYSIS will ensure geo-referenced data, standardization of data, and integration of spatial data in an electronic format.

1.3.2 OBJECTIVES

The primary objective of SPYSIS is therefore to store and broadcast current spatial planning data for the province. This will include the planning review process which is essentially checking alignment between local plans and the provincial plan.

The secondary objective will be to monitor progress against that plan by tracking actual projects as they happen. Moreover, the ultimate goal will be not only to track projects (reactively) as they happen but to influence projects (proactively) before they start. To achieve this, the SPISYS must fulfil the following functions:

a) Facilitate real-time information sharing, interface with the various existing data bases and manage synchronized planning between the different line functions and sector departments.
b) Be expandable to also involve and capacitate municipalities. This is a critical requirement for the Municipal Turn-around Strategy and other local government support programs.
c) Sectoral departments and municipalities must be capacitated to manage the common data sets (e.g. uploading, broadcasting, change management and quality control) to ensure that these are used across all sector planning processes.
d) Provide suitable administrative and management functionality to record and respect individual roles and responsibilities of sector departments, warrant data ownership and custodianship for individual data sets, remove unnecessary data duplications and facilitate real-time sharing of common information within a secure environment.
e) Help to align sector planning processes and base information.
f) Record agreements and implementation of roles and responsibilities.
g) Facilitate data flow and information sharing.
h) Support monitoring the implementation of plans by tracking project status.
i) Enable strategic reporting for joint decision-making.
j) Align integrated planning throughout the province through the SDFs, IDPs and spatial budgeting.
k) Provide a basis for coherent performance auditing (refer to the Implementation Framework of the PSDF).

1.3.3 BASIC SYSTEM FUNCTIONALITY

1.3.3.1 SIGNING IN ON SPYSIS

Access to SPYSIS can be through either the 'Public View' or the 'Government View' options, the 'Public View' can be accessed through the registration process indicated in the illustrations below. Access to the 'Government View' would however be restricted to government users only and through following the formal training process. Users utilizing the PSDF to fulfil their task would need to undergo formal training prior to accessing the system with a username and password. The registration and use of the system would be fully covered by the training process. To access to basic planning functions of the system, please visit spisys.co.za, further illustrations follow.

Figure 2-1: Spisys landing page with links to different planning tools, specific reference is made towards the PGDP and PSDF tool.

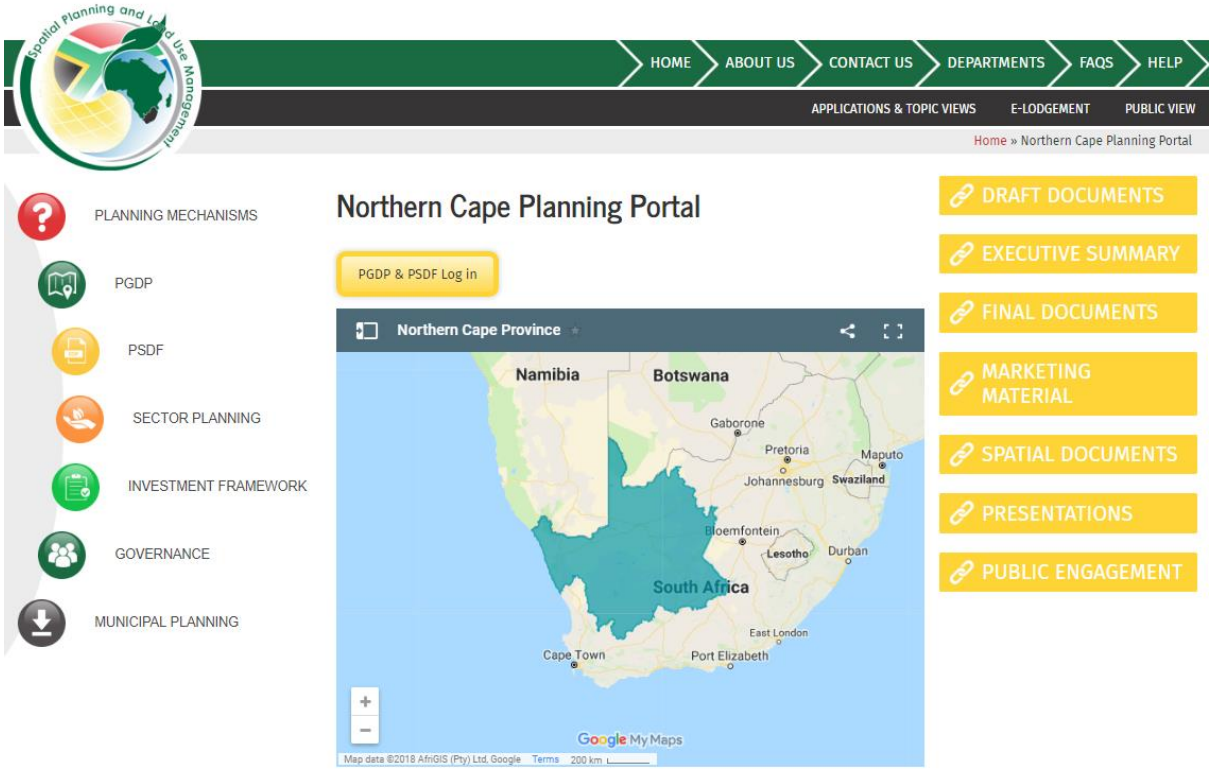


Figure 2-2: Illustration of the PSDF and PGDP Planning Portal of which further actions are self-explanatory.

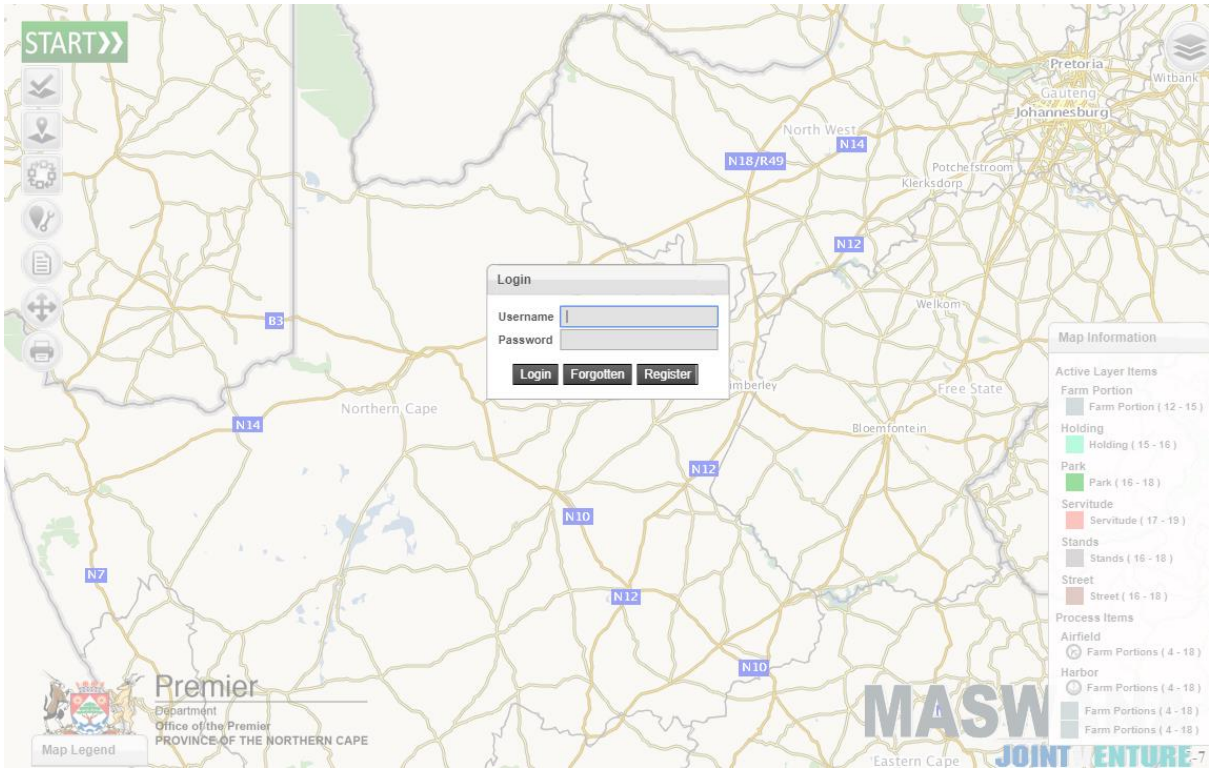


Figure 2-3: System access requires user registration as indicated

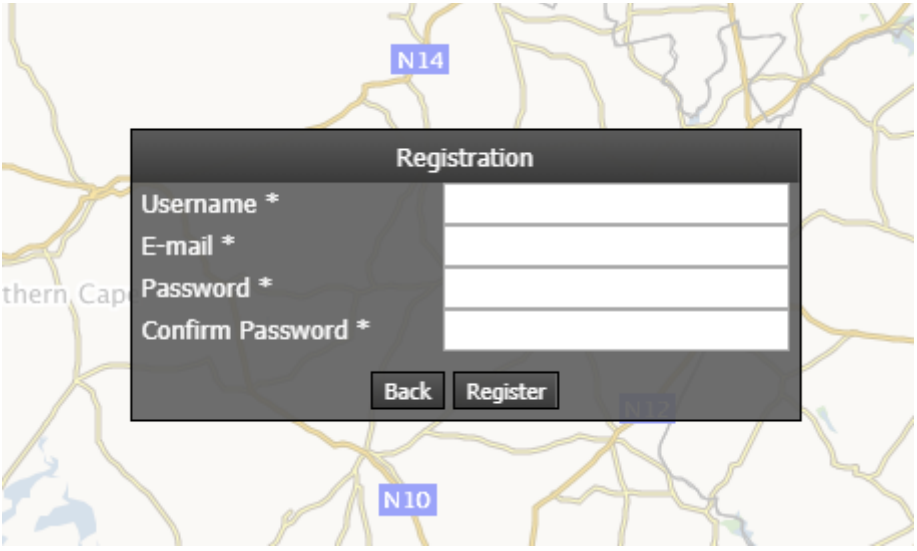


Figure 2-4: User details required for registration

Once registered a link to confirm the user email account would be sent. Once received the user needs to verify via the link provided. Once verified the user should be able to access to system.

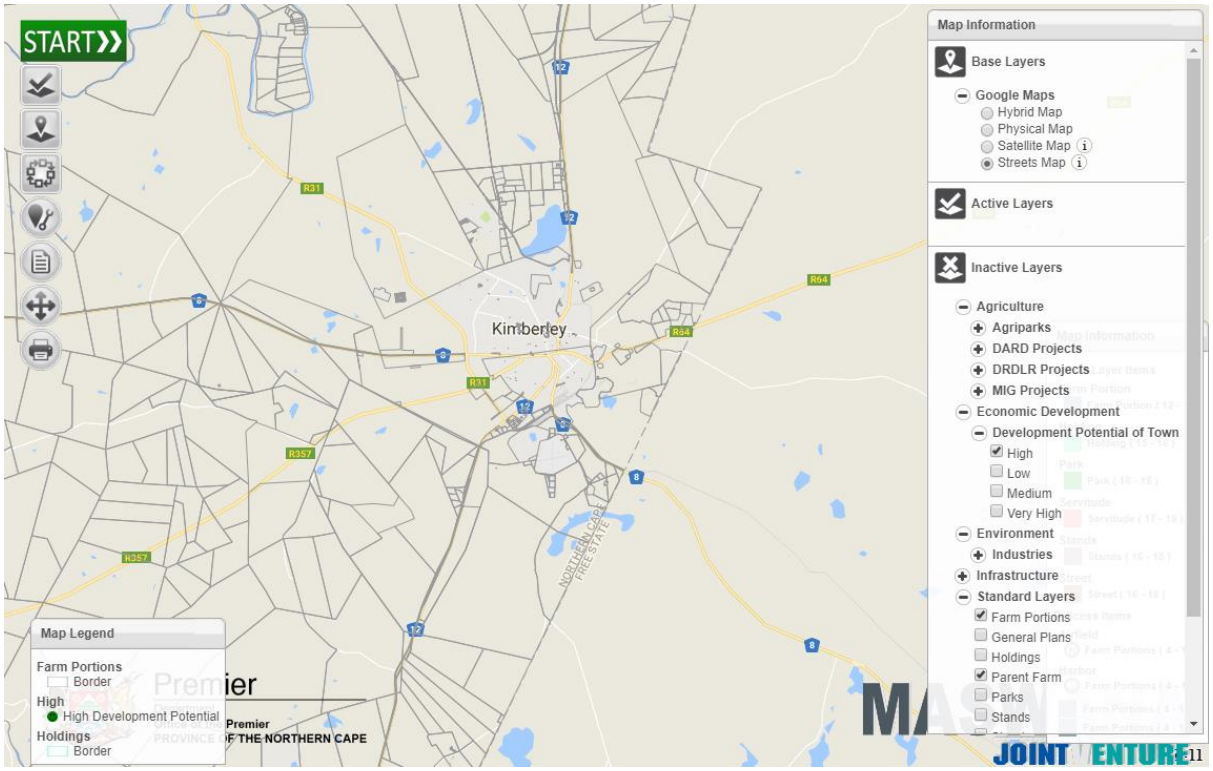


Figure 2-5: Illustration of the system interface.

All information and data used for the compilation of the PSDF would be made available in this environment. Information included:

- Composite Provincial Spatial Development Framework
- Visual assessment of the PGDP drivers and respective paths
- All Northern Cape Cadastral data
- Sector Projects data
- Environmental Data
- Infrastructure Data
- Socio-Economic Data

Other information to support the GIS based interface includes:

- Arial Imagery
- Topographical Imagery
- Street maps
- Hybrid Maps

1.3.3.2 LAND-USE

Internet technology is used via a 'Cloud System' to integrate the information available in the province. The system is accessed via the Internet with a user name and password and no other software is required to access the SPYSIS environment. The system was developed for the following purposes:

a) To store, process and disseminate current spatial development planning information to all relevant stakeholders.
b) To support integrated planning and joint decision-making for efficient cooperative governance.
c) To support monitoring and evaluation of all projects in the province.

End-users of the SPYSIS include both specialized and public users. The requirements of public end-users (e.g. municipal officials and the public) that need limited functionality from the system (e.g. retrieval of documents, digital maps and data, etc.) are provided for via the dedicated web landing page (www.SPYSIS.co.za). The basic use of the SPYSIS technology is supported through training videos on the landing page that will take the user through a step-by-step process in understanding the basics of the system, making it easy for the user to understand and do self-training. The SPYSIS does not require specialist GIS skills and has been developed for first time GIS users and will also provide the GIS specialist with enough functionality to use the system for many specialist GIS functions. Public users only need Internet Access, preferably using Google Chrome for better and faster connectivity.

Normal users should have access to a SPYSIS Administrator for specialized queries, backup and feedback (such as reporting problems in the system), either by phone, by e-mail or in person. SPYSIS Administrators should be equipped with sufficient GIS tools, which should meet the needs of each user and should be customizable to meet their specific needs.

The SPYSIS must adhere to set standards. To enable the sharing of data and information between district and local municipalities and other users, standardization needs to take place in terms of the following:

(i) System structure and development.
(ii) Data structure and development (including metadata and data dictionaries, quality of data and control points).
(iii) Data format and naming conventions.
(iv) Colour codes for SPCs and Sub-categories.
(v) Regulations integrated with the information system.
(vi) Procedure for capturing, retrieving, displaying and reproducing data.
(vii) General management and operating procedures of the system.

1.3.3.3 GUIDELINES AND PROTOCOLS

The key guidelines and protocols are as follows:

a) System Structure: The system must be structured and designed to enable effective management.
b) Data structure: Data structure must be systematic according to the SPCs and combined into one spatial database by layers building onto each other. Data will be spatially orientated and not necessarily in project context. It is the task of end-users and SPYSIS Administrators to develop their own relevant project-based database. After completion of a project, it will be crucial to update the main database. This will be the task of the SPYSIS Administrators. In this regard, it will be important to have a data quality checkpoint. Data quality standards will, in due course, be developed by the Northern Cape Government.

c) Data and File Format: To ease the flow of information and data, especially in respect of the development and management of the system, compatible GIS software should be used. Data should be created, updated and managed taking into consideration standards such as the National Land Information System (NLIS).

d) Colour-Coding: SPCs and Sub-Categories must be colour-coded and numbered throughout the entire system in a standard manner. User rights must be set to ensure that unauthorized users do not alter colours or symbols on the database (refer to Table D1).

Table D1: Colour-coding of SPCs.

SPC	DESCRIPTION	COLOUR CODE
A	Core Area	Dark green
B	Buffer Area	Light green
C	Agricultural Area	Sand
D	Urban-related Area	Grey
E	Industrial Area	Purple
F	Surface Infrastructure	Black & white

e) Numbering: The numbering of individual entities is to be undertaken in accordance with the following procedure:

(i) Number of the district municipality.
(ii) Number of the local municipality.
(iii) A capital letter indicating the SPC.
(iv) A lower case letter indicating the Sub-category.
(v) A number identifying the specific place or feature.

Table D2: District numbers.

DISTRICT MUNICIPALITY	NUMBER
Namakwa	DC6
Pixley ka Seme	DC7
Frances Baard	DC9
ZF Mgcawu	DC8
John Taolo Gaetsewe	DC45

In terms of the above procedure an agricultural industry (E.a) in the ZF Mgcawu District Municipality (DC08) would, for example, be numbered as 08-E.a (plus the dedicated place or feature number). Such a numbering system will promote effective integrated record-keeping at all spheres of planning, from the local to the provincial sphere.

f) Access to and operation of the system: Levels of access should be controlled by user passwords and set by *specialised* end-users and *system developers*. The ultimate SPYSIS could incorporate regulations regarding zoning, building heights, placement of sewer pipes, etc. and procedures, in the form of customised on-screen tools.

1.4 TOOLKIT D4 APPLICABLE INTERNATIONAL PROTOCOLS, AGREEMENTS AND CONVENTIONS

TOOLKIT SYNOPSIS

The South African Government is a signatory to a number of international protocols, conventions and agreements pertaining to the above aspects. Consequently, all spheres of government (including the Northern Cape, and its district municipalities and local municipalities) are obliged to adopt and give effect to these protocols, conventions and agreements. The purpose of this toolkit is to list the relevant protocols, conventions and agreements.

As described in Chapter C3, all sectoral departments and functionaries, municipalities, economic sectors, and the private sector in general are to give effect to the said obligations through the preparation and implementation of SDFs and, in particular, through strategies that give practical effect to the objectives of the relevant protocols, conventions and agreements (refer, for example, to the SDI approach in Toolkit D10 and the SMA approach in Toolkit D11).

1.4.1 APPLICABLE INTERNATIONAL PROTOCOLS, AGREEMENTS AND CONVENTIONS

1.4.1.1 UNITED NATIONS CONFERENCE ON SUSTAINABLE DEVELOPMENT (RIO+20)

The United Nations Conference on Sustainable Development, commonly known as Rio+20, held in Rio de Janeiro, Brazil from 20-22 June 2012, marked the 20th anniversary of the 1992 UN Conference on Environment and Development (UNCED), also held in Rio de Janeiro, and the 10th anniversary of the 2002 UN World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa.

Rio+20 was intended as an opportunity to renew political commitments to promote sustainable development and to continue to adapt and formulate plans and strategies to address global challenges such as environmental degradation, poverty, climate change, food security, resource depletion and inequality. The conference focussed on 2 main themes namely:

- A green economy in context of sustainable development and poverty reduction.
- The institutional framework for sustainable development.

It also identified seven priority areas which needed urgent attention namely:

a) Energy.
b) Decent jobs.
c) Sustainable cities.
d) Food security and sustainable agriculture.
e) Water.
f) Oceans.
g) Disaster readiness.

The conference built upon the major agreements and strategies of the past and the preparations made in various platforms since the UNCED in 1992. Rio+20 concluded with the preparation of an outcome document entitled 'The future we want' through which the parties intend to continue the planning and implementation of sustainable development strategies in the future.

1.4.1.2 AGENDA 21

Agenda 21 is an international programme, adopted by more than 178 governments, to put sustainable development into practice around the world. It emerged from the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992. The South African Government and, subsequently, the Northern Cape and its municipalities are obliged to implement the Agenda 21 agreements, which reflect global consensus and political commitment on developmental and environmental cooperation. Underlying the UNCED agreements is the realisation that the international world cannot continue with present policies, which increase poverty, hunger, sickness and illiteracy and cause continuing deterioration of ecosystems on which life on earth depends. The government recognises Agenda 21 as the fundamental programme of action for achieving sustainable development. Agenda 21 provides a broad overview of issues pertaining to sustainable development, including statements on the basis for action, objectives, recommended activities and the means of implementation.

In the process of transforming the South African society, the South African Government stated as one of its priorities that the government *'must ensure that all South African citizens, present and future, have the right to a decent quality of life through the sustainable use of resources'*. It is also stated that *'environmental considerations must be built into every decision'* and that current legislation should be revised *'with a view to establishing an effective system of environmental management'* in South Africa. The underlying principle of sustainability is not only recognised as a priority by the South African Government, but also internationally by way of Agenda 21. Of particular relevance, are the following principles of Agenda 21:

a) Integrated approach to the planning and management of land resources: The broad objective of this programme is to facilitate the allocation of land-uses to the uses that provide the greatest sustainable benefits and to promote sustainable and integrated management of land resources. In so doing, environmental, social and economic issues should be taken into consideration. Protected areas, private property rights, the rights of indigenous people and their communities as well as other local communities should be taken into account.

b) Promoting sustainable human settlement development: It is estimated that about half of the world's population is living in cities. The urbanisation of society is part of the development process and on a global scale cities generate 60 % of Gross National Product. In industrialised countries, the consumption patterns of cities are severely stressing the global ecosystem, while settlements in the developing world need more raw material, energy, and economic development simply to overcome basic economic and social problems. This implies, *inter alia*, the following:
   (i) Providing adequate shelter for all, especially for rapidly growing populations.
   (ii) Improving human settlement management to ensure sustainability of all urban settlements.
   (iii) Promoting sustainable land-use through environmentally sound planning and management.
   (iv) Promoting the integrated provision of services, such as water, sewage, stormwater and solid waste management.

c) Integrating environment and development in decision-making: Countries can no longer afford to make decisions concerning developmental issues, without taking the environment into account. Changes are needed in the institutional structures of government to enable more systemic consideration of the environment when decisions are made on, amongst others, land-use, conservation, economic, social, agriculture, transportation and other policies. Governments should also strengthen national institutional capacity and capability to integrate social, economic and environmental issues at all levels of developmental decision-making and implementation. Attention should also be given to moving away from narrow sectoral

approaches and progressing towards full cross-sectoral co-ordination and co-operation. This implies the following:

(i) Integrating environment and development at the policy, planning and management levels, with the objective of improving, or restructuring, the decision-making process.

(ii) Providing an effective regulatory framework, with the main objective to promote the integration of environment and development policies through appropriate legal and regulatory policies, instruments and enforcement mechanisms at the national, provincial and local spheres.

(iii) Making effective use of economic instruments and other incentives, by:

- Incorporating environmental costs into the decisions of producers and consumers, and not to pass these costs onto society in general or to future generations.
- Moving towards integrating social and environmental costs into economic activities so that prices will appropriately reflect the relative scarcity and total value of resources (water and electricity as examples) and contribute to the prevention of environmental degradation.
- Including the use of market principles in providing economic instruments (e.g. the establishment of an environmental trust fund) and policies to pursue development.

d) Establishing systems for integrated environmental management and auditing: This principle includes the use of IEM procedures, which include the implementation of environmental management systems, monitoring and auditing in all development and conservation initiatives.

South Africa is one of the global partners of Agenda 21, which calls on governments to adopt national strategies for sustainable development. The responsibility for the implementation of the key objective of Agenda 21 (i.e. sustainable development) has been placed on municipalities and their constituent communities. The real roots of Agenda 21's success therefore lie at the micro, local level, all of which are addressed through the Local Agenda 21, which is described below.

The Local Agenda 21 was developed as a result of South Africa's obligation towards the international Agenda 21 agreement, and is defined as *a local-government-lead, community-wide, and participatory effort to establish a comprehensive action strategy for environmental protection, economic prosperity and community well-being in the local jurisdiction or area. This requires the integration of planning and actions across economic, social and environmental spheres. Key elements are community participation, assessment of current conditions, target setting for achieving specific goals, monitoring and reporting* (Department of Environmental Affairs and Tourism, 1998).

The PSDF gives practical effect to, *inter alia*, the following themes of the Local Agenda 21:

a) Sustainable use of resources.
b) Prevention of pollution.
c) Conservation of biodiversity.
d) Meeting the basic needs of local communities.
e) Provision of access to the skills, knowledge and information needed to enable people to play a meaningful role in society.
f) Provision of opportunities for culture, leisure and recreation to all.
g) Development of human settlements that have appropriate scale and form.
h) Establishment of appropriate links with other parts of the world.

The above themes are promoted by giving practical effect to the following six key elements of the Local Agenda 21 (DEA, 1998):

- Promoting the local authority's own environmental performance.
- Integrating sustainable development aims into the local authority's policies and activities.
- Promoting public awareness and education.
- Consulting and involving interested and affected parties.
- Establishing appropriate partnerships.
- Measuring, monitoring and reporting on progress towards sustainability.

1.4.1.3 UNITED NATIONS MILLENNIUM DEVELOPMENT GOALS

The Millennium Development Goals (MDGs) are eight international development goals that all 192 UN member states and at least 23 international organisations have agreed to achieve by the year 2015. The MDGs form part of the United Nations Declaration which was signed at the Millennium Summit held in New York in September 2000. The MDGs are the world's time-bound and quantified targets for addressing extreme poverty in its many dimensions – income, poverty, hunger, disease, lack of adequate shelter, and exclusion – while promoting gender equality, education and environmental sustainability. They are also basic human rights – the rights of each person on the planet to health, education, shelter and security as pledged in the Universal Declaration of Human Rights and the UN Millennium Declaration (UN Millennium Project, 2005).

1.4.1.4 UNESCO'S MAN AND THE BIOSPHERE (MAB) PROGRAMME

The MaB Programme is a global programme of international scientific, strategic planning and co-operation dealing with people-environment interactions over the entire realm of bioclimatic and geographic situations of the biosphere.

The World Network of Biosphere Reserves (the Network) provides the platform for implementing the MaB Programme and for creating partnerships for knowledge-sharing, research and monitoring, education and training, and participatory decision-making. Biosphere reserves are defined as '*areas of terrestrial and coastal/marine ecosystems or a combination thereof, which are internationally recognised within the framework of UNESCO's MaB Programme.'*

Each biosphere reserve is intended to fulfil three basic functions, which are complementary and mutually reinforcing, namely:

a) Conservation function - to contribute to the conservation of landscapes, ecosystems, species and genetic variation;
b) Development function - to foster economic and human development which is socio-culturally and ecologically sustainable;
c) Logistical support function - to provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development.

In summary, biosphere reserves aim to provide the ecological and social framework within which government, community, corporate and other private interests, share responsibility for co-ordinating land-use planning, for both public and private land and for dealing with and implementing development options that would ensure that human needs are met in a sustainable way (WRI, *et al,* 1992).

1.4.1.5 UNESCO'S WORLD HERITAGE CONVENTION

The World Heritage Convention aims to promote co-operation among nations to protect all forms of natural and cultural heritage that are of such outstanding universal value that their conservation is of concern to all people. The Convention provides for World Heritage Sites to be nominated and listed in accordance with *UNESCO's Intergovernmental Committee's Operational Guidelines*. The World Heritage Convention Act 49 of 1999 regulates the enforcement and implementation of the World Heritage Convention in South Africa. In the preamble of this Act, it is stated that both the cultural and natural heritage are among the priceless and irreplaceable possessions, not only for South Africa, but for humankind as a whole.

The Northern Cape incorporates the *Richtersveld Botanical and Landscape World Heritage Site* which has been inscribed as an UNESCO World Heritage Site under the World Heritage Convention. The World Heritage Site sits in the heart of what is called the Succulent Karoo Biodiversity Hotspot[1] - an ecosystem with approximately 4 850 succulent plants, 40% to 60% of which are endemic to the area.

It is generally recognised that World Heritage Sites can benefit from a robust holistic land-use management framework such as a biosphere reserve. A biosphere reserve in the Richtersveld region could contribute towards more efficient management of the *Richtersveld Botanical and Landscape World Heritage Site.*

1.4.1.6 CONVENTION ON BIOLOGICAL DIVERSITY

The Convention on Biological Diversity is a comprehensive, binding agreement covering the use and conservation of biodiversity. It requires countries to develop and implement strategies for sustainable use and the protection of biodiversity, and provides a forum for continuing international dialogue on biodiversity-related issues through the annual conferences of the parties. The Convention recognized for the first time in international law that the conservation of biological diversity is *'a common concern of humankind*' and is an integral part of the development process. The agreement covers all ecosystems, species, and genetic resources. It links traditional conservation efforts to the economic goal of using biological resources sustainably. It sets principles for the fair and equitable sharing of the benefits arising from the use of genetic resources, notably those destined for commercial use.

The PSDF recognises that biodiversity conservation is a prerequisite for sustainable development, and that for biodiversity conservation to succeed, the maintenance of environmental integrity (as defined by ecological, economic and social criteria) must be one of the primary determinants of land-use planning. The PSDF therefore promotes the objectives of the Convention with specific reference to the following:

a) Conservation of biodiversity (refer *inter alia* to the rehabilitation and conservation of all wetlands and remnants).
b) Rehabilitation of existing eco-corridors and creating linkages where required.
c) Introduction of elements of biodiversity through the landscaping of the designated agricultural area and the development sites.

[1] The Succulent Karoo of South Africa and Namibia boasts the richest succulent flora on earth. Reptiles also show relatively high spheres of endemism in the region. It is also one of only two arid ecosystems to earn hotspot status – the other is the Horn of Africa Biodiversity Hotspot.

1.4.1.7 UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

The United Nations Framework Convention on Climate Change is universally recognised to be the appropriate global forum to tackle the problem of climate change. Founded at the Rio Earth Summit in 1992 with 192 members, its ultimate objective is to stabilise greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system. Under the Convention, governments are mandated to:

(a) Gather and share information on greenhouse gas emissions, national policies and best practices.
(b) Launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries.
(c) Co-operate in preparing for adaptation to the impacts of climate change.

1.4.1.8 KYOTO PROTOCOL ON CLIMATE CHANGE

South Africa is a signatory to the Kyoto Protocol which is a protocol of the *United Nations Framework Convention on Climate Change* aimed at fighting global warming. The Kyoto Protocol is an international environmental treaty which aims to achieve *stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climatic system.* The target agreed upon was an average reduction of 5.4% from 1990 levels by the year 2012.

One of the Kyoto Protocol's market-based mechanisms is the *Clean Development Mechanism* (CDM). Under the CDM, projects that reduce greenhouse gas emissions in developing countries and contribute to sustainable development can earn certified emission reduction (CER) credits. Countries with a commitment under the Kyoto Protocol buy CERs to cover a portion of their emission reduction commitments under the treaty. In other words, the CDM allows industrialised countries with emission-reduction commitments to meet parts of their commitments by investing in projects (i.e. offsets) in developing countries that reduce greenhouse-gas emissions while contributing to the local sustainable development needs of the host country. To allow CDM projects to occur, host countries need to designate national authorities to evaluate and approve the operation of CDM projects in their country. There are currently more than 840 registered CDM projects in 49 countries, and about another 1 800 projects in the project registration pipeline.

In terms of the National Environmental Management Act 107 of 1998, a Designated National Authority (DNA) was gazetted on 24 December 2004 by the Minister of the Department of Environmental Affairs and Tourism. The DNA was established within the Department of Minerals and Energy and provides the DNA with its legal mandate to oversee the Clean Development Mechanism in South Africa.

According to the UNIDO (2003) report *Clean Development Mechanism Investor Guide: South Africa,* the CDM has great potential in South Africa as the country ranks as a foremost emitter of greenhouse gases. The CDM may also play an important role in bolstering the development path which South Africa has set for itself. A large potential for CDM projects does exist in the energy sector in the areas of fuel substitution and energy efficient, as South Africa is heavily dependent on coal-based energy. Furthermore, a large potential for CDM projects does exist in the industrial sector in the country. Possible CDM projects in the Northern Cape could include solar and wind energy farms, biodiesel production initiatives, new building thermal designs, affordable low cost housing with solar heaters, etc.

1.4.1.9 UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION

This Convention is the only convention stemming from a direct recommendation of the Agenda 21. It was adopted in Paris on 17 June 1994 and entered into force in December 1996. It is the first legally-binding international framework set up to address the problem of desertification. The Convention is based on the principles of participation, partnership and decentralisation – the backbone of good governance and sustainable development. It now has 192 country parties to the Convention, making it truly global in reach. It addresses land degradation in arid, semi-arid and dry sub-humid areas of the world.

1.4.1.10 NEW PARTNERSHIP FOR AFRICA'S DEVELOPMENT (NEPAD)

NEPAD is a vision for Africa that aims to tackle issues such as peace and security, good economic, political and corporate governance, and to make the continent an attractive destination for foreign investment. Furthermore, NEPAD revolves around African ownership and management. Through this programme, African leaders are setting an agenda for the renewal of the continent. The agenda is based on national and regional priorities and development plans that must be prepared through participatory processes involving the people. It is based on the agenda set by African peoples through their own initiatives and of their own volition, to shape their own destiny.

1.4.1.11 RAMSAR CONVENTION

The Convention on Wetlands of International Importance (or commonly known as the Ramsar Convention) is an international treaty signed on 2 February 1971, in the Iranian city of Ramsar. The mission of the Ramsar Convention is the conservation and sustainable use of wetlands by national and international co-operation as a means of achieving sustainable development throughout the world. The Ramsar Convention is the only global environmental treaty that brings nations together in the conservation of a particular ecosystem type, namely, wetlands. Being an instrument for the protection of wetlands it has certain legal bindings that contracting parties have to consider upon accession. One of the commitments is the requirement to designate at least one wetland site of international importance upon accession and also make the effort to maintain the ecological integrity of that wetland.

According to Cowan (1995), the broad objectives of the Convention are to:

a) Stem the loss of wetlands.
b) Promote wise use of all wetlands.
c) Promote special protection of listed wetlands.
d) Promote the training of personnel.
e) Promote the implementation of parties' obligations under the Convention.

The benefits vested in being a member[2] to the Ramsar Convention includes:

(i) An endorsement of the principles that the Convention represents, facilitating the development at national level of policies and actions, including legislation, that helps nations to make the best possible use of their wetland resources in their quest for sustainable development.
(ii) Presenting an opportunity for a country to make its voice heard in the principal inter-governmental forum on the conservation and wise use of wetlands.

[2] South Africa took a leading role in the development of the Ramsar Convention. It became the fifth Contracting Party to the Convention on 12 March 1975.

(iii) Bringing increased publicity and prestige for the wetlands designated for the List of Wetlands of International Importance, and hence increased possibility of support for conservation and wise-use measures.

(iv) Bringing access to the latest information and advice on application of the Convention's internationally-accepted standards, such as criteria for identifying wetlands of international importance, guidelines on application of the wise-use concept, and guidelines on management planning in wetlands.

(v) Bringing access to expert advice on national and site-related problems of wetland conservation and management through contacts with Ramsar Bureau personnel and consultants, and through application of the Management Guidance Procedure when appropriate.

(vi) Encouraging international co-operation on wetland issues and bringing the possibility of support for wetland projects, either through the Convention's own Small Grants Fund or through the Convention's contacts with multilateral and bilateral external support agencies.

1.4.1.12 ORANGE-SENQU RIVER COMMISSION

The Orange-Senqu River Commission (ORASECOM) agreement was signed on 3 November 2000 between Lesotho, South Africa, Botswana and Namibia. ORASECOM promotes the equitable and sustainable development of the resources of the Orange River Basin. It provides a forum for consultation and coordination between the riparian states to promote integrated water resources management and development within the River Basin.

Several regional and basin-level agreements are important to the founding and the operation of ORASECOM, namely:

a) Agreement for the Establishment of the Orange-Senqu Commission, 3 November 2000 in Windhoek, Namibia. ORASECOM is the first commission to be established following the regional ratification of the Southern African Development Community (SADC) Protocol on Shared Water Course Systems. The Agreement refers to, and recognise the following:
   - *Helsinki Rules on the Uses of the Waters of International Rivers (August, 1966):* It is an international guideline regulating how rivers and their groundwaters that cross national boundaries may be used.
   - *SADC Revised Protocol*: SADC is an international organisation that has been in existence since 1980 and currently comprises 15 member states.
   - *UN Convention on Non-Navigational Uses of International Watercourses (1997).*

b) SADC Protocol on Shared Watercourse Systems (2000): The revised SADC Protocol on Shared Watercourse Systems (2000) was originally developed by SADC in 1995 as part of the implementation process of the SADC Treaty. The SADC Protocol on Shared Watercourse Systems was signed in 2000 and came into force in 2003. It promotes the establishment of shared watercourse agreements and institutions and enshrines the principles of reasonable use and environmentally sound development of the resource. Furthermore, the SADC Protocol supports strengthening the principles of integrated management of shared basins with specific provisions for equitable utilisation, planned measures, no significant harm, and emergency situations.

c) UN Convention on the Law of the Non-Navigational Uses of International Watercourses (Watercourses Convention), 1997: This convention provides a framework and principles to guide basin level agreements. This Convention is intended to be an umbrella agreement to support and sustain basin-wide cooperation. Within the Orange-Senqu River Basin, South Africa and Namibia have both ratified this agreement. The Watercourses Convention stresses principles of universal participation, cooperative governance, equity, peaceful dispute resolution, communication and environmental protection. Furthermore, its supports the Millennium Development Goal 7, Target 7, on sustainable access to safe drinking water and basic sanitation.

1.5 TOOLKIT D5 GUIDELINES FOR A CLIMATE-NEUTRALITY STRATEGY

TOOLKIT SYNOPSIS

Climate change is the defining issue of our era, with sufficient scientific evidence that climate change is upon us and that it is here to stay. However, there is also evidence that it is still in our power – as individuals, businesses, cities and governments – to influence the ultimate significance of the phenomenon.

We have the choice on how to act and we can all make a difference by supporting the transition to a climate-neutral world. There is however a huge gulf between where we currently are and the extent of climate-neutrality we need to achieve in order to promote long-term sustainability. What is required is a reasonably simplistic and cost-effective approach to proceed from a vision to an implementable and sustainable climate-neutrality strategy.

This toolkit provides guidelines for the preparation of a climate-neutrality strategy that would, in combination with the SDI approach in Toolkit D10 or any comparable approach, enhance environmental sustainability and generally '*improve the state of*' as contemplated by the PSDF. The preparation of a provincial climate-neutrality strategy is the responsibility of the Department of Finance, Economic Development and Tourism, the district and local municipalities, and the industrialists, in particular.

1.5.1 METHODOLOGY FOR DEVELOPING A CLIMATE-NEUTRALITY STRATEGY

A climate-neutrality strategy constitutes the following integrated phases (refer to Figure D3 below):

1.5.1.1 PHASE 1: CLIMATE-NEUTRAL POLICY FRAMEWORK

This phase constitutes the formulation of a mission statement for the subject incorporating key climate-neutral objectives. The mission statement needs to take cognizance of the applicable legislation, policy and guidelines at all levels of planning (i.e. from the international to the local level).

The mission statement incorporates consideration of:

a) Sustainability – with special reference to the objectives of sustainable development projects to be implemented.

b) Mitigation and adaptation – this presents a very important area of consideration presented by the Adaptation Policy Frameworks (APF) for Climate Change, developed by the United Nations Development Programme (UNDP) on behalf of the Global Environment Facility (GEF).

c) International knowledge base – represented by a range of international organizations, from where the frameworks summarized in Phase 2 are derived. The international organizations and protocols considered in this regard include:

- Agenda 21.
- World Symposium on Sustainable Development.
- Millennium Development Goals.
- African Development Bank Extensions.
- Millennium Ecosystem Assessment.
- Organisation for Economic Cooperation and Development.
- Intergovernmental Panel on Climate Change.

The above aspects contribute towards a generic climate-neutral policy framework, from which to proceed through Phases 2 and 3 towards delivery of an efficient climate-neutrality strategy.

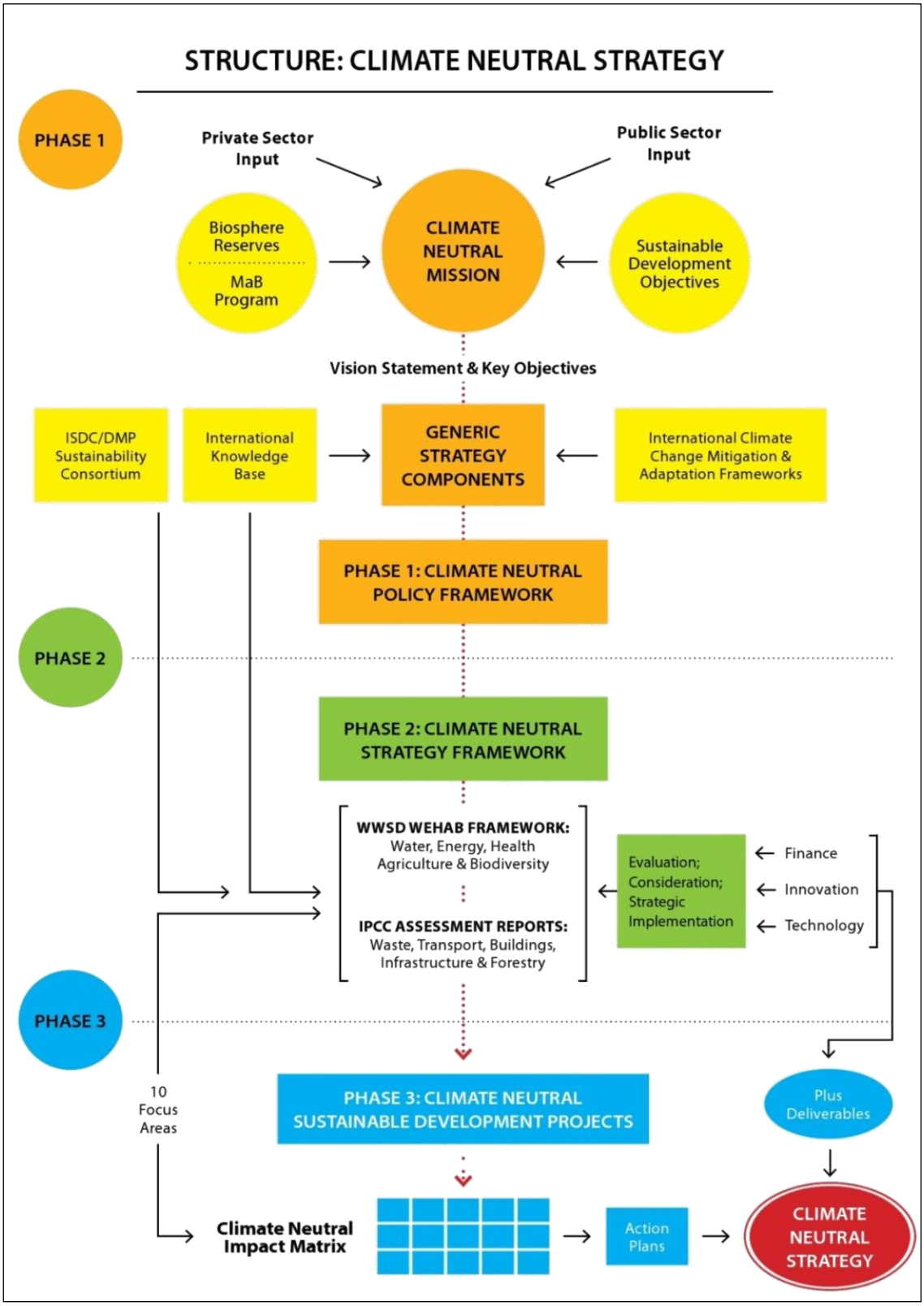


Figure D3: Climate Neutral Strategy (Source: ISDC London and DMP).

1.5.1.2 PHASE 2: CLIMATE-NEUTRALITY STRATEGY FRAMEWORK

In this phase a climate-neutrality strategy framework is formulated by integrating the objectives of the sustainable development project portfolio with the key climate-neutrality strategy focus areas. A climate-neutral action matrix is utilized to achieve the required integration. The latter is introduced under Phase 3.

In order to establish the strategy framework, the climate-neutrality strategy focus areas (drivers) need to be identified first. A number of frameworks, derived from the international knowledge base, provide the extensively tested focus areas (drivers) required to develop the necessary guidelines for arriving at a suitable climate-neutrality strategy.

The five key focus areas are water, energy, health, agriculture and biodiversity, which are also referred to as 'WEHAB'. The latter was the focal point of an announcement by the UN Secretary-General ahead of the World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002. A further five additional focus areas have since been suggested, namely waste, transport, buildings, infrastructure and forestry.

As a next step in this phase, a set of sustainable development guidelines directed by defined implementation programmes are established for each focus area. Simultaneously, an evaluation process is introduced, in which *Finance, Innovation* and *Technology* (FIT) considerations are evaluated and considered for introduction into the strategic development process.

This is of specific importance with regard to the creation of suitable economic drivers, required for the successful integration of a project's sustainable development guidelines and the subsequent implementation as a climate-neutrality strategy. Furthermore, economic drivers (agriculture, solar plants, bio fuels, property development etc.) are created in order to generate the required cash flow from which to effectively finance the strategy.

1.5.1.3 PHASE 3: CLIMATE-NEUTRAL SUSTAINABLE DEVELOPMENT PROJECTS

The completion of a Climate-Neutral Impact Matrix© is the final phase of the development of a climate-neutrality strategy. This phase constitutes a process in which the selected focus areas, each with their accompanying guidelines, are integrated, effectively delivering a range of implementable action plans. In order to generate the required cash flow from which to effectively finance a fully implementable climate-neutrality strategy, it is essential that the action plans are combined with suitable economic drivers.

In order to achieve this objective, finance, innovation and technology considerations are evaluated and considered and are introduced appropriately into the strategy development process.

1.5.2 CLIMATE CHANGE ADAPTATION

Many towns and cities are extremely vulnerable to climate change impacts, especially in areas where land degradation is evident such as in the John Taolo Gaetsewe District. Temperature increases, and weather variability threaten to directly or indirectly disrupt systems critical to the survival of towns in the province. The sub-region is warming, and increased droughts are possible in the future. Heat island effects and changing disease patterns are key challenges for inland urban areas. Unguided urbanisation, degradation of freshwater resources, lowered levels of food security and failure of

climate change adaptation strategies are among the most significant global environmental risks in African cities.

The challenge for urban areas to respond to the impacts of climate change is particularly serious, due to the often-precarious nature of living conditions and livelihoods that many face. For those living just outside of poverty, but still with very low incomes very slight external changes can prompt a shift to poverty. These may include social, economic, political or environmental changes such as droughts, increasing food or fuel prices or damage to property due to unexpected events. Many poor residents live in informal settlements, informal backyard dwellings or informally occupied buildings, sometimes referred to as 'bad buildings'. Informal living environments are at times located in high-risk locations (such as flood plains) and often with minimal bulk and public services, such as waste collection and management, public transport, access to potable water, sanitation, and health facilities.

As such, it is clear that certain portions of the population are more at risk to the seemingly slight and gradual changes that climate change poses.

Policy and action on climate change in South Africa and the Northern Cape is changing. The rising local awareness of climate change and increasing impacts on the poor and the rich alike, are beginning to create a political opportunity for making climate change a central development issue, linked to patterns of consumption, employment and public services. This, in turn, creates the potential for mainstreaming climate adaptation into the core mandate, planning and budget allocations of Municipalities. The South African Government's National Climate Change Response (NCCR) White Paper was developed in 2011 and focuses on three key aspects:

- Adaptation;
- Mitigation; and
- Mainstreaming sustainable and 'climate- resilient' development.

The NCCR White Paper requires all government departments and state-owned enterprises to achieve "full alignment with the national climate change response" by way of reviewing their legislation, policies, strategies, governance structures and plans. The push for resilience in all planning is a major policy objective for the Northern Cape Province. Climate change is a significant threat to a sustainable future in the short, medium and long term.

In the context of the significant role urban form plays in carbon emissions, the SDF must:

- Build resilience within communities;
- promote a compact carbon efficient urban form; and
- preserve the
- natural environment that provides irreplaceable ecosystem services for the Province's towns and settlements.

1.6 TOOLKIT D6 SEVILLE STRATEGY FOR BIOSPHERE RESERVES

TOOLKIT SYNOPSIS

As stated in Chapter C3, the bioregional planning approach that has been adopted for the Northern Cape through the PSDF implies that the entire province will be governed in accordance with biosphere reserve principles. However, in order to align the Northern Cape with international protocols and, in particular, to give effect to UNESCO's MaB Programme in defined areas of global interest it is proposed that the Northern Cape facilitate the planning and establishment and apply to UNESCO for the listing of Transfrontier biosphere reserves.

This toolkit summarises the procedures and criteria for the required planning and application processes as stipulated in UNESCO's *Seville Strategy on Biosphere Reserves*. For reference and clarification purposes the key aspects of the strategy are also cited.

1.6.1 VISION FOR BIOSPHERE RESERVES IN THE 21ST CENTURY

The international Seville Conference on Biosphere Reserves, organised by UNESCO, adopted a two-pronged approach, namely:

a) To examine past experience in implementing the innovative concept of the biosphere reserve; and
b) To look to the future to identify what emphasis should now be given to their three functions of conservation, development and logistical support.

The Seville Conference concluded that, in spite of the problems and limitations encountered with the establishment of biosphere reserves, the programme, as a whole, had been innovative and had much success. In particular, the three basic functions would be as valid as ever in the coming years.

1.6.2 FOUNDATIONS OF THE NEW SEVILLE STRATEGY

The Seville Conference identified the following key directions, which are basically the foundations of the new Seville Strategy:

a) Strengthen the contribution that biosphere reserves make to the implementation of international agreements promoting conservation and sustainable development, especially to the Convention on Biological Diversity and other agreements, such as those on climate change, desertification and forests.
b) Develop biosphere reserves that include a wide variety of environmental, biological, economic and cultural situations, going from largely undisturbed regions and spreading towards cities. There is a particular need and potential to apply the biosphere reserve concept in the coastal and marine environment.
c) Strengthen the emerging regional, inter-regional and thematic networks of biosphere reserves as components within the Network.
d) Reinforce scientific research, monitoring, training and education in biosphere reserves, since conservation and the rational use of resources in these areas require a sound base in the natural and social sciences, as well as the humanities. This need is particularly acute in countries where biosphere reserves lack human and financial resources, and should receive priority attention.
e) Ensure that all zones of biosphere reserves contribute appropriately to conservation, sustainable development and scientific understanding.

f) Extend the transition zone to embrace large areas suitable for appropriate ecosystem management, in order to explore and demonstrate approaches to sustainable development at the regional scale. Appropriate attention should, therefore, be given to the transition area.
g) Reflect more fully the human dimensions of biosphere reserves. Connections should be made between cultural and biological diversity. Traditional knowledge and genetic resources should be conserved, and their role in sustainable development should be recognised and encouraged.
h) Promote the management of each biosphere reserve essentially as a 'pact' between the local community and society as a whole. Management should be open, evolving and adaptive. Such an approach will help ensure that biosphere reserves - and their local communities - are better placed to respond to external political, economic and social pressures.
i) Bring together all interested groups and sectors in a partnership approach to biosphere reserves, both at site and network levels. Information should flow freely among all concerned.
j) Invest in the future. Biosphere reserves should be used to further our understanding of humanity's relationship with the natural world, through programmes of public awareness, information, formal and informal education, based on long-term, inter-generation perspectives.
k) In summary, biosphere reserves should preserve and generate natural and cultural values, through management that is scientifically correct, culturally creative and operationally sustainable. The World Network of Biosphere Reserves, as implemented through the Seville Strategy, is thus an integrating tool, which can help to create greater solidarity among peoples and nations of the world.

1.6.3 THE SEVILLE STRATEGY

The Seville Strategy provides recommendations for developing effective biosphere reserves and for setting out the conditions for the appropriate functioning of the Network. It does not repeat the general principles of the Convention on Biological Diversity, nor Agenda 21, but instead, identifies the specific role of biosphere reserves in developing a new vision of the relationship between conservation and development. Thus, the Seville Strategy is deliberately focused on priorities.

The Seville Strategy proposes different levels at which each recommendation will be most effective, namely the international, national and individual biosphere reserve level. However, given the large variety of different national and local management situations, these recommended levels of actions should be seen merely as guidelines and should be adapted to fit the situation at hand. Note, especially, that the 'national' level should be interpreted to include governmental spheres higher than the individual reserve (e.g. district, provincial, state, etc.). In some countries, national or local NGOs may also be appropriate substitutes for this level. Similarly, the 'international' level often includes regional and inter-regional activities.

The Seville Strategy also includes recommended 'implementation indicators', i.e. a check-list of actions that will enable all involved to follow and evaluate the implementation of the Strategy. Criteria used in developing the 'indicators' include the following:
a) Availability (can the information be gathered relatively easily?)
b) Simplicity (are the data unambiguous?)
c) Usefulness (will the information be useful to reserve managers, National Committees, and/or the Network at large?).

A primary role of the 'implementation indicators' is to assemble a database of successful implementation mechanisms and to exchange this information among all members of the Network.

1.6.3.1 GOALS AND OBJECTIVES

The primary goals and objectives of the Seville Strategy are summarised in the table below.

Table D3: Goals and objectives of the Seville Strategy.

Goal 1: Use biosphere reserves to conserve natural and cultural diversity.	
Supporting objective 1.1	Improve the coverage of natural and cultural biodiversity by means of the World Network of Biosphere Reserves.
Supporting objective 1.2	Integrate Biosphere Reserves into conservation planning.
Goal 2: Utilise biosphere reserves as models of land management and of approaches to sustainable development.	
Supporting objective 2.1	Secure the support and involvement of local people.
Supporting objective 2.2	Ensure better harmonisation and interaction among the different biosphere reserve zones.
Supporting objective 2.3	Integrate biosphere reserves into regional planning.
Goal 3: Use biosphere reserves for research, monitoring, education, and training.	
Supporting objective 3.1	Improve knowledge of the interactions between humans and the biosphere.
Supporting objective 3.2	Improve monitoring activities.
Supporting objective 3.3	Improve education, public awareness and involvement.
Supporting objective 3.4	Improve training for specialists and managers.
Goal 4: Implement the biosphere reserve concept.	
Supporting objective 4.1	Integrate the functions of biosphere reserves.
Supporting objective 4.2	Strengthen the World Biosphere Reserve Network.

1.6.4 STATUTORY FRAMEWORK OF THE WORLD NETWORK OF BIOSPHERE RESERVES

The present Statutory Framework of the World Network of Biosphere Reserves (1995) (the Statutory Framework) has been formulated with the objectives of enhancing the effectiveness of individual biosphere reserves and strengthening common understanding, communication and co-operation at regional and international spheres.

This Statutory Framework is intended to contribute to the widespread recognition of biosphere reserves and to encourage and promote good working examples. The 'delisting procedure', which is included in the Statutory Framework should be considered as an exception to this basically positive approach, and should be applied only after careful examination, paying due respect to the cultural and socio-economic situation of the country, and after consulting the government concerned.

The text provides for the designation, support and promotion of biosphere reserves, while taking account of the diversity of national and local situations. Countries are encouraged to elaborate and implement national criteria for biosphere reserves, which take into account the special conditions of the country concerned. The following articles are of particular significance:

1.6.4.1 ARTICLE 1: DEFINITION

As stated above, biosphere reserves are areas of terrestrial and coastal/marine ecosystems or a combination thereof, which are internationally recognised within the framework of UNESCO's MaB Programme, in accordance with the present Statutory Framework.

1.6.4.2 ARTICLE 2: WORLD NETWORK OF BIOSPHERE RESERVES

The Network constitutes a tool for the conservation of biological diversity and the sustainable use of its components, thus contributing to the objectives of the Convention on Biological Diversity and other pertinent conventions and instruments.

Individual biosphere reserves remain under the sovereign jurisdiction of the countries where they are situated. Under the present Statutory Framework, countries take the measures, which they deem necessary according to their national legislation.

1.6.4.3 ARTICLE 3: FUNCTIONS

In combining their three functions, biosphere reserves should strive to be sites of excellence to explore and demonstrate approaches to conservation and sustainable development on a regional scale. As stated above, biosphere reserves have the following three functions:

a) Conservation - contribute to the conservation of landscapes, ecosystems, species and genetic variation;
b) Development - foster economic and human development which is socio-culturally and ecologically sustainable;
c) Logistical support - support for demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global issues of conservation and sustainable development.

1.6.4.4 ARTICLE 4: CRITERIA

The general criteria for selecting a biosphere reserve include the following:

a) It should encompass a mosaic of ecological systems representative of major biogeographic regions, including a gradation of human interventions.
b) It should be of significance for biological diversity conservation.
c) It should provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale.
d) It should have an appropriate size to support the three functions of biosphere reserves, as set out in Article 3 above.
e) It should promote these functions, through appropriate zoning, recognising the following:
    (i) Legally constituted core areas, or areas devoted to long-term protection, according to the conservation objectives of the biosphere reserve, and of sufficient size to meet these objectives.
    (ii) Buffer zones clearly identified and surrounding, or contiguous to the core area, where only activities compatible with the conservation objectives can take place.
    (iii) Transition areas where sustainable resource management practices are promoted and developed.
f) Organizational arrangements should be made for the involvement and participation of a suitable range of, *inter alia*, public authorities, local communities and private interests, in the design and carrying out the functions of a biosphere reserve.
g) In addition, provisions should be made for:
    (i) Mechanisms to manage human use and activities in the buffer zone.
    (ii) A management policy and management plan for the area as a biosphere reserve.
    (iii) A designated authority or mechanism to implement this policy and plan.

(iv) Programmes for research, monitoring, education and training.

1.6.4.5 ARTICLE 5: DESIGNATION PROCEDURE

a) Biosphere reserves are designated for inclusion in the Network by the International Co-ordinating Council (ICC) of the MAB Programme in accordance with the following procedure:
   (i) Regions, through National MaB Committees where appropriate, forward nominations, together with supporting documentation, to the Secretariat after having reviewed potential sites, taking into account the criteria cited in Article 4 above.
   (ii) The Secretariat verifies the content and supporting documentation. In the case of incomplete nomination, the Secretariat requests the missing information from the nominating country.
   (iii) Nominations will be considered by the Advisory Committee for Biosphere Reserves for recommendation to the ICC.
   (iv) The ICC takes a decision on nominations for designation. The Director-General of UNESCO notifies the country concerned of the decision of the ICC.

1.6.4.6 ARTICLE 6: PUBLICITY

a) The designation of an area as a biosphere reserve should be given appropriate publicity by the country and authorities concerned, including commemorative plaques and dissemination of information material.
b) Biosphere reserves within the *Network*, as well as the objectives, should be given appropriate and continuing promotion.

1.6.4.7 ARTICLE 7: PARTICIPATION IN THE NETWORK

a) Countries participate in, or facilitate co-operative activities of the Network, including scientific research and monitoring, at the global, regional and sub-regional spheres.
b) The appropriate authorities should make available the results of research, associated publications and other data, taking into account intellectual property rights, in order to ensure the proper functioning of the Network and maximise the benefits from information exchanges.
c) Countries and appropriate authorities should promote environmental education and training, as well as the development of human resources, in co-operation with other biosphere reserves in the Network.

1.6.4.8 ARTICLE 8: REGIONAL AND THEMATIC SUB-NETWORKS

Countries should encourage the constitution and co-operative operation of regional and/or thematic sub-networks of biosphere reserves, and promote development of information exchanges, including electronic information, within the framework of these sub-networks.

1.6.4.9 ARTICLE 9: PERIODIC REVIEW

The Statutory Framework stipulates the following guidelines for periodic review:

a) The status of each biosphere reserve should be subject to a review every ten years, based on a report prepared by the concerned authority, on the basis of the criteria described in Article 4, and forwarded to the Secretariat by the country concerned.
b) The report will then be considered by the Advisory Committee for Biosphere Reserves for recommendation to the ICC.
c) The ICC will examine the periodic reports from countries concerned.
d) If the ICC considers that the status or management of the biosphere reserve is satisfactory, or has improved since designation, or the last review, it will be formally recognised by the ICC.
e) If ICC considers that the biosphere reserves no longer satisfies the criteria described in Article 4, it may recommend that the country concerned take measures to ensure compliance with the provisions of Article 4, taking into account the cultural and socio-economic context of the country concerned. The ICC indicates to the Secretariat actions that it should take to assist the country concerned in the implementation of such measures.
f) Should the ICC find that the biosphere reserve in question still does not satisfy the criteria contained in Article 4, within a reasonable period, the area will no longer be referred to as a biosphere reserve, which is part of the Network.
g) The Director-General of UNESCO notifies the country concerned of the decision of the ICC.
h) Should a country wish to remove a biosphere reserve under its jurisdiction from the Network, it notifies the Secretariat. This notification shall be transmitted to the ICC for information. The area will then no longer be referred to as a biosphere reserve, which is part of the Network.

1.6.4.10 ARTICLE 10: SECRETARIAT

a) UNESCO shall act as the secretariat of the Network and be responsible for its functioning and promotion. The Secretariat shall facilitate communication and interaction among individual biosphere reserves and among experts. UNESCO shall also develop and maintain a worldwide accessible information system on biosphere reserves, to be linked to other relevant initiatives.
b) In order to reinforce individual biosphere reserves and the functioning of the Network and sub-networks, UNESCO shall seek financial support from bilateral and multilateral sources.
c) The list of biosphere reserves forming part of the Network, their objectives and descriptive details, shall be updated, published and distributed by the Secretariat periodically.

1.7 TOOLKIT D7 PROCEDURE FOR DELIMITATION OF BIOREGIONS

TOOLKIT SYNOPSIS

As described in Chapter 6 the PSDF interrogated the existing administrative boundaries of the Northern Cape and provides broad directives pertaining to the conceptual bioregions that constitute the province. The objective of these was to identify and provide a premise for addressing possible anomalies and to ensure that the ecological, social and economic parameters that collectively delineate the places that people refer to as 'home' are recognised as an imperative for efficient bioregional planning and management.

The unique ecological, cultural, social and economic characteristics and components of each bioregion co-exist and function in an integrated, and often complex manner. For bioregions to be optimally effective in terms of their community-supporting functions, it is of paramount importance that this symbiosis of bioregional characteristics and functions be maintained and that bioregions must, as far as possible, not be fragmented by political boundaries. They should be maintained and governed as distinct units. In this regard, it is imperative that no bioregion, or any land unit, should be seen as an island in isolation from its surroundings. Each unit is an important part of the broader region within which it is situated, and the mutual relationships and linkages between adjacent units must be understood and applied when delimiting and managing these units.

The process of determining the parameters of bioregions that emphasise regional environmental characteristics, are based on environmental parameters, and take account of productive uses and the identity and needs of human communities, is the initial phase of the SDF process to be undertaken at the district municipality level. This toolkit provides guidelines for determining bioregions and their parameters.

1.7.1 PRIMARY REQUIREMENTS

The bioregional planning methodology builds on the proposals of WRI, UNEP and IUCN put forward in their publication *National Biodiversity Planning* (1995) in which the principles and suggestions pertaining to the preparation of plans are provided. It is noted that regional planning in which environmental characteristics are a principal determinant of boundaries, is considered to be of major importance if biological diversity conservation is to succeed.

One of the critical determinants of the success of bioregional planning is the extent to which all spheres of government co-operate and co-ordinate their activities. It is noted that bioregional planning should be undertaken within the context of four distinct spheres, namely the international sphere, national sphere, regional sphere and the local sphere. Effective integrated planning at these spheres requires innovative forms of institutional integration and social co-operation. Dialogue amongst all stakeholders, participatory planning and institutional flexibility are, therefore, essential to plan and manage effectively. For this co-operation to occur, a concerted province-wide, and even nation-wide, effort is necessary to establish effective lines of communication and co-ordination mechanisms that can be activated as soon as appropriate bioregional boundaries have been determined and accepted.

There are a number of key requirements that determine the effectiveness of bioregional planning, the most significant of which are the following:

a) Information needed to define flexible, hierarchical planning units.
b) Assemblage of bioregion, watershed, ecosystem, species etc. data.

c) Relationships between bioregions and people's perceptions of 'their place' (i.e. the cultural identity of communities with the area in which they live).

1.7.2 OBJECTIVES

The objectives of the delimitation of bioregional planning units include the following:

a) Achieve holistic integrated planning, i.e. ensure that all aspects that may have an influence on the planning area are addressed.
b) Identify areas of co-operation between municipalities (i.e. overlapping areas where municipal boundaries do not correspond with bioregional parameters) in order to achieve holistic integrated planning.

1.7.3 PRINCIPLES

The delimitation of planning units should be undertaken in accordance with the following principles:

a) Treat each region as an integrated system, taking into account the interactions among and between land, air, water, organisms and human activities.
b) Recognise that each system influences and is influenced by larger and smaller systems - whether ecological, economic, social or political.
c) Consider people as an integral part of the system and evaluate the social, economic, environmental, technical and political factors, which will influence the way they use natural resources.
d) Relate economic policy to environmental carrying capacity.
e) Increase the benefits obtained from each stock of resources.
f) Promote technologies, which will help people use resources more effectively.
g) Ensure that users of resources pay the full social price of the benefits they enjoy.
h) Ensure that the planning of the region always be considered in context of the whole.

1.7.4 GUIDELINES

The delimitation of planning units should be undertaken in accordance with the following guidelines:

a) Identify the biological diversity elements of national, regional and local significance, the extent to which they need to be protected, and the extent to which they already occur in protected areas.
b) Identify the major activities taking place within the region and in adjoining regions and analyse how these may adversely affect the region's biological diversity.
c) Identify any areas that are important for biological diversity conservation and require repair or rehabilitation.
d) Identify priority areas for biological diversity conservation and for ecologically sustainable use, and their relationship to essential community requirements, such as infrastructure and urban and industrial developments.
e) Provide mechanisms for genuine, continuing community participation and proper assessment and monitoring processes.
f) Formulate co-ordinating mechanisms to ensure ecologically sustainable use of biological resources, with particular reference to agricultural lands, catchments and fisheries.

g) Incorporate flexibility, to allow for changes in land-uses of particular locations, and to accommodate improvements in knowledge and management techniques and changes in institutional arrangements.

With regard to its role in the planning process, it is important to recognise that the bioregion is but one layer in a system of planning units required for coherent and integrated planning. Places manifest themselves on various environmental spheres. The bioregion is an effective planning unit for integrated planning on the level of the region, district and greater municipal area, and provides an effective intermediate framework to co-ordinate planning on other scales.

Existing statutory planning processes do not necessarily result in effective integration of administrative, biophysical, and topographical boundaries, which form the parameters of the places people call 'home'. No allowance is generally made for matching the parameters of a particular ecosystem (or ecosystems) within a specific geographical space with the human settlement patterns that occur within that space. Bioregions can fill this gap and are, therefore, especially well-suited for inter- and intra-district and local municipal planning, and provincial and national co-ordination. However, for the purpose of co-ordinating planning within the bioregion (or within the greater local municipal area), and for inter-municipal planning, a smaller planning unit is required to meet place-specific planning criteria, namely the neighbourhood planning area (refer to Toolkit D8).

As stated previously, one of the greatest singular problems, which has been experienced world-wide in the delimitation of bioregional planning areas, is the historic mismatches between administrative, bio-physical and topographical boundaries, which form the parameters of the places people call 'home'. The symbiotic relationship between socio-economic development, administrative and fiscal factors in general, and the environmental characteristics of the region are of particular importance to the delimitation process and, therefore, form an integral part of the criteria used for defining bioregions.

It is recognised that there are several criteria that can be used to delimit bioregions – criteria that can, in fact, be mutually exclusive. As stated by Alexander (1990) it is ultimately up to the people of a region to decide which are the most useful for local purposes from a variety of perspectives, including political acceptance, management and rehabilitation of the environment, and cultural and spiritual resonance. The delimitation process proposed by the PSDF is described below.

1.7.5 DELIMITATION APPROACH

The purpose is to assist authorities and planners with the detailed delimitation of bioregions, which should be a fundamental part of the preparation of an SDF. This procedure is not a blueprint, but that it serves as model that can be adapted to address specific requirements and circumstances.

To delimit bioregions that would encapsulate biophysical, biological and socio-economic considerations consistent with the definition of bioregions, it is proposed that a hierarchical delimiting process be adopted. This approach recognises both diversity and scale. The approach provides for the identification of four distinct bioregional components in a hierarchical relationship with each other, requiring a planning/management approach ranging from the broad scale to the detail (refer to Figure D4).

The delimitation process follows logical steps, or sequences, the first of which is defining and delimiting the broad-brush *macro biogeographical region* within which the bioregion is situated, using coarse-grain criteria. The second step is to identify the various *catchments* and *quarternary (sub) catchments* followed by the *ecosystems, habitat units*, etc. The level of detail required for delimiting

the bioregional components, and the associated management and planning thereof, increases as the scale decreases. The most detailed component, which is used for refining the delimitation of individual bioregions, is the *land-subdivision*. The four bioregional components are illustrated by Figure D4.

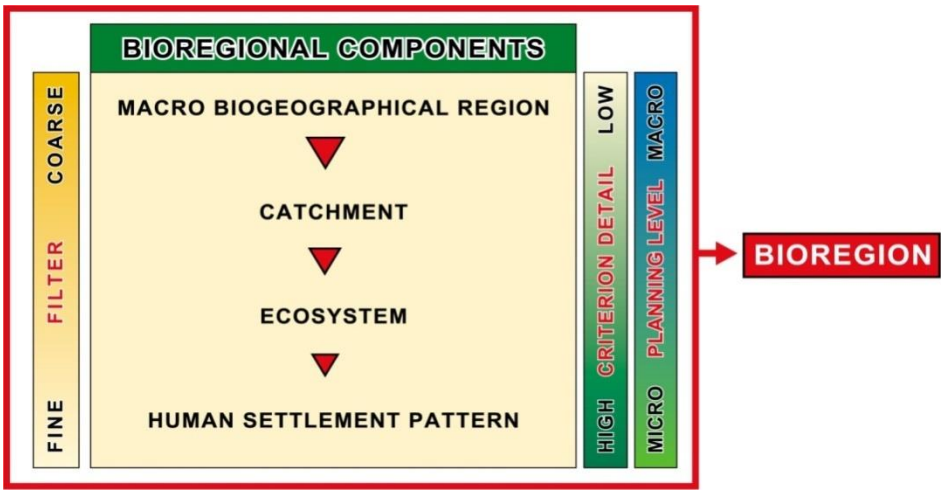


Figure D4: Bioregional Components.

1.7.5.1 MACRO BIOGEOGRAPHICAL REGION

The macro biogeographical regions are defined by their unique biological characteristics (flora and fauna) and biophysical characteristics (climate, geology, soils). These characteristics give rise to a variety of major landscapes, and variations in human settlement patterns and economic activity. The unique characteristics of these macro biogeographical regions and their associated landscapes are largely the result of the natural fragmentation of the land surface of the region by discernible natural dividing features.

1.7.5.2 CATCHMENT

Catchments and quarternary (sub) catchments are primary determinants of bioregional boundaries. Many catchment areas provide favourable combinations of moisture, temperature and soils, which are the foundations for dense sustainable human settlement and vigorous urban and rural economies. Therefore, in many regions, water and its associated catchments are the primary common denominators that determine the social, economic and biophysical boundaries of the area, which people refer to as their 'home'.

It is proposed that catchment and quarternary catchment boundaries, together with the human settlement patterns described below, should, as far as possible, be used for the delimitation of municipalities.

In terms of the Constitution the management of water resources is an exclusive national competency. As such the National Water Act 36 of 1998 mandates the Minister of Water Affairs and Forestry to ensure that water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all persons. Catchments should, as far as possible, not be fragmented by administrative or political boundaries. If fragmentation is unavoidable due to the scale

or form of the catchment, appropriate bioregional management should be applied by the responsible authorities to ensure co-ordinated and integrated management of the entire catchment.

In this regard, it is important to note that from the perspective of promoting sustainable development and biodiversity conservation through integrating development and conservation, it is especially important to consider regional planning and management in the context of the integrative relationship between ecological processes (e.g. catchment functions) and the needs and aspirations of local communities.

1.7.5.3 ECOSYSTEM

The next key component of the bioregion is the ecosystem. A common use of the term ecosystem refers to a distinct and coherent assemblage of organisms and the physical environment with which they interact. An ecosystem is supposed to represent a bounded, self-maintaining system of varied, living and non-living, interacting parts. The ecological functions of the natural systems are directly related to biodiversity. Biodiversity is the primary element in the maintenance of the resilience of ecological systems to external shocks and, thus, the ability of these systems to sustain the dependent communities. It is recognised that, for biodiversity conservation to succeed, environmental characteristics (as defined by ecological, economic and social criteria) must be one of the primary determinants of boundary delimitation.

It is imperative that ecosystems, broad habitat units and individual habitats, especially those that are highly irreplaceable, must not be fragmented due to inappropriate administrative boundaries. Ecological units that relate to each other need to be consolidated as far as possible and incorporated into a singular bioregion, which is managed by a specific authority.

In addition to their ecological functions, ecosystems also have a broad *instrumental* value in that they support a diversity of land-uses. They provide for broad divergent land-use classes, which substantially influence settlement patterns, social structures and the local economy. As with the ecological characteristics of a bioregion, it is imperative that the unique characteristics of each ecosystem and broad habitat unit be recognised and applied in any bioregional delimitation.

A primary requirement for effective bioregional delimitation is to undertake intensive research to identify ecosystems, broad habitat units, and key individual habitats, especially those that are highly irreplaceable. There is generally an enormous need for biological inventory data of appropriate quality and form. In this regard, initiatives such as the *Succulent Karoo Ecosystem Plan* (SKEP) have a particularly important function in providing the required scientific information.

1.7.5.4 HUMAN SETTLEMENT PATTERN

The social boundaries of settlements are an important element of the bioregional delimitation process in that they assist to determine the parameters of the places the various communities refer to as their ‘home’. In this regard, it is important to note that one of the greatest singular problems, which have been experienced world-wide in the delimitation of bioregions, is the historic mismatches between administrative, biophysical and topographical boundaries, which form the essence of the places people call ‘home’.

In order to provide smaller planning units and to facilitate detailed delimitation of the human settlement component, it is necessary to define the domains and neighbourhood areas that correspond with the ecological boundaries of the bioregion.

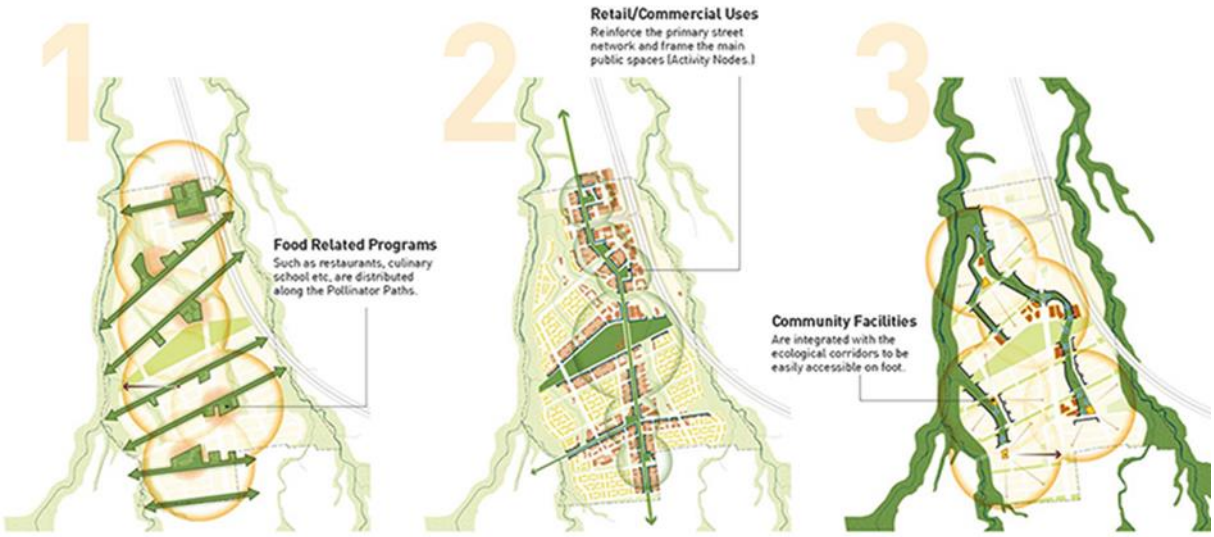
a) Domain: Human settlement patterns are generally determined by socio-economic factors and result in distinct domains, each with a specific character, and unique economic and social structures. A domain generally comprises an urban settlement (consisting of one or more neighbourhood areas), together with its industrial areas and associated rural landscapes.

b) Neighbourhood Area: The delimitation of neighbourhood areas is generally undertaken through intensive public consultation and the compilation of sectoral maps including *inter alia* maps of church wards, community wards, municipal wards, agricultural union and farmers' society wards, and rural security areas. Neighbourhood areas generally correspond with areas that have a common character and identity, determined by physical characteristics such as topography, space, form, detail, symbol use, etc. In addition, neighbourhood areas generally correspond with relatively homogeneous community groupings. In the delimitation process, it is important to explore the available sources of authentic traditional knowledge, which refers to a body of knowledge built up by a group of people through generations of living in close contact with their environment. Traditional knowledge is both cumulative and dynamic, building upon the experience of earlier generations, and adapting to the new technological and socio-economic changes of the present. Toolkit D8 provides a description of neighbourhood area planning as an important mechanism for the implementation of bioregional planning.

c) Land Subdivision: Land-subdivision and cadastral boundaries represent the fine-grain component of the bioregion. Individual land-units collectively form the character and shape of the landscape (cultural or natural) within which they are situated. It is, therefore, of paramount importance for each land-unit to be appropriately managed so as to ensure its sustainability and, most importantly, to ensure that it contributes constructively to the landscape of which it forms a part. The delimitation of individual property units requires a very high level of detail and legislative input. The statutory boundaries of individual land-subdivisions, therefore, represent the detailed boundaries of the bioregion. This fine-grain delimitation should be undertaken in collaboration with the relevant landowners.

1.7.5.5 URBAN AGRICULTURE

While the vast tracks of this land have been encroached by settlements an opportunity still exists to make use of few patches of the available agricultural land within settlements to respond to food security initiatives. Intensive production on areas of arable land available, such as, areas located along river systems need to be utilized for food production whilst also encouraging the community and households to participate in the initiative to grow food gardens, however, caution will need to be taken in terms of planting too close to the water edge. Nonetheless, all these initiatives identified will require great support and collaboration between the communities, government, and the private sector to succeed. Thus, the initiative by government to build an Agri-park within each district and the associated Farmer Production Support Unit (FPSU) Centres within each Local municipality will greatly benefit the Province and more importantly small-scale farmers and communities located within.



Integrate food systems by introducing novel urban agriculture strategies.

Create a strong network of streets and blocks, integrated to land use, to create a vibrant public realm.

Create a resilient community by preserving the ecological function of the site.

1.8 TOOLKIT D8 PROCEDURE FOR DELIMITATION OF NEIGHBOURHOOD AREAS

TOOLKIT SYNOPSIS

One of the greatest challenges facing planning authorities is to ensure that planning frameworks and planning processes are designed and managed in a manner that promotes enthusiastic public participation. A decisively important aspect that needs to be addressed is to ensure that the physical scale of the planning area must be such that the residents of that area would identify with it to the extent that they would be encouraged to actively take part in its planning and management. Together with appropriate scale, it is also imperative that institutional structures are created which would ensure effective decision-making and implementation of policy. Residents of an area should be convinced that it is worthwhile to take part in the planning of the area within which they live.

The bioregion offers an appropriate scale for regional planning. However, the bioregion is not the final planning unit within which planning and management should take place. A place-specific planning approach suggests that there should be smaller, finer-grain spatial planning units, which can serve as building blocks for the bioregion and its planning and management. From this, it follows logically that there is a need to recognise smaller local-level planning units (areas) within the bioregion, which are demarcated in a manner that effectively incorporates the interests of local communities in the affairs that affect them directly. Ideally, such local planning areas should be demarcated for the bioregion as a whole and should be contiguous.

The process of determining the parameters of neighbourhood areas and other small planning units is a key component of the SDF process to be undertaken at the local municipality level. This toolkit provides guidelines for determining neighbourhood areas and other small planning units.

1.8.1 THE DELIMITATION RATIONALE

Moughtin (1997) states that the delimitation of neighbourhoods, districts, etc. is essential for achieving sustainable development. *The process of the division of the settlements is most effective in promoting sustainable development when these divisions of the settlements are legitimised politically and when their elected councillors are given a mandate to protect and enhance the quality of the local environment* (Moughtin, 1997). It is suggested that the latter view be considered against the background of the objectives of both the Municipal Structures Act and the Municipal Demarcation Act, particularly with regard to the role wards and ward councillors and ward committees can play in the future.

The delimitation of bioregions and neighbourhood areas are of immense significance considering the fact that the municipalities are generally so large that people are not able to identify with them on a human level (therefore, the sense of belonging to such areas is generally weak). Furthermore, many towns have lost their municipal status, increasing the potential for apathy within communities in respect of the planning and management of their places. The establishment of neighbourhood areas on the district level (which can encompass a town and its immediate hinterland) will encourage people to participate in the IDP process in a more meaningful and constructive manner because they would identify with such areas very strongly.

In addition to providing for finer-grain planning units, the neighbourhood area and its planning and management will ensure that planning frameworks and processes are designed and managed in a manner, which would promote enthusiastic and effective public participation. The neighbourhood areas will ensure that the physical scale of the planning area is such that the residents of that area

would identify with it to the extent that they would be encouraged to actively take part in its planning and management.

Key elements of defining neighbourhood areas are intensive public participation and the compilation of sectoral maps including *inter alia* maps of church wards, community wards, municipal wards, agricultural union and farmers' society wards, and rural security areas. A fundamentally important aspect of the public participation is to define the meaning that places have for the people that live in those places. In this regard, the people of the planning area need to develop a phenomenological understanding of their environment in order to contribute effectively to its planning and management.

1.8.2 DELIMITATION OF NEIGHBOURHOOD AREAS

It needs to be stressed that the demarcation and management of neighbourhood areas should always be considered in the context of the larger area, or region, within which they are located. Special attention should be given to the creation of institutional mechanisms to encourage public participation and active involvement of municipalities in the planning and management of such neigbourhood areas and the region as a whole. Neighbourhood areas, therefore, need to be identified for the entire surface area of a district and/or bioregion.

It is proposed that the establishment of rural and on-farm settlements be considered on a neighbourhood area level and in accordance with the principles and goals of the IDP.

1.8.2.1 DELIMITATION CRITERIA

The following criteria are put forward for the delimitation of neighbourhood areas. These criteria are in accordance with the delimitation criteria for bioregions and comply with place-specific planning principles:

a) Local municipality jurisdiction areas: Neighbourhood areas should fall within (not crossing the boundaries of) a Category B Municipality in order to simplify political responsibility for the implementation of plans and proposals. Because the Ward Areas of the Category B Municipalities, as determined by the Demarcation Board, are generally not consistent with the criteria for neighbourhood areas, and do not seem to follow any consistent logic, these boundaries need not be taken into account in the delimitation of neighbourhood areas.

b) Property boundaries: The boundaries of neighbourhood areas should follow cadastral boundaries in order to facilitate public participation (i.e. which property owners / tenants should belong to which neighbourhood area committee), planning and management.

c) Boundaries of ecosystems: Where applicable, neighbourhood areas should correspond with catchment area boundaries, which also represent one of the key bioregional delimitation criteria.

d) Natural and man-made barriers: Boundaries of neighbourhood areas should correspond with natural barriers (e.g. mountains and rivers) as well as built barriers (e.g. roads) in order for the area to form a functionally cohesive unit.

e) Common character: Neighbourhood areas should correspond with areas that have a common character and identity, determined by physical characteristics such as topography, space, form, detail, symbol use, etc. This is in accordance with the requirements of a place-specific planning approach, in terms of which people need to identify with a particular place for it to be regarded as their home and, therefore, for them to feel a sense of pride and concern towards it.

f) Manageable size: Neighbourhood areas should be of a size that has a manageable complexity of issues for the resources available.

g) Central places: In accordance with a place-specific planning approach, neighbourhood areas should, as far as possible, be centreed around places, or development nodes, that function as the centre of the particular area.

h) Functional areas: Neighbourhood areas should correspond with areas that function as a unit in terms of the sharing of amenities and infrastructure for logistical planning purposes.

i) Cohesiveness of communities: Neighbourhood areas should correspond, as far as possible, with relatively homogeneous community groupings. This is to ensure that the norms and values of communities, which guide their decision-making on the planning and future development of their neighbourhood areas, are relatively similar. Neighbourhood area advisory committees should, in co-operation with one another, advise the relevant municipality on the refinement of the boundaries of their respective neighbourhood areas. In addition to the above delimitation criteria, the boundaries of existing church wards and farmers' associations should also be taken into account.

j) Neighbourhood area precincts: One of the fundamental purposes of establishing a neighbourhood area is to create planning units which people would relate to on a personal and neighbourhood community level. Whilst the neighbourhood area is probably the smallest practical planning unit a local municipality would establish for integrated development planning purposes on the bioregional level, it seems advisable to provide for even smaller units for internal neighbourhood planning purposes. In the latter regard it is suggested that each neighbourhood area be divided into a number of neighbourhood precincts that are consistent with specific physical characteristics such as topographical features, areas demarcated by main roads, small settlements etc. (refer to Chapter C6 and Toolkit D13). The neighbourhood precincts could then also serve as a basis for electing the members of a neighbourhood area advisory committee.

1.8.3 NEIGHBOURHOOD AREA ISSUES, POLICIES AND ACTION PLANS

The neighbourhood area level of planning provides an appropriate level for identifying and addressing a number of developmental needs, or issues, in conjunction with the local community. Development issues specific to a neighbourhood area, in terms of the vision for its future development, as well as district-wide issues, which could be addressed on a neighbourhood level, should, accordingly, be identified for each neighbourhood area. Amongst others, the following issues and types of actions could be addressed on a neighbourhood area level:

a) Minimizing resource use: This includes the following:
   (i) Community-level recycling, i.e. the reclamation and re-use of wastes (e.g. composting, use of waste water, etc.).
   (ii) Maximizing people's access while minimizing the use of fossil fuel and other non-renewable resources.
   (iii) Promoting the establishment of fuel-efficient, movement-minimizing living environments.

b) Creating employment that reduces poverty and supports resource conservation: The creation of jobs from recycling should improve the lives of poorer groups, whilst also promoting resource conservation. Provision should be made for market gardening (or small-scale agricultural production) which could be central to the livelihoods of poorer households.

c) Providing minimum basic services to all: The public participation opportunities provided by neighbourhood level planning should facilitate more accurate determination of the service requirements and priorities of a particular local community and how these needs can best be addressed in that particular context.

d) Generating finance for sustainable development: Neighbourhood level planning should promote the mobilization of community resources for low-income housing and neighbourhood area development (e.g. finance for community, or neighbourhood level,

services and infrastructure such as water provision, sanitation, health care, etc.). Innovative community actions to meet development needs and reduce resource consumption should be supported.

e) Meeting citizen's health needs and ensuring a healthy environment: Communities should investigate means of providing health care and emergency services within limited municipal budgets. Domestic violence could be prevented through community mobilization.

f) Transport-minimizing: This could be promoted through bringing employment opportunities close to public transport nodes and residential areas.

1.8.4 SPATIAL PLANS FOR NEIGHBOURHOOD AREAS

Spatial plans should be drawn up according to the envisaged roles of neighbourhood areas, whilst giving physical form to policy proposals. Such must be guided by higher level development plans, e.g. the IDP and SDF. The SPCs that have been designated on a bioregional level should be refined and fine-tuned on a neighbourhood area level. Neighbourhood plans could also put forward alternative proposals, where it can be demonstrated that IDP proposals are inappropriate.

The following aspects need to be addressed in spatial plans for neighbourhood areas (refer to the spatial structuring elements in Toolkit D13):

a) A green system where development should not be allowed, or will be more tightly controlled for a variety of reasons, including ecological, hazards, production, recreation and place-making reasons.

b) Location of settlement areas in accordance with development pattern characteristics of the neighbourhood area.

c) Nature and configuration of the transportation system.

d) Location and nature of social community facilities.

e) Location and nature of utility and emergency services.

1.9 TOOLKIT D9 COASTAL MANAGEMENT GUIDELINES

TOOLKIT SYNOPSIS

The coastline of the Northern Cape is a valuable economic, social and environmental asset. As indicated by Figure 40 on Page 204, the coastline, with the exception of the existing urban areas, has been afforded the status of SPC A: Core Conservation Area. It is imperative that effect be given to this designation in the long-term.

However, the coastline also has strong comparative economic advantages vested in various economic sectors, most of which require the construction of infrastructure and significant human activities. It is therefore imperative that the coastline and its resources be managed in terms of a standard set of guidelines so as to promote its long-term sustainability. This toolkit comprises a set of coastal management guidelines based upon the National Environmental Management: Integrated Coastal Management Act 24 of 2008.

1.9.1 THE COASTAL ZONE

The coastline is a distinct, but limited spatial area that gets its character mainly from the direct interaction between land, sea and associated air masses. Surrounding this area of direct interaction are areas of indirect influence, extending from inland mountain catchment areas to the Exclusive Economic Zone[3] and beyond.

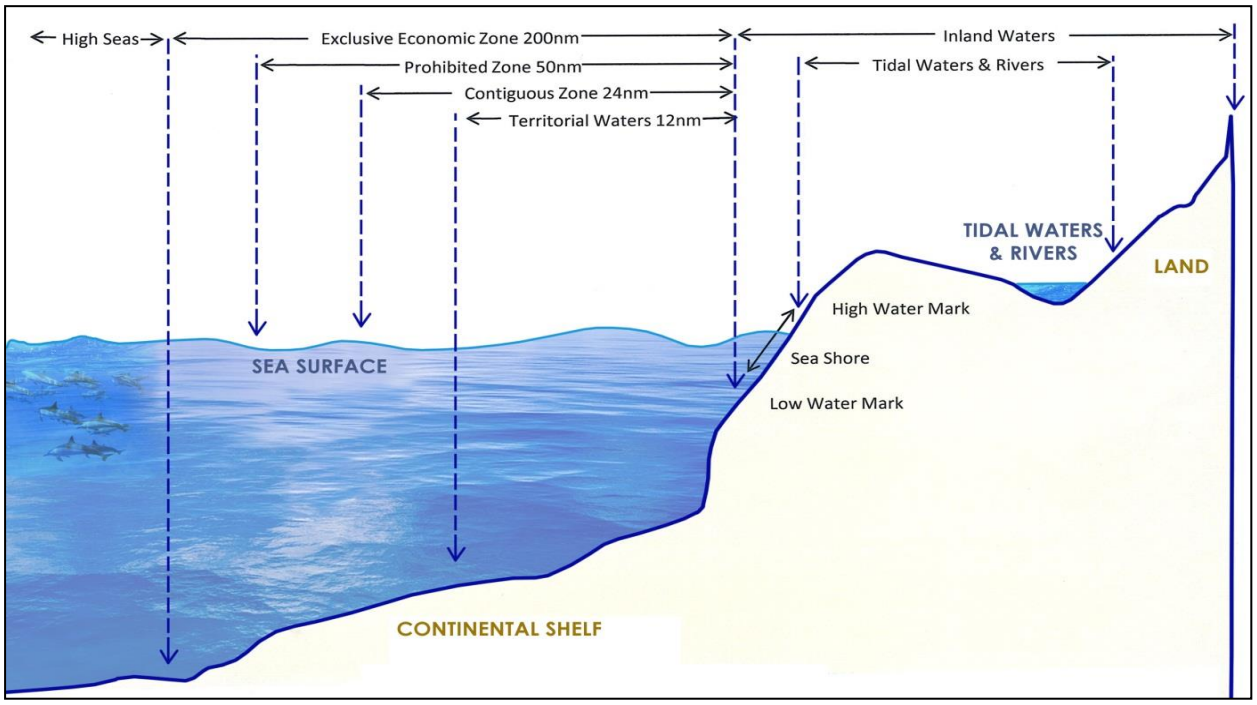


Figure D5: The Coastal Zone.

[3] Under the law of the sea, an exclusive economic zone (EEZ) is a sea-zone over which a state has special rights over the exploration and use of marine resources, including production of energy from water and wind. It stretches from the seaward edge of the state's territorial sea out to 200 nm (nautical miles) from its coast. In casual usage, the term may include the territorial sea and even the continental shelf beyond the 200-mile limit (http://en.wikipedia.org).

The National Environmental Management: Integrated Coastal Management Act 24 of 2008 defines the coast *as an area with a landward and a seaward boundary that includes coastal waters, which extend from the low water mark into the sea, up to the point where these waters are no longer influenced by land and land-associated activities*. The Act also defines the various spatial aspects that combine to form the coastal zone of South Africa, namely:

a) Coastal public property.
b) Coastal protection zone.
c) Coastal access land.
d) Coastal waters.
e) Coastal protected areas.
f) Special management areas.
g) Coastal set-back lines.

The Integrated Coastal Management Act introduces these concepts and highlights the management units of the coast, its ownership and the responsibility of the State.

1.9.1.1 COASTAL PUBLIC PROPERTY

The term 'coastal public property' refers to a people-centred approach to coastal management that is promoted by the Integrated Coastal Management Act. This is a shift away from resource-centred management and places the ownership of large areas of the coastal zone in the hands of the citizens of South Africa. The intention of coastal public property is to prevent exclusive use of the coast by facilitating access to, and the sustainable use of the productive coastal resources for the benefit of all South Africans. Coastal public property cannot be transferred, sold, attached or acquired by prescription, nor can the rights over it be acquired by prescription.

Table D4 summarises describes the components that constitute coastal public property. It is the duty of the State to ensure that coastal public property is used, managed, protected, conserved and enhanced in the interests of the whole community, as opposed to only a few individuals or groups. The State must also act to take whatever reasonable legal and other necessary measures to conserve and protect coastal public property for the benefit of the present and future generations. In essence, coastal public property includes a number of components such as the actual water of the coast, the land below that water, islands, the sea shore, and other state land such as Admiralty Reserve. Coastal public property also includes natural resources found in any of the areas mentioned above. Coastal public property includes the following:

Table D4: Components that constitute coastal public property.

Coastal waters	Marine waters that are part of South Africa's internal waters (all waters landward of the Maritime Zones Act baselines, and all harbours) or territorial waters (the sea within 12 nautical miles from the Maritime Zones Act baselines), including estuaries.
Land submerged by coastal waters	This includes land and the material underneath that land that is covered by coastal waters, or land flooded by coastal waters e.g. when a harbour or canal system is excavated.
Any island in coastal waters	Any natural or artificial island, except any part of an island that was lawfully alienated (transferred or sold) before the Integrated Coastal Management Act took effect, or an artificially created island that is declared by the Minister not to be part of coastal public property.

The seashore	The area between the low-water mark and the high-water mark, except parts of the seashore or coastal cliffs that were lawfully alienated in terms of the Seashore Act (Act No. 21 of 1935) before the Integrated Coastal Management Act took effect.
Any Admiralty Reserve owned by the State	Admiralty reserve means any strip of state-owned land adjoining the inland side of the high-water mark and includes land designated, on official plans, deed of grant or title deed, or other document that demonstrates title or land-use rights as 'government reserve', 'beach reserve', 'coastal forest reserve' or other similar reserve owned by the State.
Any other State land declared as coastal public property	The Minister may declare (and withdraw any such declaration) any State owned land as coastal public property in order to achieve certain objectives.
Any natural resources	Any natural resources on or in coastal public property as described above, but also including the Exclusive Economic Zone or in or on continental shelf, as well as in any harbour, work or installation on coastal public property owned by an organ of State.

1.9.1.2 COASTAL PROTECTION ZONE

The coastal protection zone consists of a continuous strip of land, starting from the high water mark and extending 100 metres inland into developed urban areas such as residential, commercial, or public open space, or 1000 metres inland into areas that remain undeveloped or rural areas (refer to Figure D6). The coastal protection zone consists of:

a) Sensitive coastal areas.
b) Any part of the littoral active zone that is not coastal public property.
c) Any coastal protected area, or part of such an area, which is not coastal public property.
d) Any rural land unit that is situated within one kilometre (1000 metres) of the high water mark, which is zoned as agricultural or undetermined.
e) Any urban land unit that is situated completely or partly within 100 metres of the high water mark.
f) Any coastal wetland, lake, lagoon or dam which is situated completely or partially within a land unit situated within 1000 metres of the high water mark that was zoned for agricultural or undetermined use, or is within 100 metres of the high water mark in urban areas.
g) Any part of the seashore which is not coastal public property (including all privately owned land below the high water mark).
h) Any Admiralty Reserve which is not coastal public property.
i) Any land that would be inundated (submerged or covered) by a 1:50 year flood or storm event (this includes flooding caused by both rain storms and rough seas).

The purpose of the coastal protection zone is to:

(i) Manage, regulate and restrict the use of land that is adjacent to coastal public property, or that plays a significant role in the coastal ecosystem.
(ii) To protect the ecological integrity, natural character, and the economic, social and aesthetic value of the neighbouring coastal public property.
(iii) To avoid increasing the effect or severity of natural hazards.
(iv) To protect people, property and economic activities from the risks and threats which may arise from dynamic coastal processes such as wave and wind erosion, coastal storm surges, flooding and sea-level rise.
(v) To maintain the natural functioning of the littoral active zone.

(vi) To maintain the productivity of the coastal zone.
(vii) To allow authorities to perform rescue and clean-up operations.

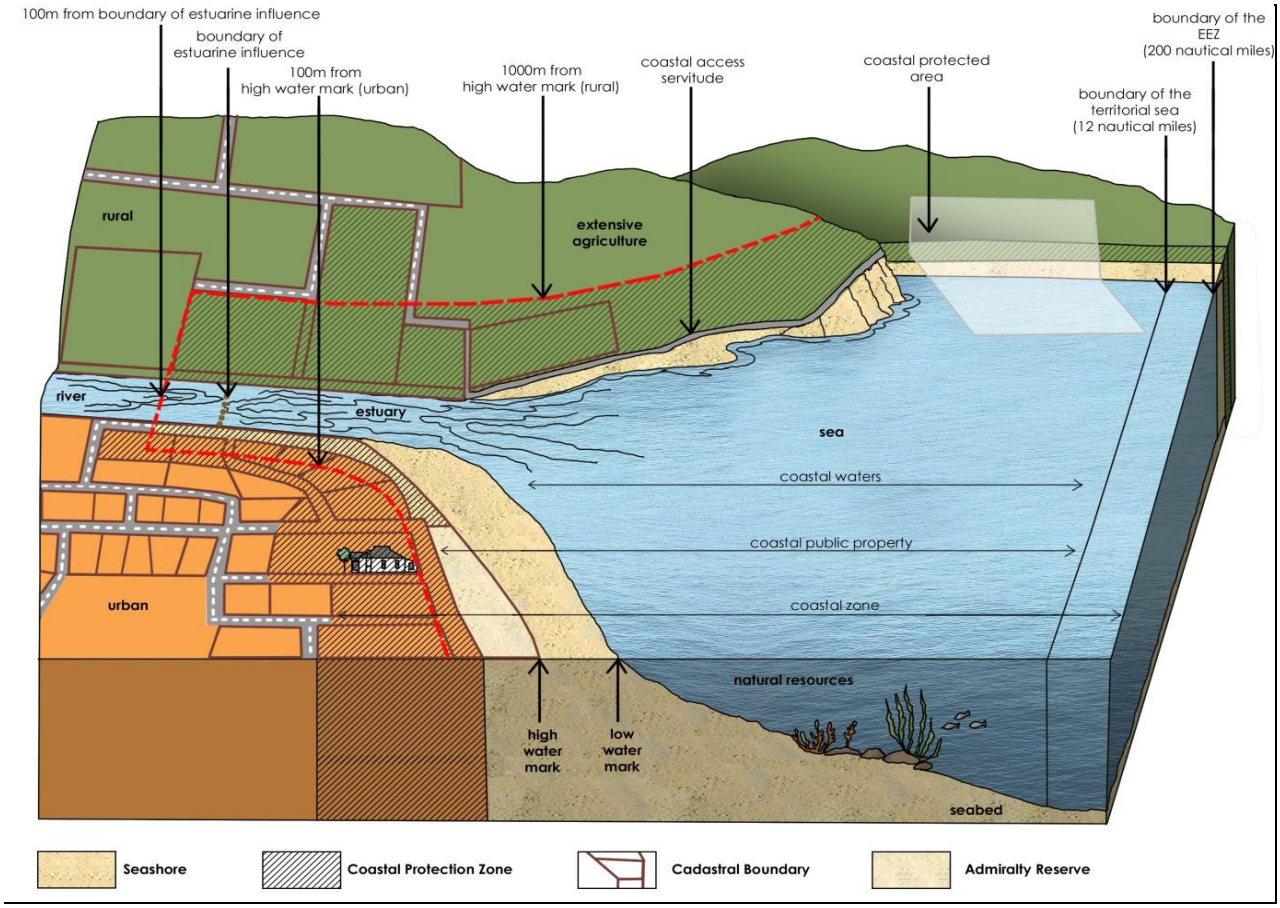


Figure D6: The Coastal Protection Zone

1.9.1.3 COASTAL ACCESS LAND

The intention of coastal access land is to ensure that the public can gain access to coastal public property via public access servitudes. Municipalities are required to establish coastal access land using by-laws.

1.9.1.4 COASTAL WATERS

The Integrated Coastal Management Act also has authority over coastal waters, and an organ of state that is legally responsible for controlling or managing any activity on or in coastal waters (marine waters that are part of South Africa's internal or territorial waters, and estuaries) must control or manage that activity in the interests of the whole community, and according to South Africa's obligations under international law.

1.9.1.5 COASTAL PROTECTED AREAS

Coastal protected areas are legislated and managed via the National Environmental Management Protected Areas Act. All coastal protected areas form part of the coastal protection zone. The

Integrated Coastal Management Act, however, allows the MEC to exclude, by notice in the Government Gazette, part of, or the entire coastal protected area from also being part of the coastal protection zone. This may, however, only be done after consultation with the management authority of the protected area, and should not negatively affect management of the area. Such an area remains a coastal protected area but is no longer considered as part of the coastal protection zone.

1.9.1.6 COASTAL SPECIAL MANAGEMENT AREAS

The Integrated Coastal Management Act provides for the declaration of special management areas that are wholly or partially in the coastal zone. These areas can only be declared (and withdrawn) by the Minister and such declaration may prohibit certain activities from taking place within such a management area. Before the Minister can declare a special management area, he or she must consult with the MEC of the province and then make the declaration by notice in the Government Gazette. The Minister may appoint a manager, with appropriate expertise and defined powers and duties, to manage this area. A special management area can be declared if environmental, cultural or socioeconomic conditions in the area require it to:

- Achieve the objectives of a coastal management programme;
- Facilitate the management of coastal resources by local communities;
- Promote sustainable livelihoods; or
- Conserve, protect or enhance coastal ecosystems and biodiversity.

1.9.1.7 COASTAL SET-BACK LINES

The Integrated Coastal Management Act makes provision for the establishment of coastal set-back lines to be drawn up. Set-back lines define an amount of space that should be left between buildings and infrastructure and the shoreline as a means to mitigate the impacts of climate change, such as rising sea spheres, erosion and flooding, on coastal areas. A development setback is a strip along the coastal zone where certain development activities are prohibited or restricted. Such setbacks are used as a means to regulate and prevent insensitive, inappropriate and non-sustainable development in sensitive coastal environments, to ensure public safety and public interests, and to reduce the risks posed by climate change, or simply the dynamic coastal processes.

Coastal set-back lines may be established for various reasons and there may be more than one set-back line in any given area. For example, one set-back line may be an anticipated erosion setback line, while another may relate to aesthetics and control the height of buildings to protect a specific scenic landscape. Set-back lines will assist in controlling development along an ecologically sensitive or vulnerable area, or any area that poses a hazard or risk to humans (DEA, 2000).

The coastal set-back line may be situated wholly or partially outside the coastal zone. In effect, coastal set-back lines prohibit or restrict the construction, extension or repair of structures that are either wholly or partly seaward of the line. The intention of the coastal set-back line is to protect or preserve:

a) Coastal public property such as beach amenities and other infrastructure such as parking;
b) Coastal private property such as private residences and business properties;
c) Public safety in the face of extreme climate and other natural events;
d) The coastal protection zone; and
e) The aesthetics or ‘sense-of-place’ of the coastal zone.

1.9.2 OBJECTIVE OF EFFICIENT COASTAL MANAGEMENT

The over-arching objective of sound coastal management is to give effect to the following:

a) The coast must be retained as a national asset, with public rights to access and benefit from the many opportunities provided by coastal resources.
b) Coastal economic development opportunities must be optimised to meet society's needs and to promote the well-being of coastal communities.
c) Coastal management efforts must ensure that all people, including future generations, enjoy the rights of human dignity, equality and freedom.
d) The diversity, health and productivity of coastal ecosystems must be maintained and, where appropriate, rehabilitated.
e) The coast must be treated as a distinctive and indivisible system, recognising the interrelationships between coastal users and ecosystems and between the land, sea and air.
f) Coastal management efforts must adopt a risk-averse and precautionary approach under conditions of uncertainty.
g) Coastal management is a shared responsibility. All people must be held responsible for the consequences of their actions, including financial responsibility for negative impacts.
h) All people and organisations must act with due care to avoid negative impacts on the coastal environment and coastal resources.
i) A dedicated, co-ordinated and integrated coastal management approach must be developed and conducted in a participatory, inclusive and transparent manner.
j) Partnerships between government, the private sector and civil society must be built in order to ensure co-responsibility for coastal management and to empower stakeholders to participate effectively.

1.10 TOOLKIT D10 THE SUSTAINABLE DEVELOPMENT INITIATIVE APPROACH

TOOLKIT SYNOPSIS

The acute and urgent need to give effect to sustainable development to address poverty, inequality and unemployment and the global challenges that climate change is creating, cannot be left to government alone. The private sector, communities and individuals share responsibility with government to help promote integrated sustainable development and to address these vexing problems together.

Legislation and policy have created the opportunity for the private sector to take part in the sustainable development process and it is incumbent upon the private sector to help take the initiative and give effect to sustainable development in a practical manner.

The Sustainable Development Initiative (SDI) is presented as an approach for the practical implementation of sustainable development (i.e. *improving the state of….*) with due regard for applicable policy and legislation.

This toolkit summarises the key components of the SDI approach and how it is to be implemented as a mechanism to ensure that large-scale resource use projects unlock meaningful benefit for both the environment and the local people.

1.10.1 WHAT IS AN SDI?

An SDI is an over-arching socio-economic development and environmental rehabilitation strategy that is enabled and funded through the utilization of the resources (capital) vested in a defined area consistent with the international definition of sustainable development. The SDI model is about helping to promote a dynamic developmental state as contemplated in the South African Constitution. Accordingly, the SDI responds, in a practical and exemplary manner, to the most critical and fundamental challenges facing the country and the globe, namely poverty, inequality and environmental degradation.

The SDI model recognises that global sustainability depends upon the successful implementation of development projects on the local scale linked to all other spheres of planning up to the international global scale. The SDI model includes a climate-neutrality strategy and action plans without which global sustainability is not possible.

1.10.2 PILLARS OF THE SDI MODEL

The SDI model stands on three pillars, namely:

1.10.2.1 PILLAR 1: FINANCE

Sustainable Development has to be financed. The employment of monetary capital is the conventional method considered necessary for this purpose. However, to ensure the stability of the capital resources that are required for sustainable development, it is imperative that a broader view pertaining to capital and finance be adopted.

Financing sustainable development entails the employment of monetary capital together with three other forms of capital i.e. environmental capital, infrastructural capital and social capital. The four forms of capital must be strategically incorporated into a single form of capital that would be considered bankable by financial institutions. In the SDI model this is referred to as sustainability capital or sustainability finance. A key strategic requirement for successful sustainable development is therefore to create sustainability capital in the project planning process that is bankable and ensuring that such capital would be employed in a sustainable manner.

It is imperative to establish an organisational structure that would include a sustainability fund to facilitate and administer the employment of capital to fund the economic drivers of sustainable development. Economic drivers for sustainable development are diverse and could include property development, solar or bio-fuel energy plants etc. Property development in particular can serve as a major primary economic driver for the implementation of sustainable development. Property development can unlock capital to support, in a meaningful and sustainable manner, economic growth, social development and environmental rehabilitation.

Development can only be optimised through positive economic intervention within a framework of an integrated development plan and strategy. In order to optimise the potential of the economic drivers of sustainable development, the SDI model builds upon the principle that an SDI, for any given area, must be supported by projects to be implemented in terms of specific programmes. Projects should ideally promote the comparative economic advantages of the region or the area within which the SDI is undertaken.

1.10.2.2 PILLAR 2: COMMUNITY PARTICIPATION, INCLUSIVITY AND HUMAN WELL-BEING

The SDI model builds on the principle of inclusivity. This implies that the planning, implementation and management of an area should be an on-going inclusive process that gives meaningful consideration to the changing and dynamic interests, needs and values of the people that live in the area and that have an interest in ensuring a prosperous future for the area. In this regard, it is important that the following should result from an SDI:

a) Continuing participation, representation and involvement of stakeholders in the SDI area.
b) Creating adequate and appropriate opportunities during the inception phase of the SDI planning, and thereafter, for community participation in decisions that may affect the area.
c) Consideration of, and agreement on, the values which would form the basis of the SDI and the associated projects.
d) Developing and utilising the skills and capacities of the people living in the area (especially previously disadvantaged people, and women) in the planning and implementation of the SDI and its projects.
e) Encouraging on-going involvement of local people in the programmes identified for the SDI.
f) Recognising that historic injustices need to be addressed in a practical and sustainable manner as a matter of high priority. In particular, recognition needs to be given to the rights of local previously disadvantaged people to share in the benefits that development brings to the area in a spirit of partnership.

The SDI model is based upon, and gives effect to, the Community Public Private Partnerships Programme (CPPP) of the Department of Trade and Industry, which targets private partners with the aim to position community initiatives/enterprises as ideal repositories for corporate social investment. CPPPs allow the public sector to achieve value for money by accessing private sector capital, resources and skills, thereby obtaining the benefits of innovation, risk transfer and improved quality and service spheres.

The inclusivity approach provides for the participation and involvement of local communities in the planning, implementation and management of the SDI through an appropriate community-based organisational structure. Accordingly, a Treasury Trust should be established to serve as the overarching entity that ensures that the SDI and its associated projects are wisely managed, co-ordinated and implemented in the spirit of partnership with all concerned. The Treasury Trust is to be supported by a structure of programme trusts (Public Benefit Organisations) that manage and control the interests of the various beneficiaries of the SDI.

1.10.2.3 PILLAR 3: ENVIRONMENTAL REHABILITATION AND CONSERVATION

The SDI model supports the principle that biodiversity conservation is a prerequisite for sustainable development. It accepts that, for biodiversity conservation to succeed, the maintenance of environmental integrity (as defined by ecological, economic and social criteria) must be one of the primary determinants of land-use planning and development. The SDI model is accordingly founded on the principles of NEMA, namely:

a) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
b) Development must be socially, environmentally and economically sustainable.
c) Sustainable development requires the consideration of all relevant factors including:
    (i) that the disturbance of ecosystems and loss of biological diversity; pollution and degradation of the environment; disturbance of landscapes and sites that constitute the nation's cultural heritage are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
    (ii) that waste is avoided, or where it cannot be altogether avoided, minimised and re-use or recycled where possible and otherwise disposed of in a responsible manner;
    (iii) that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;
    (iv) that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;
    (v) that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and
    (vi) that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.

1.10.3 KEY ASPECTS OF THE TREASURY TRUST

1.10.3.1 FUNCTIONS

In order to enable the Treasury Trust to achieve its goals in this regard, it would initially have to have full control over the administration of the funds and assets, which will be made available to the lower tier entities. Once the lower tier entities have been established, the role of the Treasury Trust would be scaled down to that of a conduit that collects and receives the contractual contributions from the core project (i.e. economic driver) and distributes these to the relevant beneficiaries in a predetermined ratio. In addition, the key functions of the Treasury Trust include the following:

a) Conclusion of agreements that are to provide a sustained income for the structure of PBOs or trusts.

b) Establishment and registration of empowerment organisations in accordance with the input and co-operation of the relevant stakeholders.
c) Facilitation of the appointment of trustees representing the interests of the various stakeholders.

1.10.3.2 FUNDING

The Treasury Trust is funded through the following:

a) A contribution to the Treasury Trust of a predetermined percentage of the value of the initial sale of all residential properties in a residential-type development.
b) A contribution to the Treasury Trust of a predetermined percentage of the value of all subsequent property sales, in perpetuity, in accordance with a condition registered in the title deeds.
c) A contribution to the Treasury Trust of a predetermined percentage of all property sales (non-residential).
d) A contribution to the Treasury Trust of a predetermined percentage of profits of all other operations, including mining, industrial, solar power enterprises, the SKA, etc.

1.10.3.3 BENEFICIARIES

The PBOs are the main beneficiaries of the Treasury Trust as illustrated below. These entities are established in partnership and in close co-operation with the relevant stakeholders, the objective being to ensure that benefits are delivered to the rightful beneficiaries and be managed in a transparent and equitable manner.

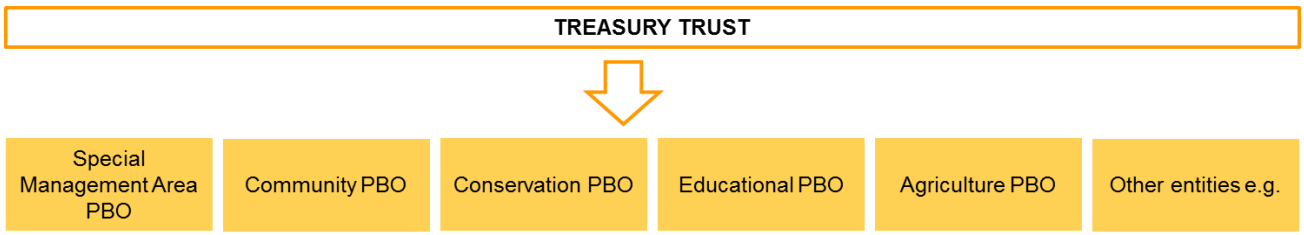


Figure D7: SDI organisational structure incorporating the Treasury Trust and possible PBOs.

The SDI approach does not provide for one-sided grants, or transfers, of funds from the core project to any stakeholder. In practice, an application and motivation (including a business plan) has to be submitted to the Treasury Trust for consideration and funds would be disbursed to the relevant PBO (the applicant) in terms of a contract.

All the PBOs (or trusts), including the Treasury Trust, will be registered in terms of Section 13(5) of the Non-profit Organisations Act 71 of 1997. Each trust will apply in its own capacity for exemption from income tax in terms of Section 30 of the Income Tax Act 58 of 1962.

1.10.4 IMPLEMENTATION OF THE SDI MODEL

The SDI is a strategy through which practical effect is given to a vision of sustainability for the area where the SDI is undertaken. An SDI is implemented in accordance with the following sequence of steps (refer to Figure D8):

Step 1: If an appropriate vision for the subject area does not exist upon inception of the SDI, the first requirement is to formulate such a vision in a spirit of partnership between the proponent of the SDI and the local communities and other stakeholders. The vision for the SDI area is formulated through an inclusive and equitable process. If required, an organizational structure (e.g. Treasury Trust) is established to ensure inclusivity. The vision is then given effect through the following:

Step 2: Efficient and just use of resources (capital) vested in the SDI area and in the project site, in particular. The rationale is that sustainable development has to be financed and resources (capital) are required for this. Money (monetary capital) alone cannot achieve this. The SDI combines monetary, environmental, infrastructural and social capital into a single form of capital (currency) that is bankable and that can be used to finance sustainable development.

Step 3: Implementation and funding of projects under defined programmes that collectively address the key socio-economic and environmental needs and requirements of the SDI area. The SDI programmes are defined as strategic clusters of related activities that together achieve a specific goal.

Step 4: Considering and planning the SDI and its projects in terms of all relevant spheres of planning, from the international to the local, and in terms of legislation, policy, and the spatial and design dimension.

Step 5: Assessing the SDI and its projects in terms of the criteria of efficiency and justice and in context of the NEMA stipulations pertaining to need and desirability.

Step 6: Implementation of the SDI through an adaptive management strategy in terms of an ISO 14001 Environmental Management System (EMS) that embodies continual improvement of all aspects of the SDI.

A climate-neutrality strategy is a prerequisite for any sustainable development initiative and has to be delivered through innovative and efficient use of capital (refer to Toolkit D5). As such it is embedded in, and will be given effect by all six components of the SDI model.

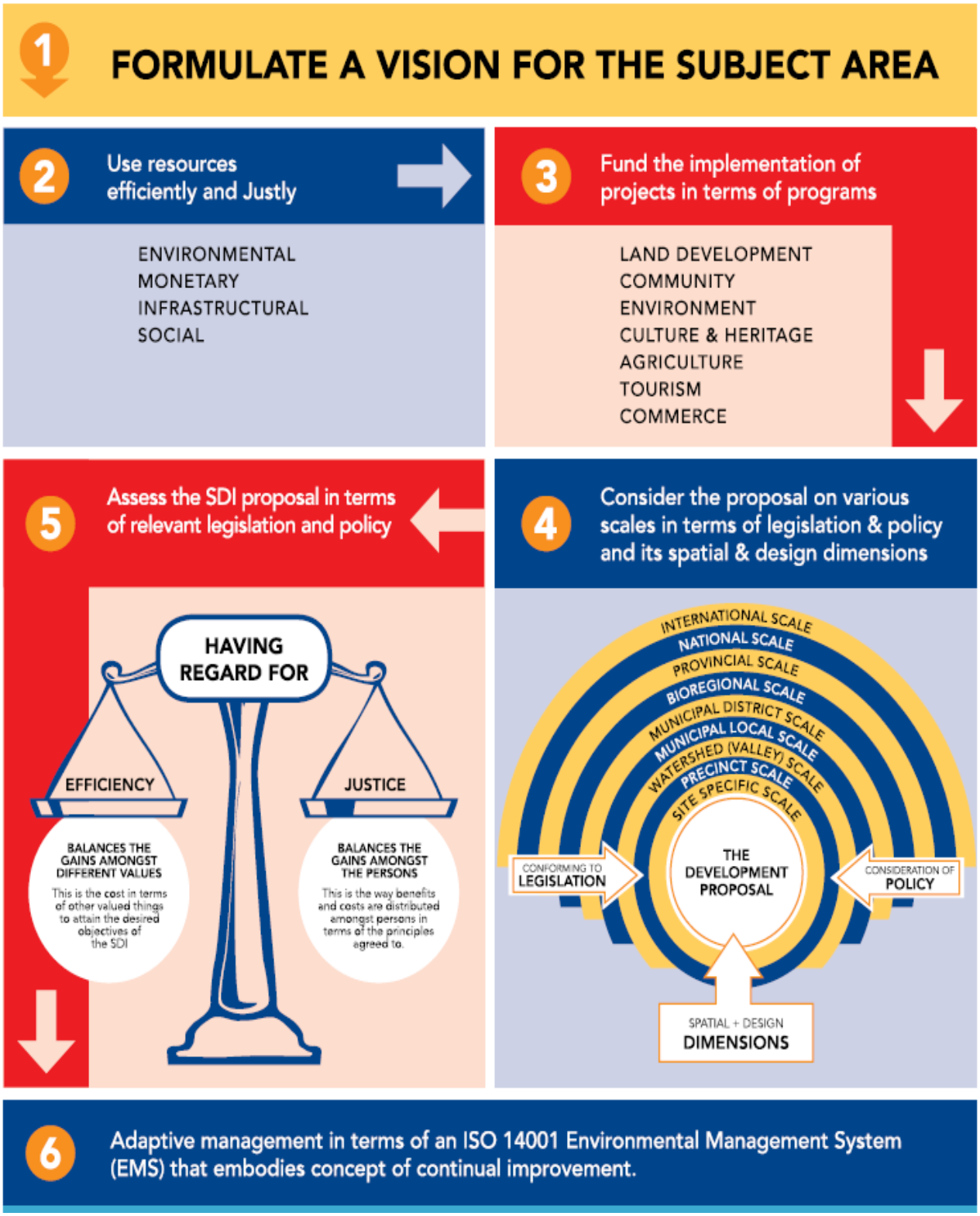


Figure D8: The Sustainable Development Initiative implementation model.

1.11 TOOLKIT D11 SPECIAL MANAGEMENT AREA APPROACH

TOOLKIT SYNOPSIS

A primary overarching goal of the PSDF is to improve the general status and sustainability of both the natural and the human-made environment throughout the province. In this regard, the aim is to create positive precedents through the implementation of innovative mechanisms or strategies. The establishment of a Special Management Area (SMA) is considered as a fundamentally important mechanism in this regard, which is of relevance to landowners, authorities, planners, and developers.

An SMA provides an ideal spatial framework for the implementation of programmes such as LandCare and Conservation Stewardship. It is primarily an approach that is implemented voluntarily by landowners. However, it can be required as a condition of approval where new or additional land-use rights or rezoning have been granted. In such instance the contractual agreement would *inter alia* ensure compliance with the conditions of approval. As such, the establishment of an SMA could be a viable mechanism for ensuring long-term environmental sustainability on the relevant property (or group of properties), presenting a positive precedent as is promoted by the PSDF.

This toolkit addresses the key aspects of the SMA concept and provides guidelines pertaining to its establishment and management.

1.11.1 WHAT IS AN SMA?

An SMA is defined as 'an area of excellence and good practice', where the ethos of sustainable development is served in practice. It is also a cadastral geographical unit, which is formally recognised and managed as an area where environmental sustainability is promoted in practice and in accordance with international standards for environmental sustainability. Both public and private land can be declared an SMA, and both natural, cultivated (i.e. farmland) and inhabited land can be included into an SMA.

In an SMA, the landowner(s) will manage the environment and its resources in accordance with an Environmental Management System (EMS) or an Environmental Management Plan (EMP) that conforms to international standards for environmental management (e.g. ISO[4]14001).

An important aspect of the establishment of an SMA is that the landowner(s) will be required to establish a trust fund, which will ensure that the necessary financial resources are available for effective long-term management of the SMA. Such funds could be generated in through the SDI approach (refer to Toolkit 10).

[4] ISO (the International Organisation for Standardisation) is a world-wide federation of national standard bodies (ISO member bodies).

Where a farm has been declared an SMA by its owner, a primary purpose of the SMA will be to provide a framework for undertaking sustainable agriculture[5]. In this regard, the SMA and its EMS will facilitate adherence to the following principles of sustainable agriculture:

a) Physical-biological productivity (maintain and/or improve production/services)
   (i) Maintain existing fundamental values, technologies and structures supporting sustainable and viable agricultural enterprises.
   (ii) Develop and apply new technologies to improve the efficiency of farming practices.

b) Economic security (reduce production risk and uncertainty)
   (i) Encourage local processing of farm products and the provision of local farm services to enhance the rural economy, increase the viability of agricultural production and reduce rural poverty.
   (ii) Retain all the productive agricultural land for agricultural use.

c) Environmental protection (protect production potential of natural resources)
   (i) Integrate land-use planning and community participation to ensure optimum management and utilisation of natural resources.
   (ii) All farmers are responsible and accountable for the conservation of natural agricultural resources.
   (iii) Land-users causing unacceptable degradation of the natural environment are responsible for rehabilitation of mismanaged natural agricultural resources.
   (iv) Real cost of natural resources must be reflected in the pricing of these resources so as to discourage abuse.

d) Social acceptability and justice (promote/establish social acceptability)
   (i) Ensure equitable access to resources to all communities.
   (ii) Provide access to agriculture via land reform in accordance with environmental requirements and with full participation and consent of all the affected communities.

1.11.2 ESTABLISHING A SPECIAL MANAGEMENT AREA

1.11.2.1 PUBLIC SECTOR

It is incumbent upon government to show commitment to the promotion of IDP and SDF policy and to demonstrate, in an exemplary manner, how policy can be successfully implemented. The SMA mechanism presents the ideal opportunity for government to achieve this. Local, provincial and national government may, by formal resolution, or inter-governmental agreement, establish and manage an SMA on own accord. The public sector can establish an SMA over a specific demarcated area (such as an area around a town, i.e. commonage land). This should be undertaken in accordance with agreements with the relevant stakeholders. Such agreements could, for example, be established through the IDP

[5] Sustainable agriculture is an approach as well as a process through which different management and technological activities and socio-economic principles are reconciled with environmental requirements (Smyth and Dumanski, 1993).

process. The establishment of an SMA provides an ideal vehicle through which public-private partnerships can be arranged in order to promote environmental sustainability in general, or to facilitate a specific project.

1.11.2.2 PRIVATE SECTOR

In the private sector, an SMA can be established in accordance with the following guidelines:

a) It can give effect to the statutory conditions of approval for rezoning, or the granting of new land-use rights.
b) The establishment of an SMA can be ratified through a contractual agreement between the owner of a fixed property and the relevant municipality.
c) The contractual agreement will constitute the legal framework determining the obligations of the parties involved.
d) The contractual agreement must always provide for the SMA to be managed in accordance with an appropriate EMS, which must incorporate the landowner's obligations pertaining to the preparation and execution of all relevant requirements.

1.11.3 PLANNING OF A SPECIAL MANAGEMENT AREA

In the required EMS, the following fundamental aspects need to be addressed appropriately:

1.11.3.1 ENVIRONMENTAL POLICY

The EMS must put forward a specific environmental policy that complements existing IDP policy and addresses local environmental requirements. Such environmental policy for a specific SMA (or group of SMAs) should be consistent with, amongst others, the following principles:

a) Being appropriate to the nature, scale, and environmental impacts of development activities, local products, and available services. Implementation policies for a large resort complex would, for example, be different to policy for a small landholding on which a single tourist facility (e.g. a small hotel) is located. In this regard, the criteria and purpose of the applicable SPC must be considered.
b) Ensuring the commitment of all stakeholders to continual prevention of all forms of environmental pollution.
c) Complying with relevant environmental legislation and regulations.
d) Providing a framework for determining and reviewing environmental objectives.
e) Being appropriately documented, implemented, maintained, and communicated by all concerned.

1.11.3.2 PREPARING A SPECIAL MANAGEMENT AREA PLAN

Specific steps must be taken to translate the environmental policy into a working plan that incorporates, amongst others, the following:

a) Identifying the aspects of activities, products, and services that can impact on the environment and evaluating the significance of the potential environmental impacts.[6]
b) Determining and incorporating any legal and statutory requirements that are applicable to the relevant environment.
c) Establishing and incorporating any environmental objectives put forward by, amongst others, the relevant IDP and lower sphere planning frameworks.
d) Establishing and implementing an effective Environmental Management Plan.

1.11.3.3 IMPLEMENTATION AND OPERATION

Provision must be made for the implementation of appropriate environmental management standards, including the following:

a) Defining roles, responsibilities and authorities to facilitate sustainable environmental management.
b) Identifying training needs, and awareness and competence limitations.
c) Providing effective communication channels between all stakeholders.
d) Ensuring effective implementation of all EMS requirements.
e) Providing effective control over operations.
f) Ensuring appropriate project management and documentation control.
g) Identifying emergency needs and providing appropriate contingency measures.

1.11.3.4 MONITORING AND CORRECTIVE ACTIONS

It is of fundamental importance to implement procedures for regulating operational performance and for ensuring that objectives are being achieved. This could be achieved through the following:

a) Monitoring and measuring all impacts of development and management actions on the environment.
b) Establishing and implementing procedures for handling incidents of non-conformance with the EMS.
c) Managing environmental records, including, amongst others, the results of audits and reviews and the evaluation of educational programmes.
d) Undertaking periodic environmental audits in accordance with a formal auditing procedure.

1.11.3.5 MANAGEMENT REVIEW

The EMS needs to be reviewed at set intervals to ensure its continuing appropriateness and effectiveness. Such reviewing needs to take note of the results of the environmental audits that are to be undertaken and submitted to the relevant authorities on a scheduled basis.

[6] ISO 14001 defines an environmental impact as being *'any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services'*.

1.12 TOOLKIT D12 URBAN PLANNING AND DESIGN FRAMEWORK

TOOLKIT SYNOPSIS

The aim and rationale behind the planning, design and construction approach adopted for the Northern Cape is to maintain and, where required, restore the unique character and ambiance which people instinctively and intuitively recognise as qualitative and which instils a sense of pride, belonging and identity with those associated with the region and its component places. It is important that the image of the Northern Cape, as a uniquely diverse natural and cultural resource, be emphasised through innovative planning and design of all built structures.

The purpose of the planning and design directives put forward in this toolkit is to provide a framework within which individual buildings can be designed and constructed to ensure an integrated and harmonious architectural language for the area. The guidelines should not stifle or inhibit innovative design and/or original thought. However, the challenge lies in respecting the genius loci (spirit of place) of the area, by determining its true identity and interpreting it in ever new ways.

The guidelines are intended to assist architects, home owners, municipalities and others involved in the design and construction of buildings to create a qualitative place which would resonate with the place, historic, craft, natural and scale qualities of the various component places of the Northern Cape. The SDFs of local municipalities must incorporate place-specific guidelines that would give effect to the directives put forward in this toolkit so as to assist all concerned to enhance the integrity of the built environment.

1.12.1 PLANNING AND DESIGN FRAMEWORK

From a municipal governance perspective, the application of the design framework implies that development applications have to be evaluated against the directives summarized below. If a development proposal is considered inconsistent with these directives, the relevant municipality will inform the applicant about the nature and extent of the inconsistency and the avenues to be explored to find appropriate solutions.

It is important that municipal officials, planners and designers understand the design framework and that they contribute towards the restoration of the existing human-made environment and the development of high quality places in accordance with the principles and guidelines listed in the PSDF. Municipalities should show the way by developing institutional capacity to apply these design principles. The criteria, guidelines and principles summarised below collectively provide the basis for the proposals and recommendations for the restructuring and future development of the individual towns and settlements of the Northern Cape.

1.12.2 'CRITICAL REGIONALISM' AS A PREMISE FOR PLACE-SPECIFIC PLANNING AND DESIGN

The planning and design approach of the Northern Cape is based upon the concept of 'critical regionalism'. 'Critical regionalism' promotes a return to the development of high-quality settlements that comply with the definition of '*a unique sustainable man-made environment which is in harmony with the natural environment that 'contains' it and which demonstrates the five guiding principles of 'critical regionalism'.* Such quality is often dependent upon a specific 'sense of togetherness' and character that requires a specific scale and density. 'Critical regionalism' constitutes a sensory understanding and appreciation of the environment and its component 'things'. The approach is based

on five basic principles that should guide the planning, design and management of development, namely (Kelbaugh, 1997):

1.12.2.1 SENSE OF PLACE

'Sense of place' is described as the *'degree to which a place can be clearly perceived and mentally differentiated and structured in time and space by its residents, and the degree to which that mental structure connects with their values and concepts'* (Lynch, 1998).

In evaluating a sense of place, one needs to recognise that there are various 'components of sense' that, together, provide a particular environmental quality for the observer. 'Sense of place' is based upon the *sensed quality* of the unique 'components of sense' of a particular place, including its identity, character, structure, local climate, topography, vegetation, building materials, building practices, and local authenticity.

In practice, in the preparation and consideration of development applications (including architecture and placement of new infrastructure), it is important to ensure that the above 'components of sense' are incorporated into the planning and design. For example, this implies that development should *inter alia* reflect elements of the traditional vernacular of the area, make use of local natural building materials, and reflect a strong sense of local authenticity. The Northern Cape should, through its architecture and construction methods reflect a distinctive and authentic sense of place. The settlements should also reflect a sense of a 'frontier settlement' against the background of the harsh and semi-desert of the Kalahari. This rare quality is immensely marketable and should be enhanced and protected at all cost.

1.12.2.2 SENSE OF HISTORY

Historical precedents are a good point of departure when planning, designing and rehabilitating new places and existing areas (Kelbaugh, 1997). It is imperative that the local history, traditions and values be thoroughly studied as part of any planning process and that the planning and design of both the cultural and the natural environment should reflect these dimensions. The history of an area should form the basis of development and land-use in any area. Developments should reflect an appreciation for the history, culture and traditions of the local people and build on the historical precedents presented by existing high quality settlements.

Any architectural type that has stood the test of time must be doing something right in terms of responding to climate, social and cultural needs, tradition, and economy, and should, therefore, be worth copying (Kelbaugh, 1997).

It is suggested that the elements of the traditional building form be adopted in the planning and design of new developments in the Northern Cape. As such, the design of buildings is to draw from traditional building dimensions and footprint which would, amongst other, provide for the creation of secluded courtyards and similar sheltered areas that create a specific sense of enclosure and protection against the generally harsh local climate. The traditional 'letter' architectural form of the 'I', 'T' or 'H' shape floor plan illustrated by the figure below could be applied to all new residential buildings.

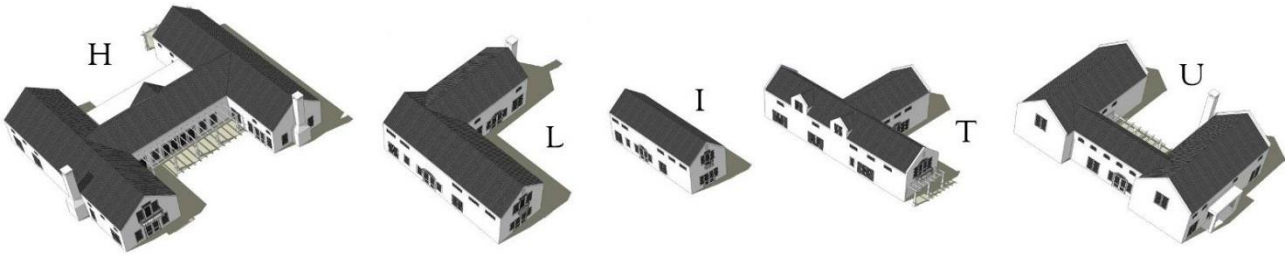


Figure D9: The traditional 'letter' architectural form.

1.12.2.3 SENSE OF CRAFT

Critical regionalism builds upon a return to craftsmanship and avoids construction types, which have become less sustainable and less appropriate over most of the past century (Kelbaugh, 1997).

The characteristics and the craftsmanship of the local people evolved in response to the challenges of nature and the needs of the historic people of the area. In order to create *places* where humans can live with dignity and pride, it will be necessary to revive and retain the traditional craftsmanship and to ensure that an appropriate 'sense of craft' is reflected in all development. There is evidence of unique stone masonry, thatching and woodwork, etc. which reflect a sense of craft. This should be encouraged throughout future new development and urban renewal throughout the Northern Cape.

1.12.2.4 SENSE OF NATURE

Nature is a good model for design because it holds the key to vitality and sustainability. It is recognised that architects, landscape planners, and urban planners can learn from the sophistication of ecological systems and that these can fulfil a meaningful role to protect ecosystems, natural processes, and the symbiosis between organisms and their environment (Kelbaugh, 1997). This can be achieved through appropriate study and developing an appreciation for the unique environmental value of a place before any planning, design and development is undertaken. Any development is to reflect an appreciation for the unique natural attributes of the environment and respond to the dominant local forces of nature.

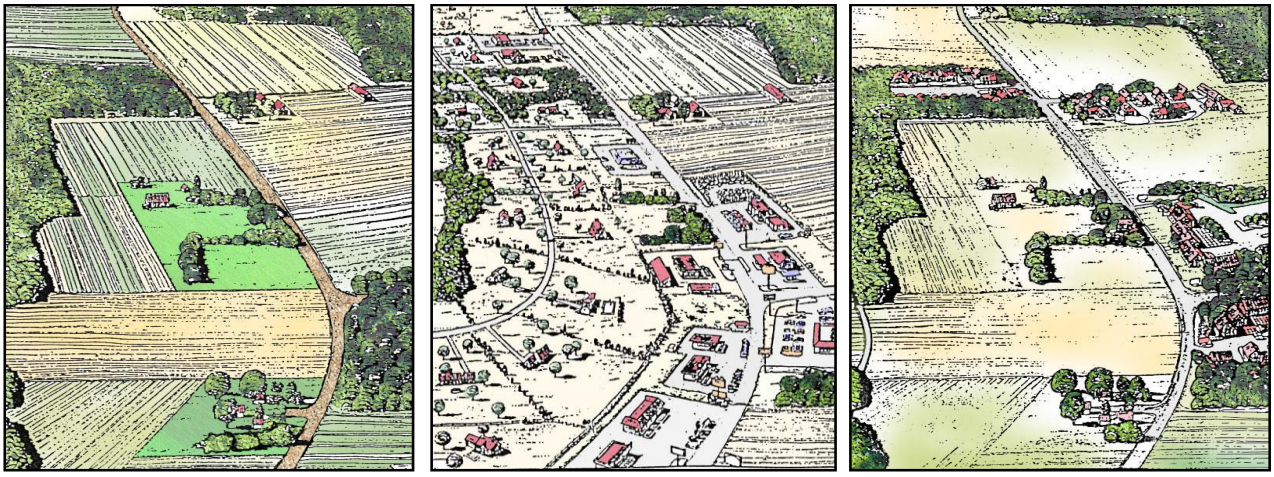
This implies that in any development there should be presumption in favour of conservation and that a premium will be placed on the conservation of natural resources, wildlife and landscape. Materials for new development should, for example, be obtained from sustainable sources, and in the design of buildings the use of energy consumption should be minimised. In addition, the following principles should be incorporated into the planning and management of any development:

a) Minimise use of the four generic resources, namely energy, water, land and materials. There is serious wastage of, in particular, water and energy. There is a huge opportunity for the Northern Cape to become a model for the generation and wise use of solar power.
b) Maximise resource re-use and/or recycling.
c) Use renewable resources in preference to non-renewable resources.
d) Minimise air, land and water pollution.
e) Create a healthy, non-toxic environment.
f) Maintain and restore the earth's vitality and ecological diversity.
g) Minimise damage to sensitive landscapes, including scenic, cultural, historical, and architectural aspects.

1.12.2.5 SENSE OF LIMITS

There is a need for physical and temporal boundaries to frame and limit human places and activities. There is also a need for human scale in the built environment. Kelbaugh (1997) states that '*the sense of limits also pertains to a need for psychological boundaries – ones that make life more understandable and negotiable*'.

In order to achieve the above, strategies need to be formulated and implemented to prevent the unlimited urban sprawl that characterises some of the urban and peri-urban areas. Such strategies need to reflect the *ability of the natural environment* to sustain development and consumptive land-use. In addition, such strategies need to ensure that the development density of human settlements is such that it would facilitate the development of places where people can live with dignity and pride. It is therefore imperative that future development in the various settlements strengthen the nodal character of such settlements (refer to the figure below) and that a designated urban edge be applied and adhered to.



A: Rural character before development. **B: Extensive development creating urban sprawl.** **C: Nodal development such as 'farmyards'.**

Figure D10: Desired nodal form of rural settlements.

1.12.3 PLANNING AND DESIGN THEORIES

During the past century our approach to urban design, which was heavily influenced by factors such as the introduction of the motor vehicle, zoning, urban sprawl and the privatization of public space, gave rise to the loss of quality urban spaces (Trancik, 1986). 'Lost space' is defined as 'undesirable urban areas that are in need of redesign', or 'anti-space' which make no positive contributions to their surroundings or users. Inappropriate design approaches have led to humans losing their identification with the environment within which they live and ultimately environmental destruction.

One of the major requirements is therefore to design urban environments in which individual buildings are integrated with public space, thereby creating positive urban spaces. *Designers should create site plans that become generations of context, and design buildings that define exterior space rather than to displace it* (Trancik 1986). Against this background, three major theoretical approaches (theories) to spatial design in urban areas were developed, namely:

a) Figure-ground theory.
b) Linkage theory.

c) Place theory.

Together these three theories can provide effective strategies for integrated urban design (Trancik, 1986). They must be carefully considered in the planning and design of existing and new urban spaces and developments to ensure that anti-space does not continue to occur in the settlements of the Northern Cape and that humans regain their ability to identify with their 'place'. The theories are summerised below.

1.12.3.1 FIGURE GROUND THEORY

The figure-ground theory is founded on the study of the relative land coverage of buildings as solid mass ('figure') to open voids ('ground'). Each urban environment has an existing pattern of solids and voids, and through the figure-ground relationship these relationships can be manipulated by adding to, subtracting from, or changing the physical geometry of the pattern. The objective of these manipulations is to clarify the structure of urban spaces in an urban area or node by establishing a hierarchy of spaces of different sizes that are individually enclosed but ordered directionally in relation to each other.

Trancik explains that space is the medium of the urban experience and that spatial orientation is defined by the configuration of urban blocks that collectively form neighborhoods and districts. It is the articulation and differentiation of solids and voids that make up the fabric of the city and establish physical sequences and visual orientation between places. It is therefore important that the perimeter of spaces and blocks be well articulated in order to establish positive outdoor rooms, which can be created by connecting the form of the building to the structure of the site or by turning and twisting the building's facades (Trancik, 1986).

1.12.3.2 LINKAGE THEORY

Unlike the figure-ground theory, which is based primarily on patterns of solids and voids, the linkage theory is derived from 'lines' connecting one element to another. These lines are formed by streets, pedestrian ways, linear open spaces, or other linking elements that physically connect the parts of a city. The designer applying the linkage theory tries to organize a system of connections, or a network that establishes a structure for ordering spaces. Emphasis is placed on the circulation illustration rather than the spatial illustration of the figure-ground theory. Movement systems and efficiency of the infrastructure take precedence over patterns of defined outdoor space (Trancik, 1986).

1.12.3.3 PLACE THEORY

The place theory goes one step beyond figure-ground and linkage theories in that it adds the components of human needs and cultural, historical, and natural contexts. Place theory gives physical space additional richness by incorporating unique forms and details indigenous to its setting and includes history, element of time and the fit between new design and existing conditions. In place theory, social and cultural values, visual perceptions of users and an individual's control over the immediate public environment, are as important as principles of lateral enclosure and linkage (Trancik, 1986).

Figure D11: Illustration of a combination of the Figure-ground, Linkage and Place theory (DMP, 2008).

1.12.4 PRINCIPLES FOR SUSTAINABLE DEVELOPMENT AND SPATIAL PLANNING

The overall objective of the PSDF is to facilitate sustainable development throughout the Northern Cape. Key aspects of sustainable development are the manner in which settlements are shaped and spatially orientated in the environment, and the extent to which a balance is achieved between the three global imperatives for sustainable development.

In this regard, Moughtin (1997) states that principles of *sustainable development* would include clear objectives for a framework of urban design that emphasizes conservation of both the natural and built environment. In the development process there should be presumptions in favour of conservation, and a premium should be placed on the conservation of natural resources, wildlife and landscapes. There is a strong need to structure and restructure the built environment in a manner that promotes sustainable development. In this regard, the PSDF draws from the views of Moughtin (1997) and provides guidelines and principles pertaining to the following aspects:

1.12.4.1 ENERGY AND THE BUILT ENVIRONMENT

Traditions of vernacular architecture have many lessons for those seeking sustainable forms in urban planning and design, and there is much to commend in the common sense approach to energy conservation and environmental protection practised by many builders in the past (Moughtin, 1997). In this regard, six planning principles were identified, which would contribute towards promoting sustainable development:

Principle No 1: Priority should be given to the conservation and reuse of buildings, infrastructure and materials.

Principle No 2: Use local regional building materials for construction work. Where possible, it is preferable to use materials requiring low inputs of energy in fabrication, transportation to the site, and the construction process itself. Preference should be given to materials, which are labour intensive, rather than energy intensive in their extraction, dressing and erection.

Principle No 3: Avoid materials that cause environmental damage leaving behind unsightly spoil heaps and quarries. The worst effects of such damage, when it occurs, should be mitigated, and new buildings should be linked with tree planting schemes in an

effort to offset some of the effects of pollution caused by the manufacturing of building materials.

Principle No 4: Relate the building to the local environment - to reduce the amount of external wall surface; to orientate the building towards the sun; to organise the interior of the building so that a buffer of storage rooms and other similar accommodation faces south, and to arrange for conservatories or sun spaces to be sited on the north, east or west facades.

Principle No 5: Design buildings for flexibility so that a mix of uses can be accommodated under the same roof and so that floor plans are robust, in the sense that they can be adapted for different uses during the building's lifetime.

Principle No 6: Buildings should be located on public transport routes and with close connections to other parts of the existing urban infrastructure and, where possible, development should take the form of infill within existing development or on 'brown land', that is, on previously used land or wasteland.

1.12.4.2 SUSTAINABLE TRANSPORT

Transport, in addition to bringing benefits to society, involves large costs. Costs, such as pollution and noise are incurred directly or indirectly by the users or by those passively affected by developments, whilst other costs are the result of environmental damage (Moughtin, 1997). 'Many of these costs, particularly from road building programmes and the resulting increase in traffic have fallen on the community rather than the developers of the transport system or its users. The price signals, such as road construction costs and cost of petrol, given by the transport market, because they ignore environmental costs, mislead the users into believing that personal mobility is cheaper than it really is. The depressed costs have therefore resulted in transport decisions harmful to the community' (Moughtin, 1997). The aim of planning policies and urban design solutions must be to *reduce* the need for movement and to recognise that planning and designing urban forms for the reduced need for mobility, is a longer term solution to the problems facing society.

1.12.4.3 URBAN METAPHOR

Similar to any organic organism, a healthy urban environment is maintained only as long as the balance of its components is maintained. *'Excess growth is managed by the propagation of new colonies. The organic model for the urban area is most in tune with the concept of sustainable development when, in particular, it takes on the attributes of ecology.'* This would occur where there is a diversity in its components, which maintains the balance between the energy inputs and outputs including recycling, waste reduction and pollution spheres (Moughtin, 1997).

1.12.4.4 URBAN FORM

Against the background of the key aspects of urban form, namely the *linear* urban area, the *gridiron plan* and the *highly centralised* settlement, it is contended that each may have a role to play in achieving sustainable development, and that much will depend on the circumstances in which each form is used. A public transport strategy and an ecological strategy are probably the two most important factors in determining urban form. *'Such settlements, to be effective, should be of a size determined by comfortable walking distances between activities in the settlement'* (Moughtin, 1997).

It is a priority for the immediate future, to make existing urban areas more sustainable, and to seek ways in which the great suburban belts of development, which encircle most settlements, can be

made less energy-intensive in terms of mobility while maintaining a good quality of life for those living there.

1.12.5 PRINCIPLES FOR URBAN DESIGN

An integrated approach to urban design must combine the spatial definition of the figure ground theory with the connective qualities of the linkage theory and the social responsiveness of the place theory summarized above. The combination of the three theories implies that in designing urban space the integration of various land-uses and activities is promoted and favoured. '*Spaces that can accommodate mixed or integrated uses have much greater richness and vitality than single-use spaces, which are often static and remain lifeless for substantial periods of time. Design must respond to the dynamics of social uses in its physical form'* (Trancik, 1986).

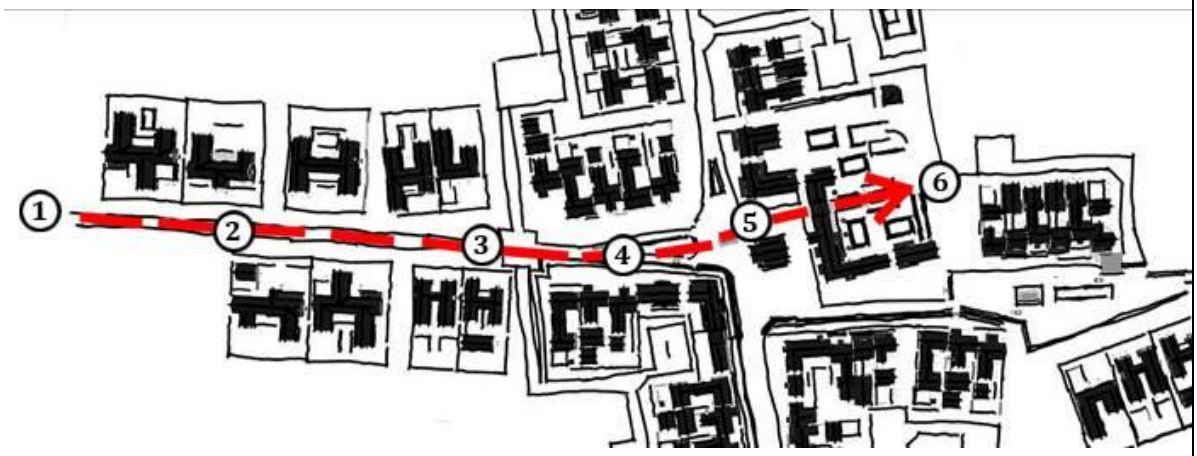
It is also imperative that new ways of integrating the motor vehicle into the urban landscape be found in order to ensure that good quality outdoor spaces are created for pedestrians. Historically streets and squares where places to spend time in, as well as corridors through which to move, but in modern times they have lost much of their social function and physical quality.

While it is accepted that in some areas the separation of the motor vehicle and the pedestrian should be promoted, the design of most urban spaces must accommodate an appropriate mix of people and cars and strategies such as the 'woonerf concept' must be considered. The separation of places of work and living, which has become the norm, must be addressed. The goal of an integrated approach to urban design should be to promote closer proximity between housing and employment where ever possible, without compromising the quality of living.

Finally, it is imperative that a concern for design quality be integrated into the political decision-making process. *'Too often, function and economic considerations override those of design. Part of the designer's role is to influence policy makers and the public in order to ensure that the quality of the public environment is not compromised'* (Trancik, 1986:220). In order to achieve these integrated design goals, the following five design principles are to be followed in the future planning and design of the settlements of the Northern Cape.

1.12.5.1 LINKING SEQUENTIAL MOVEMENT

Historic models should be considered for inspiration in restructuring modern urban spaces, i.e. urban spaces that have successfully solved problems of connecting existing structures into a sequential, unified space. Important urban design principles can be applied to contemporary design of places where the exterior landscape acts as a link between buildings and directing sequential movement through a series of spaces. The linkage principles can be applied to knit together discontinuities by infilling directional pedestrian space (Trancik 1986: 220).



Point 1:	As one walks up the street the node comes into sight with its square in the distance.
Point 2:	The street is defined on either side by buildings (lateral enclosure).
Point 3 & 4:	The focal point (axis and perspective) becomes prominent.
Point 5:	As one cross the square the line of sight leads to a coachman's entrance (integrated bridging).
Point 6:	Upon entry, the enclosed vista opens and the agricultural landscape lies beyond.

Figure D12: Illustration of Principle No 1 – Linking Sequential Movement (DMP, 2008).

1.12.5.2 LATERAL ENCLOSURE AND EDGE CONTINUITY

'Continuity and the use of walls are important to achieve lateral enclosure and to create a setting for street-level activities appropriate to the area being designed. 'The success or failure of public space depends largely on the character of its frontage and the continuity of walls' (Trancik 1986).

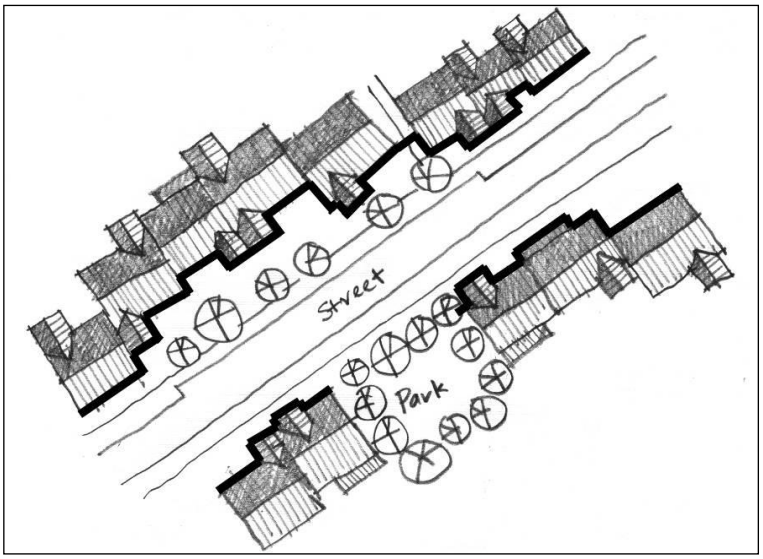


Figure D13: Lateral enclosure and edge continuity are promoted by placing building fronts right up to the street at slightly uneven angles.

The continuity and character of streetscapes can be promoted by following traditional building lines, where buildings front directly on the boundary of the erf and are connected on the sides. The result is a feeling of enclosure; *'buildings therefore enclose the street and define it as public space'* (KrugerRoos, 1998).

The aim is to design buildings that are integrated with the public space instead of displacing it and using the principle of enclosure to define urban space. Poor enclosure is caused by wide roads and buildings which are too low and therefore do not create the 'walls' of the urban space. Continuity and the use of walls are therefore important to achieve lateral enclosure and to create a setting for street-level activities appropriate to the area being designed.

1.12.5.3 INTEGRATED BRIDGING

Another design principle that can be applied successfully in today's urban landscape is the concept of integrated bridging, which is best described as a building that is a bridge, and a bridge that is also a building. The two functions are successfully integrated into one form. This principle can be applied when blockages or barriers in the urban fabric need to be overcome. It is possible to design continuous spaces without the negative gaps that often disrupt the spatial flow. The objective is to create an uninterrupted mesh of activities in public spaces. Separated buildings and activities can be integrated with coherent public space defined by architectural and landscape elements.

Figure D14: Methods of designing continuous spaces without negative gaps (DMP, 2008).

1.12.5.4 AXIS AND PERSPECTIVE

Axis and perspective can greatly help in designing hierarchies of spaces based on spheres of visual and functional importance and can be used to clarify and order block patterns.

Figure D15: Axis and perspectives illustrating hierarchy of spaces (DMP, 2008).

Trancik explains that, whereas block patterns give shape to streets and squares, axis and perspective provide directional guidance for movement, their layout should invariably be based on simple, fundamental geometries that link elements at the macro scale (Trancik, 1986).

1.12.5.5 INDOOR / OUTDOOR FUSION

In all urban design the transition between indoor and outdoor space is of great importance. It is emphasised that the principle of indoor / outdoor fusion has enormous potential for creating new types of urban spaces in the future – spaces that are responsive to energy needs (passive-solar, climate-controlled systems and the like), spaces that take greater advantage of the potential of year - round usage, spaces that integrate landscape and urban gardens, and spaces that also explore new architectural possibilities with the use of advanced materials (Trancik, 1986).

1.13 TOOLKIT D13 APPLICATION OF SPATIAL STRUCTURING ELEMENTS

TOOLKIT SYNOPSIS

A key objective of the local municipality SDFs is to provide a rational and coherent framework for the structuring of new urban developments and for the restructuring of existing urban areas with the aim to:

- enhance and preserve the unique characteristics and qualities of the individual towns and settlements of the Northern Cape;
- restore degraded places; and
- create high-quality places in accordance with the principles of good 'place-making' and in terms of the principles of sustainable development.

This toolkit provides guidance to municipalities, planners, developers, landowners and other community members involved in urban development with regard to the above.

1.13.1 THE SPATIAL STRUCTURING ELEMENTS AND THEIR FUNCTIONS

Together with the land-use classification approach (the SPCs application) (refer to Toolkit D1), six Spatial Structuring Elements are provided to guide urban renewal and future development throughout the Northern Cape, namely:

- Urban Edge.
- Precinct.
- Node.
- Activity Corridor.
- Activity Street.
- Municipal Open Space System.

The Spatial Structuring Elements are practical tools to be used by all stakeholders to help shape individual towns into settlements that are sustainable and where a high quality for its inhabitants is ensured. The key functions of the Spatial Structuring Elements are to facilitate the following:

a) Containment of urban sprawl (urban sprawl implies higher per capita cost of providing essential services and loss of valuable agricultural or natural land).

b) Promotion of urban and social integration by creating compact urban areas (compact urban areas, i.e. mixed use areas where a wide range of urban activities/facilities as possible are accommodated within walking distance of living areas, contributes to the accessibility of economic, social and recreational opportunities to the community).

c) Promotion of acceptable higher densities (higher densities imply more efficient use of available urban land, natural resources and service infrastructure).

d) Creation of quality urban environments through urban renewal and landscaping (priority should be given to the conservation and reuse of buildings, infrastructure and materials and the beautification of the urban environment through intensive landscaping).

e) Reduction of the need for traffic movement and promotion of pedestrian and non-motorised movement patterns (the price signals of transport, such as construction costs and cost of petrol given by the transport market, because they ignore environmental costs, mislead the users into believing that personal mobility is cheaper than it really is).

f) Restoration and maintenance of a defined sense of place (urban areas must reflect the culture-historical character of the area and its people and unique local land-uses).

g) Alleviation of poverty and inequality (future urban development should improve the state of any given situation within the context of the constitutional imperative of promoting both human well-being and environmental integrity).

h) Protection and enhancement of the properties and investment of all inhabitants by *inter alia* preventing inappropriate development or land-use in the proximity of such properties and promoting renewal/upgrading of existing development that detracts from the overall value and integrity of an area.

i) Enhancing and simplifying decision-making regarding development applications. Applications that are not consistent with the designated Spatial Structuring Elements will be subject to standard directives, including the respective Scheme Regulations.

In the chapters below a definition, the purpose and application value, and broad policy guidelines are provided with regard to the implementation and/or compliance with the Spatial Structuring Elements.

1.13.1.1 URBAN EDGE

The Urban Edge is the demarcated outer boundary of such urban areas and marks the transition between urban and rural land-uses. The Urban Edge consists of the following three components:

a) Urban Edge Line: The *Urban Edge Line* is the demarcated outer boundary within which urban expansion can be accommodated within a defined period of time.

b) Built Edge Line: The *Built Edge Line* defines the outer boundary of the existing built up area and will always be contained by, or coincide with, the *Urban Edge Line*.

c) Urban Fringe: The *Urban Fringe* is the area located between the *Urban Edge Line* and the *Built Edge Line.* The Urban Fringe is significant because it is the area in which urban expansion must be accommodated.

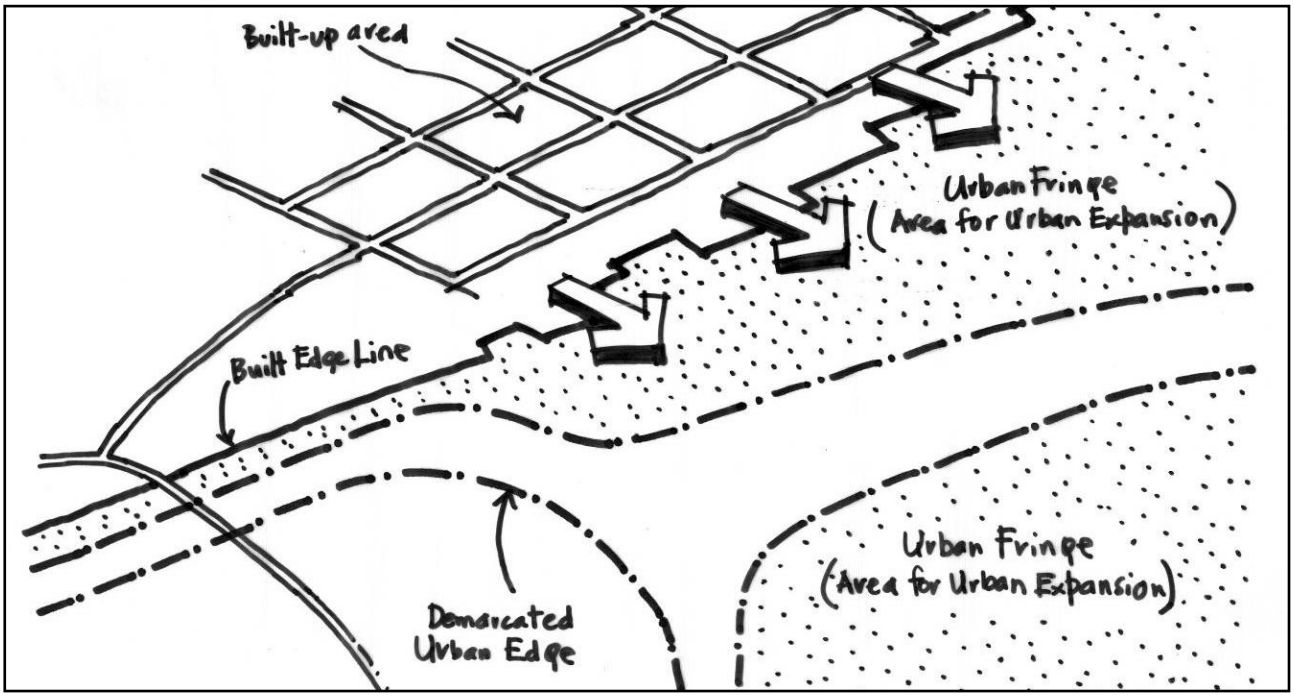


Figure D16: Components of the Urban Edge.

The Urban Edge is demarcated to manage, direct and control the outer limits of development and protect valuable natural environments and resources. It is also an important tool to contain urban sprawl and *ad hoc* low-density development which adds to the life cycle costs of urban areas and places an unnecessary heavy burden on communities.

1.13.1.2 PRECINCTS

Precincts are special use areas, which are dominated by a primary activity together with an appropriate diversity of land-uses closely associated with the primary activity. The development of such *Precincts* could influence the settlement patterns and growth the individual towns within the Northern Cape. Four distinct precincts have been identified, namely:

a) Central Business Districts (CBD):
b) Tourism Precinct: This precinct consists of existing and envisaged tourism and recreational facilities such as resorts and public parks
c) Airport Precincts: This precinct consists of the existing and planned business and cargo hubs at the various airports within the Northern Cape.
d) Industrial Precincts: This precinct consists of the existing designated industrial areas and envisaged Industrial Development Zones.

1.13.1.3 NODES

The bioregional planning approach requires that development planning be undertaken in the context of five distinct spheres, namely the international level, national level, provincial level, district municipal level and local municipal level (refer to Chapter 5 and Toolkit D4). This implies that the inter-relationship of settlements or nodes should be recognised and understood. As stated throughout the document, the Northern Cape is an immensely important hub in the international, national, regional and local context.

The various spheres of nodes applicable to the Northern Cape are as follows:

a) Regional Nodes: These are areas/towns of significance in terms of scale, location, impact, diversity and agglomeration of function (facilities, services and economic activities), which have a significant impact on the Northern Cape as a whole. These include:
   (i) Upington.
   (ii) Kimberley.
   (iii) Springbok.
b) Sub-Regional Node: These are areas/towns of significance in terms of the various districts or regions of the Northern Cape. These include:
   (i) De Aar.
   (ii) Colesberg.
   (iii) Calvinia.
   (iv) Keimoes.
   (v) Kakamas.
   (vi) Kuruman.
c) Local Nodes: This refers to the local settlements and public places.

Within the individual towns and settlements *Local Nodes* occur in the form of 'junctions' or 'concentrations' of a particular use or physical character at the intersection of *Activity Corridors, Hospitality Corridors* and/or *Activity Streets,* described below. These are strategic localities within which the primary economic activities of such towns are centred and within which the much-

needed integration of the local communities is to be achieved. These *Local Nodes* are characterised by higher development densities and mixed-use activities.

Based on the significance of the particular *Local Nodes* in terms of scale, location, diversity and agglomeration of activities and services, differentiation is made between three types of *Local Nodes*, namely:

(i) Neighbourhood Nodes: This type of node occurs at a neighbourhood level and is intended to serve the daily economic and social needs of at least one neighbourhood.

(ii) Lower Order Neighbourhood Nodes: This is a scaled down *Neighbourhood Node* and usually occurs at the intersection of *Activity Streets* and *Connectors*. Lower Order Neighbourhood Nodes are intended as a public meeting place for communities (i.e. local corner café, church and playgrounds) with only the minimum of activities to satisfy the daily need of the particular community.

(iii) Speciality Nodes: This type of node surrounds a primary activity and serves a specific market. Activities within these nodes are of a specific or specialised nature, which could be retail, professional services, health care, tourism, etc.

Activity Corridors, *Streets* and *Nodes* are interdependent and reliant upon each other. The corridors and streets rely on nodes along its length to generate movement and activity. In turn, nodes form the logical strategic points where economic and social investment is focused. *Activity Corridors* and *Streets* reinforce the economic efficiency and significance of *Nodes* and *vice versa*.

1.13.1.4 ACTIVITY CORRIDOR

An *Activity Corridor* is a linear zone of medium to high density, mixed-use development abutting a primary transport route. Activity corridors link areas of greater intensity of land-use, namely *Nodes*. In activity corridors a variety of social and economic functions are integrated with higher density residential functions. Two types of *Activity Corridors*, that reflect their primary use, are promoted in the individual towns of the Northern Cape, namely:

a) General Business Corridors: These are medium to high density business-orientated development areas abutting either side of a primary transport route. Secondary land-uses compatible with business-orientated developments, i.e. higher density residential uses, may also be considered.

b) Hospitality Corridors: These are areas abutting either side of the primary transport route, where low to medium density community-based hospitality initiatives and projects are promoted and implemented. In these corridors obligations are placed on those that own hospitality-related enterprises to ensure their meaningful participation in creating an environment conducive of viable tourism and to ensure their long-term commitment in this regard.

Activity corridors are important structural elements focused on the:

(i) Promotion of social integration.

(ii) Increasing residential and business densities.

(iii) Enhancing accessibility of economic and social opportunities.
(iv) Creating high-quality urban environments through urban renewal and intensive landscaping.

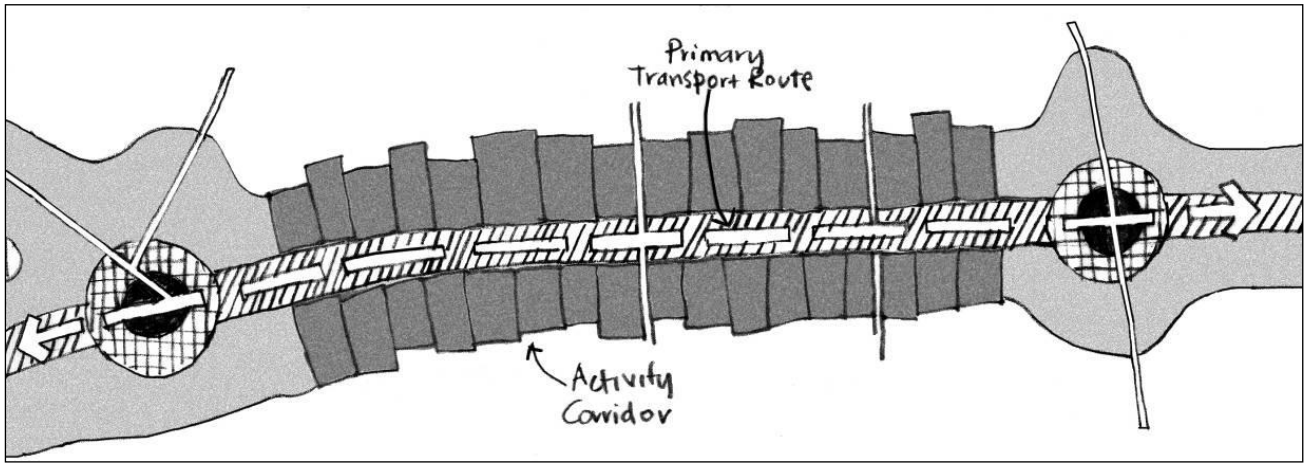


Figure D17: Drawing of typical Activity Corridor linking Nodes of high intensity land-use.

1.13.1.5 ACTIVITY STREETS

An Activity Street is a local road that displays the same characteristics and principles of linearity and mixed use development than an activity corridor, but with a lower level of intensity of use and market threshold. It attracts enough passing trade to provide viable opportunities for local business and community facilities.

Activity Streets play a vital function in linking previously isolated communities at the local level and provide appropriate locations for small and informal enterprises. It reinforces *Higher* and *Lower Order Nodes* and strengthens the integration of communities and the accessibility to economic, cultural and social functions.

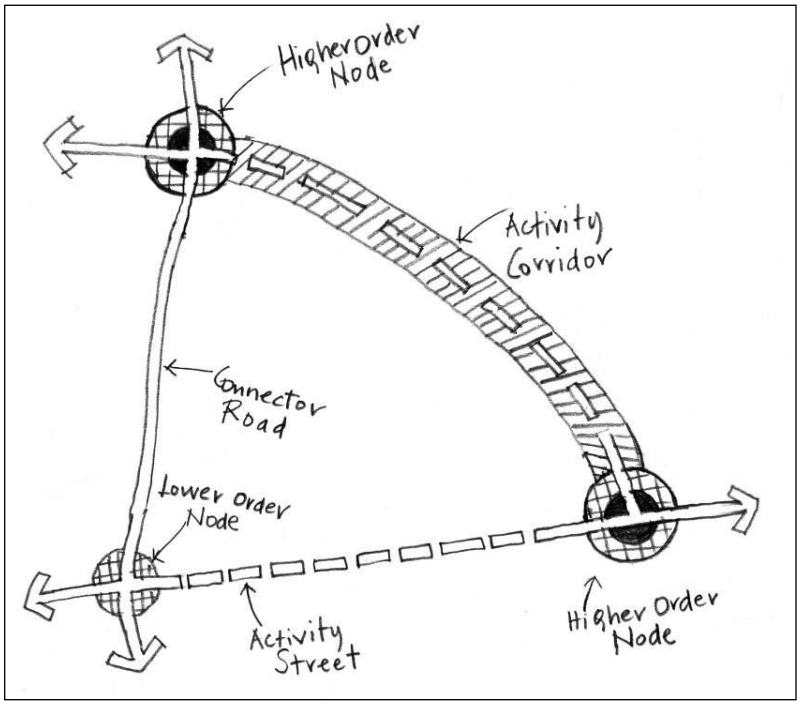


Figure D18: Drawing of typical Activity Street as it links with Lower Order Nodes, Higher Order Nodes, Activity Corridors and Precincts.

Activity Streets are linked by *Connectors* which are primarily main streets that carry through-traffic and have the capacity to handle higher traffic volumes. *Connectors* play a key role in the spatial structuring of urban areas by linking the Spatial Structuring Elements of *Activity Corridors, Activity Streets, Nodes* and *Precincts*.

1.13.1.6 MUNICIPAL OPEN SPACE SYSTEM

The Municipal Open Space System (MOSS) is network of contiguous natural corridors and urban green areas that occur throughout the individual towns and smaller settlements. The MOSS consists of 3 categories of open space:

a)	Ecological Open Space	• Statutory and Non-Statutory Conservation Areas (SPC A.a). • River Courses (SPC A.b). • Ecological Corridors / Areas (SPC B.a). • Rehabilitation Areas (SPC B.b).
b)	Social Open Space	• Urban Green Areas (SPC B.c). • Sports Fields and Infrastructure (SPC D.l).
c)	Agricultural Open Space	• Extensive Agricultural Areas (SPC C.a). • Intensive Agricultural Areas (SPC C.b).

The MOSS is aimed at:

- Complementing the built environment by providing it with diversity, natural quality, recreation opportunities and open space general enjoyment.
- Enhancing and protecting biodiversity in the urban environment by providing natural linkages between ecosystems and creating habitats for localised animal and plant species.

1.14 TOOLKIT D14 APPLICATION OF SETTLEMENT INDICES

TOOLKIT SYNOPSIS

This toolkit includes a development profile (displayed in the form of histograms appended as an Annexure of the PSDF, (refer to the Socio-Economic Potential of Towns Study) for each of the local municipalities. These basic profiles serve as a platform for a detailed diagnoses and preparation of a development strategy for each local municipality. The toolkit constitutes a 'manual' with regard to the interpretation and application of such profiles in order to achieve the objectives referred to above. The practical application of the application of the settlement profiles is illustrated with with the use of case studies.

As stated in Chapter 5.6, the settlement indices in the Annexure (referred to above) are to be used to:

a) Prioritise government spending and LED to best benefit of province as a whole.
b) Prepare IDPs and prioritising IDP spending.
c) Indicate what type of development and investment are required and how the municipal budget should be allocated to eradicate backlog or weaknesses.
d) Measure performance of district and local municipalities.
e) Assist municipalities in the continual improvement of their performance and status.
f) Assist national and provincial government departments in allocating their budgets, e.g. identify towns that can qualify for pilot projects of the Comprehensive Rural Development Programme or guide LED-programmes, etc.

1.14.1 A CASE STUDY TO ASSIST MUNICIPALITIES

Springbok provides a case study on the methodology that could be executed for any other town or municipality in the province. The output in the form of tables, illustrations and maps for all 115 towns in the province could be subjected to the same methodology, should the need arise. The town's comprehensive development profile is presented for each of the nine Indicator groups[7], as well as the Composite Indicators[8], and presented in a histogram (refer to Figure D19). Each column represents the performance level and specific development component in relation to the Northern Cape provincial average (zero-line). Therefore, these columns are an indication of each component's relative position amongst the 115 towns in the province, and should not be interpreted in absolute terms.

At rank 4 on the overarching Development Potential scale (where position 1 represent the best situation), Springbok is characterised by a high profile, well-articulated for a favourable development niche as a regional urban centre in the western part of the province and Namaqualand. The main contributors to this general standing are *Human Resources*, *Institutional Services* and *Commercial Services*. The town, therefore, scores very good on *Composite Resources*, as well as *Composite*

[7] The nine Indicator Groups are Natural Resources, Human Resources, Transportation and Communications, Institutional Services, Economic Sectors, Commercial Services, Market and Accessibility, Property Market, and Human Needs Development.

[8] The Composite Indicators refer to the Composite Resource Potential index, Composite Infrastructure Index, Composite economic Activities Index, Composite Needs Index, Composite Development Potential Index, and the Composite Needs Index.

Infrastructure indices. Market Size and Property Market display the weakest components in the town's development profile and should be investigated further in a follow-up study to be undertaken as part of the municipal SDF.

The Human Needs index has a strong low poverty level at rank 11 (rank 1 indicates the best situation), implying that the quality of life in Springbok compares relatively favourable in relation to the provincial average. When the town's specific Development Potential index is integrated with its Human Needs index, Springbok is a strong candidate for *Infrastructure Capital Investment*, supplemented by *Basic Services* upliftment if needed (as suggested by the NSDP). This is because of the town's position in the high development potential and low human needs quadrant.

The town and municipality experience political and managerial stability, which should enhance the endeavours of economic development and strengthen democracy through community participation in a co-operative governance system. Being the head office seat of the Namakwa District Municipality and the Nama Khoi Local Municipality, Springbok functions as an administrative and regional service centre for the extensive Namaqualand in the western part of the Northern Cape. At the same time the town functions as a government sub-regional centre for several of the Northern Cape Provincial departments, including a regional office for the Premier. Springbok is located in a strategic position not only in relation to its surrounding hinterland, but also with regard to the N7 and N14 transport routes. The N7 connects the Western Cape with Namibia, while the N14 links Springbok with Upington/Kimberley and further eastwards to other provinces of South Africa. Springbok performs a prominent role along the West Coast/N7 Development Corridor between Cape Town and Namibia.

The town's development profile in Figure D19 displays a reasonable diversified economic base, which is fundamental to the success of any regional urban centre. This position points to a sound confidence level for sustained economic development outcomes, especially if the weaker components of the Composite Economic Activities indicator could be stimulated. For this purpose, the already well established component of Human Resources, Institutional Services and Commercial Services should be further utilised. The regional development profile of the Nama Khoi municipality, in which the town is one of ten settlements, greatly reflects that of Springbok.

The economic base of Springbok depends mainly on agriculture (stock framing), mining and tourism as the traditional anchor activities. It has a *central market place* character providing in the shopping, administrative, educational and other service requirements of the region. The downscaling of mining activities in the surrounding settlements over the past years not only resulted in job losses which impact negatively on families, but emphasises the need for further diversification of the economy. Springbok has a well-developed business and service sector to meet the needs of the farming and surrounding mining communities of Aggeneys, Okiep, Kleinzee, Port Nolloth, Garies, Steinkopf, etc. This puts the town in a very suitable position to supply a wide hinterland with higher-order shopping goods and regional services. The range of its services transcends provincial and even international boundaries. The town's diversified economy includes a range of retail shops, offices, as well as business and community services.

A good infrastructure system already supports town development, while there is ample land available for future spatial expansion of the urban area. The settlement also has sufficient good-quality water sources such as from the Orange River for urban expansion. A possible railway line connection, as well as the upgrading of the air strip in Springbok and the nearby Port Nolloth harbour, could further enhance the connectivity and transportation infrastructure.

If a larger proportion of 'drive-through visitors' can be converted into 'overnight visitors', the tourist component and the town's economic base could be strengthened. Facilities and marketing campaigns

should be initiated to persuade visitors to remain longer in the town. This will lead to new economic vitality in the growing eco-tourism sector, utilising the unique sense of place of the serene Namaqualand/Richtersveld with its distinctive topography, flora and cultural attributes. The overall arid nature of the area resulted in large farms with a sparsely distributed population over an extensive area. This semi-desert situation however also created one of the most significant biodiversity areas in the world, which can be positively exploited for tourism and scientific purposes.

Taking all the evidence into account, Springbok has a very promising development potential. The prospects for sustained economic growth and social needs development appear very favourable. Most of the development factors support the town's undisputed niche as a regional urban centre for Namaqualand.

The *vision of the Namakwa District Municipality* creates a positive framework for development, namely *the establishment of a development-orientated and economically viable region to ensure sustainable growth in order to establish, improve and promote committed strong local structures, within the Namakwa District* (IDP, 2006: P6).

Some of the public policy instruments built in these initiatives are:

- Integrated economic development.
- Efficient service provision.
- Eradicating poverty.
- Promoting private sector investment.
- Opportunities for local and external entrepreneurs through partnerships.
- Black Economic Empowerment; job creation and infrastructure through LED initiatives.
- SMME focus; skills and capacity building.
- Integrated spatial development linking Springbok and Bergsig in a north-south corridor.

1.15 TOOLKIT D15 GUIDELINES FOR TOURISM PLANNING

TOOLKIT SYNOPSIS

Tourism is one of the key economic sectors of the Northern Cape. It has huge potential for significant growth due to the comparative and competitive economic advantages vested in, amongst other, the natural environment, rich history and diverse cultures and traditions, astronomy, hunting and other nature-related experiences. However as is often the situation in the tourism sector throughout South Africa, tourism planning and management in the Northern Cape is generally not of the required standard to ensure that the sector performs to its full potential. Chapter 6.2 stipulates a number of prioritised strategies and implementation guidelines, most of which relate to the preparation of coherent plans to facilitate on-going development and efficient management of the sector.

This toolkit provides basic guidelines regarding the preparation of tourism management plans for all spheres of government. The guidelines apply to the tourism planning and management facilitated, or undertaken, by *inter alia* Northern Cape Tourism Authority in collaboration with the Department of Finance, Economic Development and Tourism, district and local municipalities, and the entrepreneurs.

1.15.1 TYPE OF TOURISM TO BE PRACTISED IN THE NORTHERN CAPE

To achieve the true potential of the tourism sector in the Northern Cape it must be recognised that *any old tourism* will not work. An efficiently-managed and integrated tourism sector is required.

A bioregional planning and implementation approach is to be followed in all economic sectors. This approach builds upon and promotes the unique characteristics of the local environment and subsequently has the potential to boost other sectors of the economy. The type of tourism to be adopted should create entrepreneurial opportunities for the previously neglected groups; should be kind to the environment; and should contribute towards bringing economic empowerment, prosperity and enjoyment for the people of the area.

1.15.1.1 RESPONSIBLE TOURISM

The White Paper on the Development and Promotion of Tourism in South Africa (DEA, 1996) proposes responsible tourism as the key guiding concept for tourism development.

Responsible tourism implies a proactive approach by tourism sector partners to develop, market and manage the tourism sector in a responsible manner, so as to create a competitive advantage. Responsible tourism implies tourism sector responsibility to the environment through the promotion of balanced and sustainable tourism and focus on the development of environmentally-based tourism activities. Responsible tourism means that the relevant tourism authority and business have the responsibility to involve the local communities that are in close proximity to the tourism attractions through the development of meaningful economic linkages (e.g. the supply of agricultural produce to the lodges, out-sourcing of laundry, etc.). It implies the responsibility to respect, invest in and develop local cultures and protect them from over-commercialisation and over-exploitation. It also implies the responsibility of local communities to become actively involved in the tourism sector, to practice sustainable development and to ensure the safety and security of the visitors.

Responsibility to visitors through ensuring their safety, security and health is a consequence of responsible tourism. It also implies the responsibility of both employers and employees in the tourism sector both to each other as well as to the customer. Responsible tourism furthermore implies

responsible local governance as well as responsibility on the part of the tourists themselves to observe the norms and practices of the relevant area.

Responsible tourism is furthermore characterised by strategies to:

a) Avoid waste and over-consumption.
b) Use local resources sustainably.
c) Maintain and encourage natural, economic, social and cultural diversity.
d) Be sensitive to the host culture.
e) Involve the local community in planning and decision-making.
f) Assess environmental, social and economic impacts as a prerequisite to developing tourism.
g) Ensure communities are involved in and benefit from tourism.
h) Market tourism that is responsible, respecting local, natural and cultural environments.
i) Monitor impacts of tourism and ensure open disclosure of information.

1.15.1.2 TOWARDS IMPLEMENTATION OF RESPONSIBLE TOURISM

The key challenge is to foster a commitment to responsible tourism on the part of all stakeholders and most importantly, implement it. The relevant tourism authorities and the sectoral entrepreneurs must be committed to the principle of responsible tourism and should undertake the following actions to facilitate its implementation:

a) Work closely with international funding agencies, the local and international private sectors, NGOs and other relevant partners to define responsible tourism and establish a standard for it.
b) Actively market and promote the relevant area as a premier responsible tourism destination.
c) Provide incentives for responsible tourism providers, through equirable procurement policies, encourage international organisations and agencies to follow suit.
d) Encourage the development of partnerships between the tourism private sector and local communities.
e) Sensitise the tourism private sector to the importance of involving communities in the development of responsible tourism.
f) Use the local and international media to recognise and promote establishments that take actions to become socially and environmentally responsible.
g) Support the employment of a cadre of persons to act as 'doormen' between the private sector and local communities to create business opportunities for communities.
h) Work closely with to assist local communities to identify and develop their tourism potential.
i) Encourage successful responsible tourism suppliers to champion the cause of the communities and the spread of responsible tourism.
j) Encourage joint ventures in which communities have significant ownership of and a substantial role in the management of the tourism enterprise. Land claims and communal ownership of land offer forms of equity in these kinds of schemes.
k) Encourage the provision of opportunities at hotels and other establishments for advertising local attractions and other products and services offered by local communities.
l) Encourage tour operators to include informal community gathering places, local museums, arts and craft shops in their tour itineraries.

1.15.2 KEY CATEGORIES OF THE TOURISM PRODUCT

The comparative economic advantages, or unique selling points, of the Northern Cape and its component places are not only vested in the biophysical, economic and cultural environment, but also in the minds of the people living in the area and those that visit, or intend to visit, the area.

Responsible tourism therefore largely depends on a thorough understanding of the Northern Cape and its components as distinct and unique places. Such understanding can be described as a *phenomenological understanding*[9] which needs to be supported, or cultivated. Such an understanding is based on the fact that all interrelated systems and other phenomena are nested within one place, namely the biosphere (Norberg-Schulz, 1993). Thinking about the Northern Cape as part of the biosphere (living world) helps us to understand the interdependency and links between settlement and countryside, natural and cultural processes, water and land, communities and their surroundings. In the long-term, tourism would not be a viable economic sector in the Northern Cape without such understanding.

It is important to recognise that the *spirit of place* is manifested in *location*, *spatial configuration*, and *settlement boundaries.* Primary *structural properties,* such as the way buildings are constructed, etc. must be preserved in order to retain a particular *local quality* and protect the *atmosphere* of a place. It is this atmosphere, or intrinsic value, which first of all, ties people to their place and strikes visitors as a particular local quality (Norberg-Schulz 1993). It is therefore imperative that the intrinsic and systemic values of the human-made environment of the province and its component places be restored and conserved in the long-term. This is to be achieved by giving effect to the PSDF and the municipal SDFs which require that the five principles of 'critical regionalism' summarised in Toolkit D12 be used to guide all future development and restoration actions throughout the province.

1.15.3 SPATIAL PLANNING FOR RESPONSIBLE TOURISM

The tourism plans proposed for the Northern Cape and its component places and enterprises accordingly consist of:

- A Tourism Opportunity Spectrum (TOS) in combination with;
- A Spatial Plan illustrating the appropriate land-use for each area in accordance with the Spatial Planning Categories (SPCs) (refer to Chapter 6 and Toolkit D1) and the Spatial Structuring Elements (refer to Toolkit D13).

The purpose and practical application of the integrated TOS and the SPC plan are as follows:

a) It provides a framework for the formulation of an appropriate 'image' for the planning area (e.g. the province) and its component places and for the branding and marketing of the tourism product(s).

b) It provides a comprehensive inventory of tourism opportunities so as to attract the appropriate target market. This is to be achieved through the creation of appropriate mental images as a basis for the evaluation and selection of the tourist's choice of destination.

c) It ensures that tourists do not have false expectations and that their realistic expectations and aspirations are fulfilled.

[9] A phenomenological understanding refers to how we experience ourselves and how we experience **things** outside ourselves, that is, all that is not self (Wagner, 1983).

d) It provides guidance in respect of the most appropriate tourism type and/or opportunity class to be presented in any portion of the province. These guidelines are based on the designated land-uses (in terms of the SPCs) of the subject portion.
e) It provides a framework that facilitates the preparation of guidelines for the development of tourist facilities (e.g. in accordance with the principles of critical regionalism summarised in Toolkit D12) and the management of tourism activities in each zone.
f) It provides a framework in terms of which the relevant government will be in the position to guide future tourism development and management throughout its area of jurisdiction.
g) It provides a framework for the preparation of management plans for tourism destinations and enterprises.

1.15.3.1 APPROPRIATE SPATIAL CONFIGURATION OF TOURISM TYPES AND OPPORTUNITIES

Tourism in throughout the province includes a variety of tourism types, many of which are interrelated and are presented in the same localities. In the tourism plans to be prepared for the various spheres of government and for individual enterprises these various tourism types are to be categorised broadly in terms of a consumptive/non-consumptive continuum ranging from the 'least modified' (natural) to the 'most modified' (cultural). This should be based upon the zoning concept of core areas (least modified areas), buffer zones, and transition areas (most modified areas) as described in Toolkit D1.

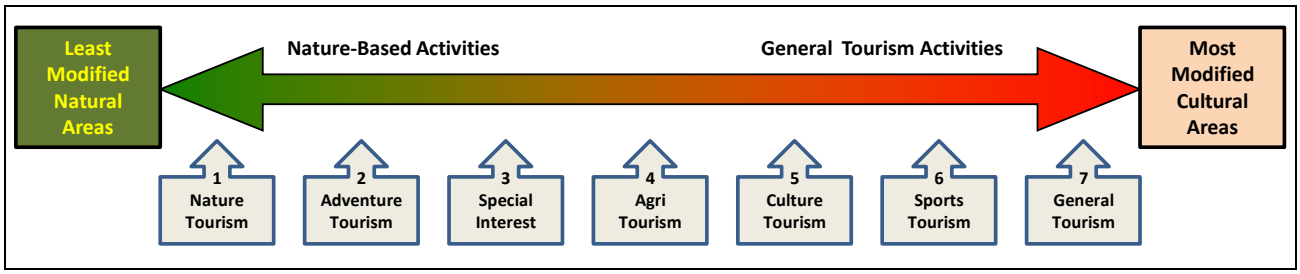


Figure D24: Tourism land-use continuum (Adapted from Reid, 1999)[10].

The continuum provides a framework for the preparation of a TOS for the relevant planning area or enterprise. This continuum arranges the various categories and types in a hierarchical order ranging from the 'least modified natural areas' to the 'most modified cultural areas'. The TOS constitutes a description of the following:

a) Type of tourism opportunity.
b) Opportunity class and associated activities.
c) Appropriate location for such activities in terms of the SPCs. The TOS, accordingly, has to be read together with the SPC plan for the relevant area.

[10] Reid, D.G. (Ed), 1999. *Ecotourism Development in Eastern and Southern Africa.* Weaver Press, Harare, Zimbabwe.

Table D5: Concept integrated TOS together with spatial indices as indicated by the relevant SPC plan(s).

TOURISM TYPE	OPPORTUNITY CLASS	SPC & LOCALITY
NATURE TOURISM	Nature-related experiences in semi-wilderness or extensive natural areas.	
	a) Non-consumptive, non-mechanised activities focussed on physical and spiritual enjoyment of the natural environment.	SPC A.a, B.a, B.b, B.c, C.a
	b) Non-consumptive, mechanised activities focussed on physical and recreational natural environment.	Ditto
	c) Nature-based hiking, biking, camping, wildlife- and bird watching.	Ditto
ADVENTURE TOURISM	Exploration, or travel to remote areas and 'expect the unexpected', gaining excitement by stepping outside of the comfort zone.	
	a) Self-catering activities with element of danger; requiring physical skill and endurance, degree of risk-taking. Includes rafting & canoeing on Orange River, mountain-biking, quad-biking[11], micro-light flights.	SPC A.b, B.a, B.b, B.c, C.a.
	b) Catered non-consumptive, mechanised activities focussed on experiential use of specific environmental dimensions, e.g. guided boat & canoe trips on the Orange River.	Appropriate locations through-out the province.
SPECIAL INTEREST TOURISM	Opportunities to use or study aspects that are unique to the Northern Cape.	
	a) Non-consumptive experiencing and/or studying of specific aspects of both the natural and cultural environment, e.g. astronomy.	Sutherland and other locations in the astronomy reserve.
	b) Utilising ideal climatic conditions and suitable infrastructure for testing of new and/or prototype vehicles and equipment.	Defined locations in the province.
	c) Ethical sports and trophy hunting in unique Kalahari environment.	Ditto
AGRI' TOURISM	Opportunities to experience and/or study agri-related lifestyles and land-uses unique to the Northern Cape.	
	a) Study and experience traditional lifestyles and land-use practices of the area, e.g. cultivation/production of wine, dried fruit, game products.	SPC C.a, C.b, D.c, D.o, E.a, etc.
	b) Where possible, reside with farmer and his family to experience local traditional, lifestyles and values.	Ditto
	c) Reside in self-contained cottage or traditional farmhouse and experience daily agricultural routines and practices.	Ditto
	d) Guided tours on farms or through agri-industries.	Ditto
CULTURE TOURISM	Opportunities to experiencing and/or study local culture and traditions.	

[11] Mechanised sports, e.g. quad-biking, may only take place in dedicated zones in order to avoid any noise and dust disturbances.

	a) Direct experiencing of local cultures, traditions, and life style, e.g. eating traditional food, visiting settlements.	Throughout the province.
	b) Guided cultural routes through former townships.	Defined sites throughout the province.
	c) Experience cultural shows and festive occasions commemorating local culture, land-uses and history,	Ditto
	d) Experience community life, cultures and traditions.	Ditto
SPORTS TOURISM	Opportunities for both professional and amateur sports-related activities at the local, national and international level.	
	a) Professional sports and academic training and education.	
	b) Training and recuperating of international sports teams during tours.	Ditto
GENERAL TOURISM	All other opportunities not catered for under the above categories.	

1.15.4 SECTOR MANAGEMENT

General sectoral management strategies are provided in the chapters below with regard to the following focal areas (refer to Figure D25).

1.15.4.1 TOURISM FINANCING

The availability of finance to develop and promote the tourism sector is critically important for the sector's further growth and development. A number of policy guidelines should guide the increased financial commitment to the development of tourism throughout the Northern Cape. While the exact nature and extent of these should be properly assessed and evaluated, the following measures should be considered:

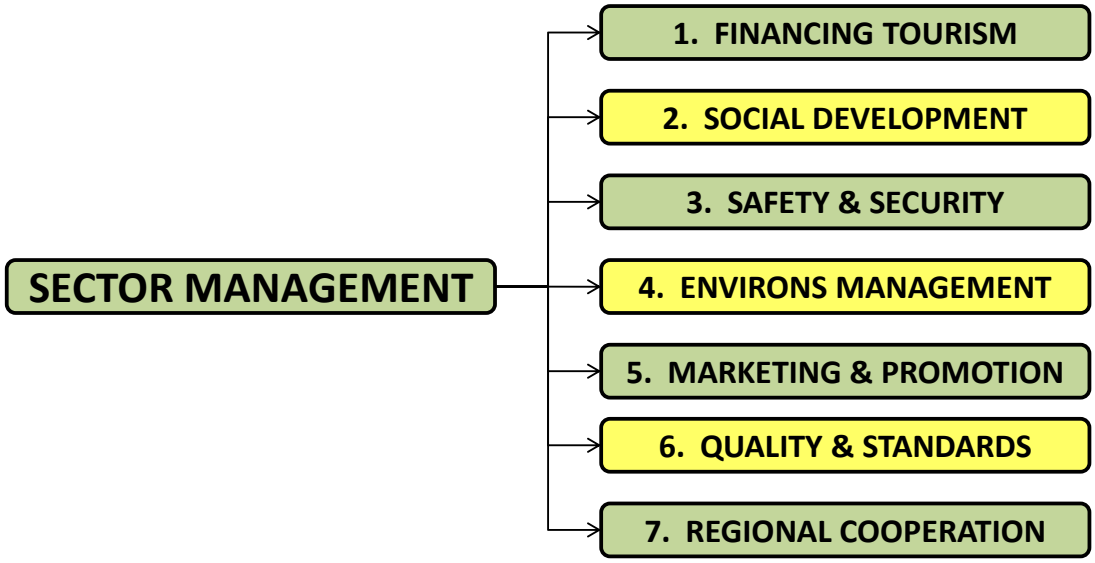


Figure D25: Focal areas for sector management.

a) Consider a large initial capital injection to 'kick start' a major tourism development thrust.
b) Investigate the broadening of the tourism funding base in a practical and uncomplicated manner and consider a single departure tax.

c) Promote partnerships for the provision of funding between and among municipality, local and international private sectors and donor agencies.
d) Promote active forms of community partnership, especially via joint ventures in which communally owned land forms the basis of equity for community partnerships with the private sector and state conservation agencies.
e) Utilise the potential of the *Sustainable Development Initiative* (SDI) approach as a mechanism to unlock funds to initiate community-based tourism.
f) Establish a dedicated tourism development fund (refer to the SDI approach) to provide funds for tourism enterprises and activities not catered for by existing state financing agencies.
g) Ensure that state funding is accessible to the wider business community, emerging entrepreneurs, micro enterprises, sole traders and the informal sector.
h) Consider creating a subsidised financing facility to accommodate the entry of the previously neglected into the tourism sector.
i) Ensure that technical assistance is provided to potential entrepreneurs, utilising as far as possible existing institutions, such as the Ntsika Enterprise Promotion Agency (NEPA).
j) Encourage the reform of property rights to allow previously neglected groups to obtain collateral to facilitate loan acquisition (e.g. through the SDI approach).
k) Disburse tourism funds through dedicated tourism windows at existing institutions that could champion lending as well as provide specific tourism technical support to potential entrepreneurs. Such existing institutions include the Industrial Development Corporation, the Development Bank of Southern Africa, Khula, the Independent Development Trust, the Small Business Development Corporation, the Kagiso Trust, the provincial Development Corporations, commercial banks, community-based organisations and others.

Foreign investment will increase competition and improve standards as well as create employment and facilitate economic growth. The municipality should establish a climate of political stability, economic growth and profitability, and provide transparent, stable and consistent policies to attract foreign investment. The municipality should encourage foreign investments that meet the following criteria:

(i) Investors and companies that will develop, promote and implement responsible tourism.
(ii) Investors that invest in rural communities and less developed geographic areas.
(iii) Investors that develop products that help to diversify the tourism product e.g. ecotourism, heritage tourism, etc.
(iv) Investments that will result in the transfer of skills and technology to locals.
(v) Joint ventures with local partners and local communities.
(vi) Attracting investors who have a proven track record in the tourism sector.

Foreign investment will not be encouraged in small, micro-enterprises or the ancillary services sector which are clearly within the reach of the local entrepreneurs and businesses. Concessions offered to investors, such as franchise arrangements and package tour arrangements should ensure that substantial leakages do not occur and acceptable social standards apply.

1.15.4.2 SOCIAL DEVELOPMENT

1.15.4.2.1 EDUCATION AND TRAINING

While the tourism sector has tremendous potential to create jobs, the sector recognises that appropriate skills and experience are necessary to facilitate employment growth as well as international competitiveness. With the projected staffing needs of the tourism sector and the current lack of physical and financial capacity to deliver education and training, the sector will increasingly be

faced by a critical shortage of skills. Tourism education and training is one of the fundamental pillars of the development of a new responsible tourism in the Northern Cape. The main principles governing the approach to education and training are as follows:

a) Promote the involvement of the private sector and private sector institutions in the provision of education and training.
b) Encourage the tourism private sector to increase its commitment to training.
c) Encourage capacity building among all community members and address the specific needs of small, micro and medium-sized businesses (SMMEs) and emerging entrepreneurs.
d) Make training more accessible to all community members.
e) Promote tourism awareness at all spheres of society.
f) Develop and invest in an education system that will lead to self-sufficiency and reduce reliance on imported skills.
g) Encourage the local media and NGOs to become partners in the tourism education and awareness process.
h) Support the provision of introductory/bridging courses to facilitate entry into the sector by all community members.
i) Develop appropriate skills programs at the introductory level as well as more specialist shorter courses for accreditation (e.g. tour guide training for a specific activity).
j) Create a tourism education and training system with a view to strengthening institutional capability and efficiency in delivering the quality and quantity of appropriate education and training required.
k) Ensure the establishment of a tourism education and training data base to facilitate planning, development and co-ordination of training activities as well as carry out needs assessment for the sector.

1.15.4.2.2 YOUTH DEVELOPMENT

Implementation programs in this regard should include the following:
a) Providing opportunities and access to sports training and development.
b) Providing opportunities and access to educational and mentorship opportunities.
c) Creation of in-service training opportunities in the tourism sector to expose youths at an early age to the travel and tourism sector. This could include, for example, internships at hotels and restaurants, tour guides, trackers, and hospitality ambassadors at airports, points of interest and tourist attractions.
d) Commitment on the part of the tourism sector to provide career guidance.
e) Expansion of range and scope of education and training opportunities.
f) Supporting and promoting capacity building programs for youth involvement in the tourism sector, particularly in areas such as sport.

1.15.4.2.3 SAFETY AND SECURITY

The tourism sector as a whole should be committed to ensuring the safety and security of all tourists. The following policy guidelines shall apply:
a) Undertake both short and long term actions and strategies to reduce crime and violence on tourists in collaboration with relevant organisations such as the SA Police Service.
b) Provide adequate information to visitors that will help to improve their safety and security.
c) Ensure cooperation among stakeholders to work together to ensure the safety and security of all tourists.

d) Undertake dedicated research regarding tourism security trends and monitor the effectiveness of safety and security measures.

1.15.4.2.4 ENVIRONMENTAL MANAGEMENT

A well-managed tourism sector has the potential to ameliorate, rather than exacerbate, major environmental challenges. To achieve this, a number of actions are necessary. Specific principles and policy guidelines for environmental management as it relates to the tourism sector are as follows:

a) Sustainable and responsible tourism development should be promoted and encouraged, *inter alia* by means of incentives to private enterprises and communities.
b) Impose mandatory Integrated Environmental Management (IEM) procedures for all new tourism projects.
c) All development is to be undertaken in accordance with the principles of bioregional planning and, more specifically, the concept of critical regionalism.
d) Encourage ongoing social and environmental audits of tourism projects conducted in an inexpensive, rapid and participatory way.
e) Encourage tourism development in areas where tourism offers a competitive form of land-use and ensure that tourism is integrated into land-use plans for such areas.
f) Encourage the creation of successful pilot tourism programs which demonstrate, in tangible ways, the benefits that ecologically sensitive tourism schemes can have over other, more damaging forms of land-use.
g) Promote sustainable and responsible consumption of water and energy in tourism institutions, using readily available technology and encouraging sustainable waste disposal, green packaging and recycling.
h) Support mandatory environmental management practices in ecologically sensitive areas.

The tourism sector must be committed to the effective management and conservation of the cultural resources of their area of interest and the Northern Cape as a whole. The following guidelines apply:

(i) Ensure that tourism takes note of cultural heritage resources within specific communities and environments.
(ii) Cultural resources should be managed for the benefit of all interested parties within the communities.
(iii) Access to management of cultural resources should be as broad as possible within specific communities and should promote cooperation between all affected parties.
(iv) Land-use planning and development projects for tourism should include effective protection and sustainable utilisation of cultural resources.

1.15.4.3 MARKETING AND PROMOTION

Marketing and promotion strategies for the various tourism regions and sites should be developed jointly between the adjoining local municipalities and entrepreneurs. The following policies and initiatives apply:

a) Adopt a consumer sensitive pricing strategy, thereby ensuring that value for money becomes a major draw card and that favourable exchange rates are applied to the advantage of the overseas consumer.
b) In addition to focusing on the domestic market, continued emphasis should be placed on other key generating markets such as international business travellers, the conference and incentive travel market, and the market associated with car-testing.
c) Marketing and promotion should focus not only on the well-established sites, but should also emphasise new and emerging products and attractions.

d) Cooperative advertising and promotion opportunities should be pursued.
e) More resources should be devoted to the marketing and promotion of tourism, particularly overseas tourism where per capita expenditure is greatest.
f) Actively develop new markets and exploit new market niches (honeymoon, hiking, mountain-biking, back packers, river-related experiences).
g) Make regional information more widely available through the development of a generic brochure, familiarisation trips among adjoining municipalities.
h) Facilitate the provision of facilities (including transportation) that would encourage domestic travel.
i) As part of the marketing and promotion efforts, emphasis should be placed on developing and improving the tourism product.

As was stated previously, the TOS concept implies 'product-led' tourism, which entails developing forms of tourism that are most compatible with the environment and society, and targeting those markets that are consistent with the product. Such approach may result in fewer tourists, but not necessarily smaller financial return ('market-led' tourism, on the other hand, is tourism that attracts a broad market regardless of its impact on the receiving environment).

Key requirements for sustainable 'product-led' tourism include the following:
(i) Provision of high-quality and authentic tourism 'products'.
(ii) Effective educational programs that promote an understanding of the tourism products with both the tourists and the local communities.
(iii) Effective marketing of the tourism products with the purpose of attracting specific types of tourists.
(iv) Appropriate management of the tourism resources in order to ensure their sustainability.

The notion of 'image' and the manner in which images of attractions, cultures, and destinations are used in advertising and promotion is an important element of sustainable tourism. A most important requirement in this regard, is to ensure that the available tourism experiences are as authentic as possible.

Both the nature of the destination's image, and the manner in which it is created, are of utmost importance because the appeal of tourist attractions arises largely from the image conjured up, partly from direct or indirect experiences and partly from external sources and influences (Hunt, 1975).

Mental images are the basis for the evaluation and selection of an individual's choice of destination. Each individual has a preferential image of the ideal holiday. This image conditions the individual's expectations and sets an aspiration level or evaluative image against which actual destination alternatives are compared (Murphy, 1985).

In the latter regard, it is imperative to note that no singular place has the 'image' or potential to satisfy the entire tourism market. It is therefore imperative to identify the authentic tourism products of the region and promote and market these in a manner that attracts the type of tourist that would be appreciative of the available tourism products.

1.15.4.4 IMPLEMENTING THE 'GATEWAY' CONCEPT

The Northern Cape is in many respects the 'gateway' to other regions of Southern Africa. In terms of the gateway concept any larger tourism destination should have a 'staging area'. *Staging areas, inter alia, provide tourist facilities and services for overnight stays of tourists wanting to visit specific*

destinations in close proximity, or could be a destination in own right. Such staging areas often contain various attractions or can be developed into an attractive tourist destination in own right, providing tourism employment and income to local residents (World Tourism Organisation, 1994).

1.15.4.5 PRODUCT QUALITY AND STANDARDS

The following policy guidelines apply:

a) Promote the development and implementation of quality tourism standards in a consultative manner.
b) Apply standards to all tourism activities and do not limit it to the hospitality fraternity only.
c) Review and reform the existing structure and system of standards and grading to make it more effective and equitable in application.
d) Ensure that standards and their related costs do not act as barriers to entry of all community members.
e) Encourage all establishments, particularly smaller establishments and previously neglected entrepreneurs, to upgrade their standards of service.

1.15.4.6 REGIONAL COOPERATION

A key objective of the PSDF is to instil an appreciation for the fact that the Northern Cape and its component areas are specific places within the global biosphere. The unique ecological, cultural, social and economical characteristics and components of each unit co-exist and function in an integrated, and often complex, manner. For individual land units to be optimally effective in terms of their community-supporting functions, it is of paramount importance that this symbiosis of bioregional characteristics and functions be maintained. In this regard, it is imperative that no land unit be managed as an island in isolation from its surroundings. Each such unit is an important part of the broader region (e.g. ZF Mgcawu District Municipality and the broader Green Kalahari) within which it is situated, and the mutual relationships and linkages between adjacent units must be understood and applied when managing a land-use such as tourism in these units.

Cooperation between all tourism regions or smaller units should be actively encouraged. Key areas of cooperation include:

a) Appropriate integrated tourism planning in accordance with a bioregional planning approach.
b) Environmental conservation and the development of related products such as trans-border protected areas.
c) Regional education and training.
d) Cooperation between all municipalities in defined tourism regions.

1.16 TOOLKIT D16 PRE-APPLICATION CHECKLIST

TOOLKIT SYNOPSIS

The purpose of this toolkit is to facilitate a coherent application procedure that would enable both the proponents and the responsible functionaries to prepare and process land-use applications in a coherent and cost-efficient manner.

As stated in Chapter 6 applications for a change in land-use must commence with a pre-application checklist, the purpose of which is to:

a) Document the key aspects of the proposed development.
b) Enable the responsible functionary to provide guidance pertaining to the planning, EIA and application process to follow.
c) Enable the proponent to prepare a rational and coherent proposal and associated application.
d) Promote institutional integration and collaboration.

Applications for approval of large-scale consumptive resource use activities must include a comprehensive *Project Development Framework*, which must include *inter alia* the following:

(i) Detailed description of the proposed project.
(ii) Graphic illustrations of the nature and extent of the proposed project.
(iii) Proposals pertaining to how effect would be given to the objectives cited under Chapter 6.2.
(iv) Proposals pertaining to how the detrimental impacts of the proposed project would be mitigated.

The *Project Development Framework* will serve as a basis for the EIA to be undertaken in terms of NEMA and for assessing the desirability of the project in an integrated, holistic and informed manner.

The checklist is to be completed by the proponent and submitted to the relevant municipality and thereafter to the relevant sectoral department as a basis for in-depth discussions regarding the desirability of the proposed project and the processes to follow as it relates to application, adjudication and implementation.

The checklist has to address at least the aspects listed below.

PRE-APPLICATION CHECKLIST: MACRO INVESTMENT FOR INDUSTRIAL DEVELOPMENT, MINING, MANUFACTURING, SPECIAL ECONOMIC ZONES, ETC.

SECTION A: DESCRIPTION OF CORE BUSINESS AND SECTOR

……
……
……
……

SECTION B: SITE AND PROJECT CONTEXT

B1 PROPERTY DETAILS

Erf / Erven / Farm No.		Portion No. (of farm)			
Street Address:					
Suburb:					
GPS Coordinates:		S			E
Zoning:		Extent			m²/ha
Spatial Planning Category:					
Title Deed No:		Restrictive conditions?			
Registered Servitudes:					

B2 PROPOSED PROJECT

Resource(s) to be utilised:

SECTION C: INFRASTRUCTURE REQUIREMENTS

Description	Demand	Current Status	Gap and means to address
1 Transport: Road			
Rail			
Air			
2 Water: Volume			
Location			
Quality			
3 Effluent: Volume			
Quality			
Recycle			
4 Energy: Need			
Source			
5 Hazardous products: Volume			
Rating			
Disposal			
6 Communication: Need Source Location			

SECTION D: HUMAN CAPITAL REQUIREMENTS OF INVESTMENT

a) Employee profile

	Permanent Staff	Temporary Staff
Number of labourers: un- and semi-skilled:		
Number of skilled blue-colour/technical employees:		
Number of highly skilled, specialised white-colour employees:		
Skills to be translocated to the Northern Cape:		
Skills pool to be generated in the Northern Cape:		

b) Human resource competency development programme:

c) Training and education investment:

d) Innovation and research investment:

SECTION E: COMPLIANCE WITH LEGISLATION AND POLICY

Government Sphere	Applicable Statutes & Policy & Compliance
National	
Provincial	
District	
Local	

E.1 PSDF AND SDF CONTEXT

a) Designated Spatial Planning Category:	
b) Applicable Land-use Guidelines:	

SECTION F: NEED AND DESIRABILITY

QUESTION	EVALUATION
Question 1: Is the land-use considered within the timeframe intended by the PSDF and the applicable municipal SDF?	
Question 2: Should the development occur here at the relevant point in time?	
Question 3: Does the community/area need the activity and the associated land-use concerned?	
Question 4: Are the necessary services with appropriate capacity currently available or must additional capacity be created to cater for the development?	
Question 5:	

Is the development provided for in the infrastructure planning of the municipality?	
Question 6: Is the project of national importance?	
Question 7: Is the development the best practicable environmental option for the relevant land/site?	
Question 8: Would the approval of the relevant application compromise the integrity of the existing approved municipal IDP and SDF as agreed to by the relevant authorities?	
Question 9: Would the approval of the relevant application compromise the integrity of the existing environmental management priorities for the area?	
Question 10: Do locational factors favour the proposed land-use at the relevant site?	
Question 11: How will the activity or the land-use associated with the activity to be applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	
Question 12: How will the development impact on people's well-being?	
Question 13: Will the proposed activity or the land-use associated with the activity to be applied for, result in unacceptable opportunity costs?	
Question 14: Will the proposed land-use result in unacceptable cumulative impacts?	

SECTION G: ENVISAGED KEY IMPACTS

a) Estimated production value:

b) Estimated export value:

c) Estimated capital investment:

d) Envisaged environmental impact:

SECTION H: APPLICATION PROCESSES

Would the proposal require any of the following?

APPLICATION	YES	NO	STATUS
Environmental Impact Assessment (i.t.o National Environmental Management Act, 107 of 1998):			
Waste Licence (i.t.o National Environmental Management: Waste Act, 59 of 2008):			
Heritage Impact Assessment (i.t.o. Heritage Resources Act, 25 of 1999):			
Rezoning (i.t.o. applicable planning legislation):			

SECTION I: IMPACT MITIGATION STRATEGIES

a) Proposal regarding Environmental Mitigation Strategy that complies with the PSDF and applicable municipal SDF:

b) Proposal regarding Community Benefit Strategy that complies with the PSDF and applicable municipal SDF:

c) Exit Strategy if the proposed project were to fail or reach its productive life cycle.

SECTION J: INSTITUTIONAL RECOMMENDATIONS

1.17 TOOLKIT D17 ENVIRONMENTAL AUDITING INDICATORS

TOOLKIT SYNOPSIS

This toolkit should be read together with Chapter 5.6 and 6.2. It provides a set of Environmental Performance Indicators for local level reporting in the Northern Cape – and proposes an initial set of environmental performance indicators for local level reporting. This is by no means a definitive final set of indicators, but rather a first step towards recognition and agreement of a core set of such indicators which can be adopted and used as a tool by government and the private sector. The intention is that the municipal SDFs and the Environmental Management Systems (EMSs) of private sector enterprises should refine the Environmental Performance Indicators to suit their site-specific requirements and enable local level auditing and reporting as described in the Implementation Framework of the PSDF.

In essence, this toolkit addresses the responsibility of 'local level reporting' within a municipal area (metropolitan, district or local). However, the indicators put forward could also be adopted in the auditing systems of private sector enterprises and the various economic sectors operational in the Northern Cape.

1.17.1 PERFORMANCE INDICATORS

Performance Indicators are defined as *pieces of information that reveal conditions, and over time, trends. Indicators can be used to make policy and planning decisions, to identify whether policy goals and targets are being met, and sometimes to predict change. Indicators can also be used to compare conditions of different localities or progress towards policy targets* (IDRC, 1998).

Environmental Performance Indicators (EPIs) are increasingly being used to identify what effect land-use projects are having on the environment. The defining characteristic of EPIs is *that they quantify and simplify information in a manner that facilitates understanding of environmental problems by both decision-makers and the public. The goal is to assess how project activities affect the direction of change in environmental performance and to measure the magnitude of that change* (Segnestam, 1999).

There may be some overlap with general environmental indicators, such as those used within State of Environment (SOE) reports. These are designed to describe the general state or condition of a particular environment and the factors influencing it. To measure environmental performance of, for example a municipality or one of its policies or activities, it may be necessary to identify the condition of the environment and to track how it changes over time. This toolkit addresses indicators not only for local level SOE reporting, but also for the measurement of performance of different spheres of government in delivering their responsibilities for environmental care. In the latter regard, the focus shifts towards indicators which specifically relate to the measurement of response by government.

1.17.1.1 WHAT IS TO BE MEASURED?

There are four types of indicators, namely those related to input, process, output and outcome/impact respectively. Each of these measures a different aspect of performance. In the case of a government entity, such as a municipality, the various types constitute the following:

a) Input indicators are typically cost-related and are most relevant to the day-to-day operations of a municipality.

b) Process indicators describe how well a municipality uses its resources to produce services. These cover the activities and operations that convert inputs into outputs. It is essentially an internal type of indicator that is most relevant to the municipality concerned and is therefore of limited relevance to a national set of performance indicators, unless there is a particular reason for their measurement. A sub-group of process indicators are indicators that measure compliance with regard to existing standards and requirements.

c) Output indicators refer to the 'products' produced by processing inputs – i.e. the immediate or short-term results. For example, the number of protected areas established, the number of pollution licences granted and so on. In general output indicators should only be used for those functions for which municipalities are directly responsible. Where responsibility for provision is clear, output indicators can be used to hold the municipality accountable for provision – they measure how well municipalities are performing in terms of their service delivery mandate.

d) Outcome/impact indicators measure the extent to which goals and objectives are being met. For example, number of endemic species found in a local area. They are usually based on the results of different variables acting together (for example, not just on the number of protected areas created, but also climatic changed, agricultural practices and so on) and they tend to lag behind output indicators because the outcomes of various outputs can only be measured after the outputs have been produced. They are also more difficult to measure and are usually influenced by factors external to the municipality's control, so it is difficult to hold a municipality solely responsible for performance in this regard. Many 'State of Environment' indicators are of this type.

1.17.2 LOCAL ENVIRONMENTAL PERFORMANCE INDICATOR FRAMEWORK

There is little clarity within government (across all spheres and sectors) about where responsibility for the various components of the local environment lies. There is confusion within and between the different tiers of local government – and between the different spheres, as to who is responsible for doing what. Guidance in this regard is provided by the following:

a) Core mandates of municipalities are defined in Schedules 4b and 5b of the Constitution.

b) Core mandates of the other spheres defined in Schedules 4a and 5a.

c) Objects of municipalities in the Constitution (which must be adhered to by all municipalities) including the following:
   - Providing a 'safe and healthy environment'.
   - Ensuring the provision of services to communities in a sustainable manner (the Municipal Systems Act expands this requirement to 'environmentally sustainable').

d) Biodiversity Act states that *all provincial EIPs /EMPs and municipal IDPs must be aligned to the national biodiversity framework and any applicable bioregional plan*. In terms of invasive species, all organs of state must produce a plan for Invasive Species Monitoring, Control and Eradication for land under their control. This must be integrated into the EIPs/EMPs, IDPs and SDFs.

e) NEMA (Chapter 1{2}) contains a set of environmental principles which are applicable to all organs of state. Municipalities must incorporate these into all planning and policy making activities.

f) Protected Areas Act states that municipalities must prepare management plans for all 'local protected areas' as defined under the act. These must be submitted to the relevant MEC for approval.

All municipalities must strive within their financial and administrative capacity to achieve these objects. It is assumed that in order to achieve these, a municipality will be obliged to implement any relevant national legislation that relates to a 'safe and healthy environment' or the delivery of

'environmentally sustainable' services. All municipalities are also bound to respect, protect, promote and fulfil the environmental rights of an individual, as defined within the Bill of Rights:

(i) To have an environment that is not harmful to their health or well-being;

(ii) To have an environment protected for the benefits of present and future generations through legislative and other measures that:

- Prevents pollution and ecological degradation.
- Promotes conservation.
- Secures ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

Thus, Schedules 4 and 5 of the Constitution are the starting point for identification of mandates of spheres of government, with additional detail on what these mean, provided by sectoral legislation. Additional sectoral legislation is also used to identify areas for which municipalities are responsible in order to meet their 'objects' as defined in the Constitution.

1.17.3 CORE MANDATES AND FUNCTIONS OF THE VARIOUS SPHERES OF GOVERNMENT

Figure D26 summarises the environmental responsibilities of municipalities and of the other spheres of government.

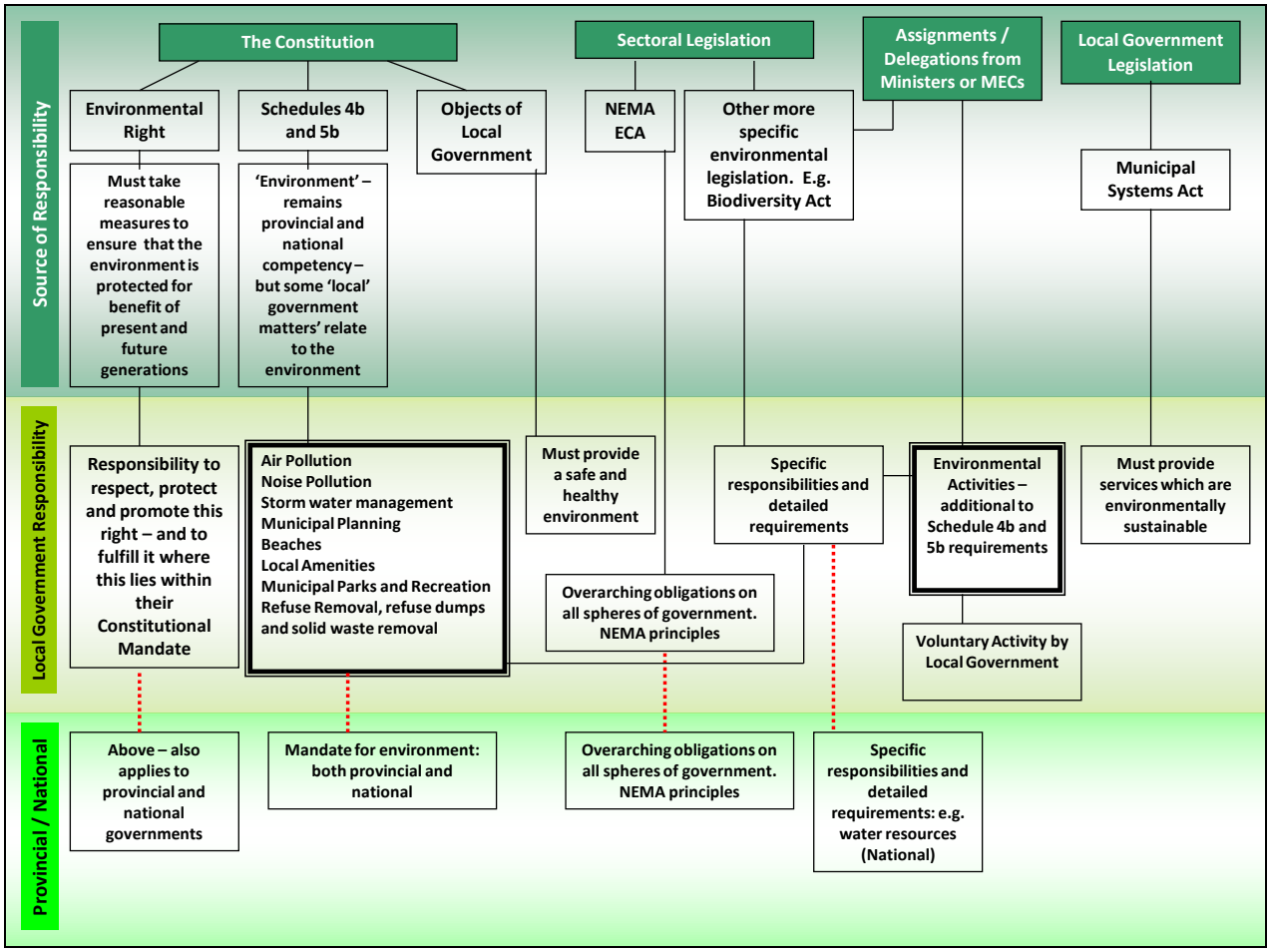


Figure D26: Source of local responsibility for the environment.

The core mandates of the various spheres of government for specific elements of 'the environment' as stipulated under Schedules 4b and 5b of the Constitution include the following:

1.17.3.1 LOCAL GOVERNMENT

a) Air pollution.
b) Noise pollution.
c) Refuse removal, refuse dumps and solid waste disposal.
d) Water and sanitation services.
e) Beaches.
f) Municipal parks and recreation.
g) Local amenities (can be interpreted to include local protected areas).
h) Storm water management in built up areas.
i) Municipal planning.

1.17.3.2 PROVINCIAL GOVERNMENT

a) Elements of general waste management.
b) Hazardous waste.
c) Environmental impact assessment authorisations.
d) Agriculture and soil conservation.
e) Estuaries and some coastal areas.
f) Water resource protection (including wetlands).
g) Areas of land within provincial parks.

1.17.3.3 NATIONAL GOVERNMENT

a) Water services and water resource protection (Department of Water Affairs).
b) Areas of land within National Parks (SANParks).

1.17.4 INDICATORS

The indicators for each broad 'performance area' of municipalities are presented in the tables below together with the following information:

a) Performance area (or in some cases, sub-performance area).
b) Indicator code.
c) Responsible institution which refers to who will be responsible for reporting the indicator in terms of the sphere of government.
d) Indicator.
e) Type of indicator.
f) Practicality.

1.17.4.1 CLIMATE AND AIR

1.17.4.1.1 AIR QUALITY

Air quality is an extension of the mandate for 'air pollution' given to municipalities under Schedule 4b and 5b of the Constitution. Specific requirements of municipalities for reporting on air quality, emissions and other air pollution related indicators are specified in the Air Quality Act 39 of 2004. Thus the indicators below are only provisional suggestions and may have to be modified once the air quality legislation and accompanying norms and standards are published. Indicators for municipalities mostly apply to Category A and B municipalities. This is a key priority area of environmental management for all municipalities.

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Air Quality	AQ1	Local A, B	Is there an adopted Air Quality Management Plan?	Core	Compliance	Pragmatic
	AQ2a	Local A, B	% of licensed industries which did not comply with licence conditions.	Core	Output	Pragmatic
	AQ2b		% of these for which there was enforcement action by the authority.			
	AQ3	Local A, B	% of key pollutants (as identified for the local areas) monitored according to the specifications in the National Air Quality Framework.	Core	Output	Pragmatic
	AQ4a	Local A, B	Ambient concentrations of key pollutants.	Core	Outcome	Ideal (not yet practical for smaller municipalities).
	AQ4b		Degree of exceeding the national standards for ambient concentrations of key pollutant.			
	AQ5a	Local A, B	Number of air quality related complaints received by local authorities	Core	Output	Pragmatic

			(number of complaints/year).			
	AQ5b		% of these for which there was an enforcement action.			
	AQ6	Local A, B	Number of staff responsible for monitoring air quality.	Core	Input	Pragmatic

1.17.4.1.2 CLIMATE CHANGE/GREENHOUSE GASES

This is an issue of concern for many municipalities, but it was not identified as an area which was core for them to measure. Nor, in many cases would it be possible for municipalities to provide such information. As stated in Toolkit D5 a Climate-Neutrality Strategy is to be developed for the province as a whole. The implementation of this strategy would be mandatory on all municipalities and the private sector.

1.17.4.2 NOISE POLLUTION

This is a local government matter under Schedules 4b and 5b of the Constitution and is also covered under the Air Quality Act. Indicators were developed for this issue – but these were not considered 'core' indicators as information on noise pollution was not considered important for aggregation to the national level. The two 'peripheral' indicators are however provided below for information.

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Noise Pollution	NP1a	Local A, B	Number of noise pollution related complaints received by the local authority.	Peripheral	Output	Pragmatic
	NP1b		% of these complaints for which there was enforcement action.			

1.17.4.3 WASTE MANAGEMENT

Waste and waste management in general is seen as one of the core mandates of municipalities under Schedules 4b and 5b of the Constitution (this makes refuse removal, refuse dumps and solid waste removal a local government matter) and under the White Paper on Integrated Pollution and Waste Management and the Environmental Conservation Act. Provincial government also has responsibility for certain waste issues and therefore indicators to be reported on by the province have also been included. This performance area has been divided into three sub-areas, namely waste generation (data on amount of waste generated in an area), waste services (performance indicators for provision of services), and waste/reduction and management (which includes such issues as recycling, landfill sites, etc.).

a) Waste Generation

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Waste Generation	WG1	Local	General waste produced per capita per year.	Core	Outcome / SoE	Pragmatic
	WG2	Local	Hazardous waste produced per sector per year.	Core	Outcome / SoE	Pragmatic

b) Waste Services

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Waste Services	WS1	Local	% of households eligible for kerbside refuse removal which receive this service weekly.	Core	Output	Pragmatic

c) Waste Reduction and Management

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Waste Reduction and Management	WRM1a	Local	Number of incidents of illegal dumping.	Core	Output	Pragmatic
	WRM1b		% of incidents for which enforcement action was taken.			
	WRM2	Local	Amount (tonnes) of illegal dumping cleared by local authority.	Core	Output	Pragmatic
	WRM3	Local	Recycling: % of general waste recycled on an annual basis (mass or volume?).	Core	Output	Pragmatic
	WRM4	Local	Landfill Sites: % of municipal landfill sites licensed according to the Environmental	Core	Compliance	Pragmatic

			Conservation Act.			
	WRM5	Local	Available landfill lifespan.	Core	Output	Pragmatic
	WRM6	Province, DWA and some locals.	% of licensed landfill sites that are being monitored for compliance (according to specification in the license).	Core	Compliance	Pragmatic

1.17.4.4 STORM WATER MANAGEMENT

This is a local government matter under Schedules 4b and 5b of the Constitution but data on the provision of storm water management was not considered of interest to DEA on a national level. Thus the indicator for this performance area is peripheral.

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Storm Water Management	SWM1	Local	% of storm water drains that are maintained annually.	Peripheral (urban only)	Output	Pragmatic
	SWM2	Local	Number of dwellings located within the 50-year flood line.	Peripheral	Outcome – indicator for level of risk.	Ideal / Pragmatic

1.17.4.5 WATER AND SANITATION

a) Water and Sanitation Services

Reporting on the provision of water supply and sanitation services is a core performance area of those municipalities (Category A, B and C) who are water service authorities. This information is of primary interest to DWA but is also collated by COGTA. The first two indicators below are already key performance indicators for municipalities. The third is an outcome indicator for provision of clean water and sanitation – but this may be accompanied by other indicators of population health related to water and sanitation which are collected by the Department of Health.

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Water and Sanitation Services	WSS1	Local: water services authority.	% of households with access to potable water within 200m of dwelling (or on site).	Core	Output	Pragmatic

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
	WSS2	Local: water services authority	% of households with at least a basic levels of service as determined by the WSA service levels policy.	Core	Output	Pragmatic
	WSS3	Local	Number of reported cases of cholera (per year).	Core	Outcome	Pragmatic
	WSS4	Local	Number of reported cases of sewage spillage into water courses.		Output	Consultation required

b) Water Quality

Monitoring of water quality in a local area is the responsibility of DWA regional offices and water utilities. However, during consultation processes for this project, it was suggested that local authorities should be aware of information on water quality and request this from DWA. A limited number of suitable water quality indicators have thus been included below.

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Water Quality	WQ1	DWA	% of exceeding of DWA guidelines for selected groundwater quality variables (total nitrogen, total phosphorus, conductivity and faecal coliforms).	Core	Outcome	Pragmatic
	WQ2	DWA	% exceeding of DWA guidelines for selected surface water quality variables (total nitrogen, total phosphorus, conductivity and faecal coliforms).	Core	Outcome	Pragmatic

1.17.4.6 MUNICIPAL PARKS AND OPEN SPACE

This is a local government matter under Schedules 4b and 5b of the Constitution – where local government is responsible for the provision and maintenance of municipal parks and recreational areas, which are forms of open space. However, the provision and maintenance of these areas is not a core environmental activity – but is a planning and amenity issue, unless the open space is of value for conservation. Thus the indicators developed for this area are not considered core environmental indicators apart from those which relate to spaces with conservation value. For areas with conservation value the greatest issue seems to be 'infilling' of such areas by development and so an indicator has been included to assess this.

To make this distinction, municipal parks and open spaces within a municipal area will have to be 'categorized' into those with conservation value (such as riparian areas and so on) and those that do not (for example, swing parks). Peripheral indicators are included below for information. They may be of use to municipalities for monitoring performance in provision and maintenance of amenity areas.

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Municipal Parks and Open Spaces.	POS1a	Local	Extent of municipal parks, recreation areas or other open spaces within the municipal area with conservation value.	Core	Output	Pragmatic
	POS1b		% of this area in-filled by development on an annual basis.			
	POS2	Local	% of dwellings which fall within a 2 km radius of a municipal park or recreational area.	Peripheral	Output	
	POS3	Local	Extent of municipal parks, recreational area or other open space per capita within the municipal area.	Peripheral	Output	
	POS4	Local	Level of community satisfaction with access to and quality of municipal parks and recreation areas (survey generated data).	Peripheral	Outcome	Ideal
	POS5	Local	% of municipal budget allocated to provision and maintenance of	Peripheral	Input	Pragmatic

			municipal parks and recreation areas.			

1.17.4.7 NATURE CONSERVATION

Biodiversity is not mentioned as a local government matter under the Schedules 4b and 5b of the Constitution. The Biodiversity Act, however, does confer some responsibility for management of biodiversity, control of invasive alien species, etc. to local government. Officially-designated local protected areas are, per definition, 'local amenities', which are a local government matter under Schedules 4b and 5b.

In addition to the obligation to provide, preserve, manage and maintain such areas under the relevant Schedules, the Protected Areas Act provides specific responsibilities to local government for the local protected areas within their boundaries. National and provincial protected areas which lie within a municipality remain the responsibility of national and provincial parks institutions.

a) Protected Areas

The purpose of the relevant indicators is to allow DEA to aggregate information in order to produce figures for the total area under formal protection across the country – and for the area of land indicated as of 'conservation importance'. The relevant indicators can be used to monitor performance of municipalities as it relates to recognising and officially protecting locally important areas by tracking the change in area of protected area, or the percentage cover of protected areas, within the municipal area over time.

As mentioned previously, specific indicators for this may be produced under the Protected Areas Act. The Protected Areas Act contains a requirement that all local authorities should facilitate the drafting (or address in their SDF) management guidelines for officially-designated protected areas within their jurisdiction area. This stipulation has been included as a simple compliance indicator.

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Protected Areas	PA1	Local (all)	Extent of municipal area under 'local protected area' status.	Core	Output	Pragmatic
	PA2	Local (all) Planning and parks Departs.	% of municipal area under local protected area status.	Core	Output	Pragmatic
	PA3	Local (all) Planning and parks Departs.	% of land of 'conservation importance' in the municipal area under local protected area status.	Core	Output	Pragmatic

	PA4	Local (all) Planning and parks Departs.	% of local protected areas with a current / adopted management plan and associated authorised budget.	Core	Output	Pragmatic
	PA5	Local	Level of user satisfaction with access to and quality of local protected areas.	Peripheral	Outcome	Ideal

b) Invasive Alien Species

The Biodiversity Act confers a responsibility on local government to draw up plans for the monitoring, control and eradication of invasive alien species on municipal land. Thus, the performance indicators here are related to municipal land – and are not related to the invaded area in a municipality as a whole, or the clearing activity being carried out across a municipality as this will be taking place on land owned by many different people. Composite figures for this information will have to be obtained by DEA directly from Working for Water (WfW) (although in some cases, municipalities may keep such information).

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Invasive Alien Species	IAS1a	WfW Local (all)	Extent of municipal land currently invaded by alien species.	Core	Output	Pragmatic
	IAS1b		% of municipal land currently invaded by alien species.			
	IAS2a	WfW Local (all)	Extent of IAS cleared from municipal land (in the reporting year).	Core	Output	Pragmatic
	IAS2b		% of municipal land currently invaded by alien species which has been cleared.			

	IAS3	Local (all) Planning Department	Is there an adopted plan for invasive plant monitoring, control and eradication that is integrated and aligned with the IDP and SDF?	Core	Compliance	Pragmatic

c) Species and Ecosystem Management and Change

It is not within the core mandate of municipalities to report information on the extent, management and change in species and ecosystems found within a municipal area. This responsibility falls to the relevant province. The indicators are all outcome-related and, as such, are useful benchmark indicators that can help to identify serious trends and species or ecosystems under threat.

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Species and Ecosystem Management and Change.	SEMC1	Province	Threatened and extinct species per taxonomic group.	Core	Outcome / SoE	Pragmatic
	SEMC2	Province	Endemic species per taxonomic group.	Core	Outcome / SoE	Pragmatic
	SEMC3	Province	Population trends of selected species.	Core	Outcome / SoE	Pragmatic
	SEMC4a	Province	Extent of sensitive, vulnerable, highly dynamic and stressed ecosystems in the municipal area - by ecosystem type (e.g. wetland, dunes, etc.).	Core	Output	Pragmatic
	SEMC4b		% of each of the above which is degraded or transformed on an annual basis.			

1.17.4.8 ENVIRONMENTAL GOVERNANCE

This is one of the most important areas of environmental performance to measure. Local government has a series of obligations under the Bill of Rights, the Constitution, environmental framework

legislation (such as NEMA) and sectoral legislation, to ensure that it protects the environment and that its activities and those of others are not detrimental to the environment or the environmental right of its citizens.

The IDP process identifies the environment as a 'cross-cutting issue' that must be incorporated into all elements of municipal planning. This should typically be achieved through an efficient SDF process. Indicators in this regard are divided into the sub-performance areas, namely NEMA principles, environmental planning, Agenda 21 (and other international obligations), environmental reporting; environmental education and awareness raising.

a) NEMA Principles

A set of indicators is required to monitor performance (of all spheres of government) in adhering to the NEMA principles. This was identified as an area of work outside the scope of this project. However, it should be possible at this stage to ask municipalities whether they have carried out an internal audit of their plans, policies and programmes in this regard.

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
NEMA Principles	NEMA1	Local	Has the municipality audited its plans, policies and programmes for adherence to the NEMA principles?	Core	Compliance	Peripheral

b) Environmental Planning

The following are simple compliance indicators, which measure simply whether a municipality has carried out a requirement of legislation. No indicators were developed to assess the quality of planning carried out or whether plans were implemented satisfactorily.

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Environmental Planning	EP1	Local (all)	Has a strategic environmental assessment of the impact of the Spatial Development Framework for the municipality been carried out?	Core	Compliance	Pragmatic
	EP2	Local (all)	For each of the following is there a current, adopted plan that is integrated and aligned with the IDP and SDF?	Core	Compliance	Pragmatic

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
			a) Air Quality Plan. b) Integrated Waste Management Plan. c) Oil Spill Contingency Plan. d) Water Services Development Plan. e) Plan to provide access to basic water services. f) Invasive species monitoring, control, and eradication plan.			
	EP3	Local (all)	Is the IDP and SDF aligned with the National Biodiversity Strategy and the Critical Biodiversity Area plan?	Core	Compliance	Pragmatic

c) Agenda 21 and Other International Obligations

Toolkit D4 summarise the international agreements, conventions and protocols to which South Africa is a signatory and which are to be given effect by all spheres of government. These contain many principles of participation, sustainability and so on, which if implemented, contribute to good environmental governance.

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Relevant agreements, conventions and protocols (refer to Chapter A2.1 and Toolkit D4).	A1	Local (all)	Has the municipality officially adopted the relevant agreements, conventions and protocols (refer to and Toolkit D4)	Core	Compliance	Pragmatic
	A2	Local (all)	Is there an approved implementation plan for the agreements,	Core	Compliance	Pragmatic

			conventions and protocols (refer to Toolkit D4)			

d) Environmental Reporting

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Environmental Reporting.	EP1	Local (all)	Has the municipality produced a current State of Environment Report?	Core	Compliance	Pragmatic

e) Environmental Education and Awareness Raising

Performance Area	Code	Who	Indicator	Core/ Peripheral	Type	Practicality
Environmental Education.	EEd1	Local (all)	What is the budgetary allocation (%) for environmental education and awareness raising per capita?	Core	Input	Pragmatic

D17.5 SUMMARY OF INDICATORS

(These are all 'pragmatic' indicators – unless otherwise marked (shaded box = ideal indicators) and are all relevant to local authorities unless otherwise marked with a P* (provincial responsibility) or DWA* (DWA regional responsibility).

CORE INDICATORS
Air/Climate
Is there an adopted Air Quality Management Plan?
% of licensed industries which did not comply with licence conditions. % of these for which there was an enforcement response by the authority.
% of key pollutants monitored according to the specifications in the National Air Quality Framework.
Ambient Concentrations of key pollutants. Degree of exceendance of national standards for ambient concentrations of key pollutants.
Number of air quality related complaints received by the local authority (per year). % of these for which there was an enforcement action.
Number of staff (FTEs) responsible for monitoring air quality in the municipality.
Waste Management
General waste produced per capita per year.
Hazardous waste produced per sector per year.
% of households eligible for kerbside refuse removal which receive this on a weekly basis.
Number of incidents of illegal dumping. % of these incidents for which enforcement action was taken.

Amount (tonnes) of illegal dumping cleared by the local authority.
% of general waste recycled on an annual basis.
% of municipal landfill sites licensed according to the terms of the Environmental Conservation Act.
Available landfill lifespan.
% of licensed landfill sites that are being monitored for compliance (according to specification in license).
Water, Sanitation and Water Quality
% of households with access to potable water within 200 m of dwelling (or on site).
% of households with at least a basic level of service as determined by the WSA service levels policy.
Number of recorded cases of cholera.
% exceeding of DWA guidelines for selected groundwater quality variables (*DWA).
% exceeding of DWA guidelines for selected surface water quality variables (*DWA).
Municipal Parks and Open Spaces
Extent of municipal parks, recreation areas or other open spaces within the municipal area with conservation value. % of this area infilled by development on an annual basis.
Protected Areas
Extent of municipal area under 'local protected area' status.
% of municipal area under local protected area status.
% of land of 'conservation importance' in the municipal area under protected area status.
% of local protected areas with a current/adopted management plan and authorised budget.
Invasive Alien Species
Extent of municipal land currently invaded by alien species. % of municipal land currently invaded by alien species.
Areas of IAS cleared from municipal land (in relevant reporting year). % of municipal land currently invaded by alien species which has been cleared (in relevant reporting year).
Is there an adopted plan for invasive species monitoring, control and eradication that is integrated and aligned to the IDP and SDF?
Species and Ecosystem Management and Change
Threatened and extinct species per taxonomic group (P*).
Endemic Species per taxonomic group (P*).
Population trends of selected species (P*).
Extent of sensitive, vulnerable, highly dynamic and stressed ecosystems in the municipal area (by ecosystem type) (P*).
% of each of the above which is degraded or transformed on an annual basis (P*).
Environmental Governance
Has the municipality audited its plans, policies, and programmes for adherence to the NEMA principles?
Has a strategic environmental assessment of the impact of the SDF for the municipality been carried out?
For each of the following, is there a current, adopted plan that is integrated and aligned to the IDP: Air Quality Plan, Integrated Waste Management Plan; Oil Spill Contingency Plan; Water Services Development Plan; Plan to provide access to basic water services; Invasive Species monitoring, control and eradication plan
Are the IDP and SDF aligned to the National Biodiversity Strategy?
Has the municipality officially adopted Agenda 21 and the other applicable international agreements and protocols?

Is there an approved implementation strategy for Agenda 21 and the other applicable international agreements and protocols?

PERIPHERAL INDICATORS
Noise Pollution
Number of noise pollution related complaints received by the local authority. % of these complaints for which there was enforcement action.
Storm Water Management
% of storm water drains that are maintained annually.
Number of dwellings within the 50-year flood line.
Beaches
% of beaches with blue flag status.
Municipal Parks and Open Spaces
% of dwellings that fall within a 2 km radius of a municipal park or recreation area.
Extent of municipal parks, recreation areas and other open space per capital within the municipal area.
Level of community satisfaction with access to and quality of municipal parks and recreation areas
% of municipal budget allocated to the provision of and maintenance of municipal parks and recreation areas.
Protected Areas
Level of user satisfaction with access to and quality of local protected areas