



PROVINCIAL GOVERNMENT OF THE WESTERN CAPE:  
DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND  
DEVELOPMENT PLANNING



# PROVINCIAL GUIDELINE ON BIODIVERSITY OFFSETS

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## Numerous stakeholders engaged in the guideline development process:

These guidelines were developed through a consultative process and have benefited from the numerous inputs and comments provided by a wide range of individuals, specialists and organizations. Stakeholders who contributed to the finalization of the Guideline by commenting on a draft Concept Paper used as the basis for a workshop, participating in a workshop, and/or commenting on the revised draft Guideline are listed in Addendum 1. This Addendum also lists stakeholders who contributed to the preparation of the Final Draft Guideline, Edition 1.

## Executive Summary

The concept of 'biodiversity offsets' is relatively new, and there is no standard method to determine an appropriate biodiversity offset. The most often cited definition of biodiversity offsets is "*conservation actions intended to compensate for the residual, unavoidable harm to biodiversity caused by development projects, so as to aspire to no net loss of biodiversity. Before developers contemplate offsets, they should have first sought to avoid and minimise harm to biodiversity*" (ten Kate *et al* 2004).

The rationale for biodiversity offsets in the Western Cape is two-fold: firstly, the province contains biodiversity that is unique globally; secondly, its ecosystems underpin socio-economic development and delivery of important services such as the reliable supply of clean water, ecotourism and coastal protection. Land-intensive development poses a significant threat to the Province's remaining biodiversity. Provincial policies have, over the past few years, increasingly prioritised the conservation of biodiversity and important ecosystem services.

The need for biodiversity offsets must be identified, and potential offsets must be investigated and evaluated, during the Environmental Impact Assessment (EIA) and decision-making process for proposed development.

The objective of biodiversity offsets, through the development authorization and associated EIA process, is to ensure that residual impacts on biodiversity and ecosystem services that are of moderate to high significance (i.e. do not represent a 'fatal flaw' from a biodiversity perspective) are compensated by developers in such a way that ecological integrity is maintained and development is sustainable.

Several laws, policies, plans and guidelines at both national and provincial levels focus on achieving long term development benefits without compromising the natural environment and biodiversity. Spatial planning at all levels is increasingly informed by the desired conservation status of land, thereby providing clarity on the spatial framework wherein economic development can be accelerated, as required in terms of, e.g., the Accelerated and Shared Growth Initiative of South Africa. Many of these laws, policies or plans provide direction for, or inform, the use of biodiversity offsets as an instrument for environmental management. Importantly:

- The conservation of the natural environment is required in terms of the Constitution, the National Environmental Management Act (NEMA), and its Biodiversity Act.
- The national environmental management principles in Chapter 2 of NEMA include the need to 'avoid, or minimize and remedy' the disturbance of ecosystems and loss of biological diversity, and the need for development not to jeopardize ecological integrity.
- The Western Cape Provincial Spatial Development Framework (PSDF, approved by Provincial Cabinet in 2005) created the policy framework for biodiversity offsets to curb the continual erosion of biodiversity. It is intended that the PSDF will be approved as a Structure Plan in terms of the Land Use Planning Ordinance (15 of 1985).
- The National Biodiversity Strategy Action Plan (NBSAP)<sup>1</sup> explicitly recognises the need for biodiversity offsets.
- Biodiversity plans at different scales identify priority and/or irreplaceable areas for biodiversity conservation; typical 'receiving areas' for biodiversity offsets.

<sup>1</sup> Department of Environmental Affairs and Tourism 2005

Biodiversity offsets could provide a useful tool to help promote sustainable development in the Province, and contribute to achieving the Province's vision of transforming into an 'environment economy'. In addition, they could contribute to meeting provincial targets for biodiversity conservation.

Biodiversity offsets are considered as a 'last resort' option in a hierarchy of possible mitigation measures. That is, they are seen as an exceptional, rather than the usual form of mitigation. 'Residual impacts' are those impacts that remain once all proposed mitigation measures to avoid, reduce and repair/restore potential negative impacts have been taken into account. Offsets may be considered to compensate for those 'residual' biodiversity impacts resulting from proposed development by securing priority habitat for biodiversity conservation in perpetuity.

Although the possible need for an offset might be identified during the pre-application planning stages of a development, the actual need to offset the impacts of the development will only be known once all feasible and reasonable alternatives and mitigation measures have been addressed and evaluated.

The six main parties having roles and responsibilities in a project where biodiversity offsets may be appropriate are the:

- Developer (acting on behalf of private shareholders).
- Competent authority (acting on behalf of the greater public).
- CapeNature (acting on behalf of biodiversity conservation in the province).
- Environmental Assessment Practitioner (acting on behalf of the broader environment).
- Specialists contributing to the EIA process (acting on behalf of their particular area of expertise).
- Interested and affected parties (acting in the interests of particular communities or sectors of the public).

The trigger for biodiversity offsets is the significance of residual negative impacts on biodiversity:

- When residual impacts on biodiversity are of 'very high' significance, offsets are inappropriate as they could not compensate for the loss of biodiversity;
- When residual impacts on biodiversity are of 'medium' to 'high' significance, potential offsets for biodiversity loss should be explored; and
- When residual impacts on biodiversity are of 'low' significance, there is no need for biodiversity offsets.

The significance of residual negative impacts on biodiversity is heavily influenced by the characteristics of the receiving environment, namely if the area proposed for development lies in:

- A Core Biodiversity Area, identified in a published bioregional plan;
- Priority areas identified in biodiversity plans or biodiversity networks;
- A threatened ecosystem, habitat containing threatened species or special habitats, or an ecological corridor; or
- An area identified by CapeNature as being irreplaceable from a biodiversity conservation perspective.

The proposed biodiversity offset system in the Western Cape is based on area-based compensation. In some instances, monetary compensation may, however, be appropriate. Monetary compensation may comprise contributions to an accredited biodiversity conservation trust for the purpose of acquiring and managing priority habitat for biodiversity, and/or providing funds to expand or manage public protected areas.

In order to determine whether or not a proposed offset would adequately compensate for the residual biodiversity impacts of a specific proposed development, the actual biodiversity loss to be caused and the significance of this loss must be estimated. Theoretically sound approaches to the valuation of biodiversity loss, whether by way of ecological proxies or economic valuation, are

still in development world-wide. As a preferred approach to the valuation of biodiversity loss, and for the practical purpose of a workable biodiversity offset system in the Western Cape, area-based policy targets are proposed.

Biodiversity offsets, where appropriate, may need to comprise either a single or composite areas to compensate adequately for residual biodiversity loss. An acceptable measure of the residual loss is obtained as a point of departure for determining an appropriate offset. Offsets are calculated by multiplying this measure by a basic offset ratio linked to the conservation status of the affected ecosystem, namely:

- A 30:1 ratio for 'critically endangered' ecosystems, where an offset would be appropriate in exceptional circumstances only;
- A 20:1 ratio for 'endangered' ecosystems;
- A 10:1 ratio for 'vulnerable' ecosystems; and
- No offset for 'least threatened' ecosystems.

The area determined by the basic offset ratio is then adjusted by a range of context-specific considerations, including:

- The condition of the affected habitat;
- The significance of residual impacts on threatened species;
- The significance of residual impact on special habitats;
- The significance of residual impact on important ecological corridors or process areas; and
- The significance of residual impact on biodiversity underpinning valued ecosystem services.

Requirements for the size of biodiversity offsets inside an urban edge are substantially lower than those required outside the urban edge, in support of the PSDF's drive to contain development within these boundaries.

For a biodiversity offset to contribute effectively to biodiversity conservation in the Western Cape, offsets should be located in an 'offset receiving area', namely a Core Biodiversity Area or priority area identified in bioregional or biodiversity plans, or other area identified by CapeNature as being targeted for the

expansion of protected areas, and/or irreplaceable for meeting conservation targets.

Once the authority has considered the information in a Basic Assessment or draft EIA Report, it may request that biodiversity offsets be investigated. This step would be carried out in the final stages of either the Basic Assessment or EIA process, with an additional specialist study ('Offset Report') to be submitted as part of the final documentation. The Offset Report reflects information gathered during the offset design process, and proposes both a type of offset and the preferred option of securing that offset. An 'Offset Management Plan', would be required for on-site offsets or off-site offsets comprising habitat where agreement had been reached to secure these offsets, and submitted as part of the Basic Assessment Report, or Environmental Management Plan with the Final EIA Report. The provincial biodiversity agency, CapeNature, would be required to submit a formal statement on the adequacy (or otherwise) of the proposed offset to the decision-making authority, as a key informant in the decision-making process.

The long term security of the offset is vital to achieve the intended benefits to biodiversity and support the sustainability of the development project. For this reason, a careful offset design process must be followed, namely:

- Measuring the residual negative impacts on biodiversity to determine an appropriate offset;
- Determining the most appropriate type of offset: 'like for like habitat', 'trading up' (where habitat of a higher priority for biodiversity conservation that that affected by development is targeted as an offset) or monetary compensation;
- Determining the size of the offset required to compensate for residual negative impacts on biodiversity and, where the proponent intends to purchase, lease or secure habitat as an offset, the optimum location of the offset;
- Deciding on the best way to secure the offset: donation to CapeNature or an accredited Public Benefit Organization,

stewardship agreements or acquiring 'like for like or better' habitat;

- Reaching agreement on the offset; and
- Developing an Offset Management Plan (where relevant) after the developer has reached agreement with a suitable land-owner on such aspects as ownership, access, possible title deed restrictions, and the management, monitoring and evaluation, and auditing of the offset.

The proponent may opt to purchase, lease or otherwise secure agreements on, habitat as a biodiversity offset prior to decision-making on the proposed project. Alternatively, the proponent may elect to provide financial guarantees for the biodiversity offset as a condition of authorization. In the latter case, a 'window' period would be provided in the Record of Decision during which the proponent could investigate and secure appropriate habitat. That failing, the financial guarantee would pass to the State to provide an appropriate offset.

At the end of the offset design process, the proponent prepares an Offset Report and, where relevant, an Offset Management Plan to be submitted with the final Basic Assessment, or EIA Report and environmental management plan. The proposal should be clear on, amongst others, the size and location of the proposed offset and any agreements in place to support the offset.

The key factors that need to be considered in evaluating an offset proposal are:

- Would the proposed biodiversity offset compensate fully for the residual negative impacts on biodiversity and be functionally

viable in the long term? Would the offset result in benefits for biodiversity?

- Where the proponent is to secure habitat as an offset, would the offset have residual negative effects on local communities, or could they be adequately compensated? Would the offset be acceptable to the main affected parties?
- Are there sufficient guarantees that the offset/s would be secured, managed, monitored and audited, as required, in the long term? Are there any unacceptable risks associated with the offset?

If the proposed offset were found to be adequate and acceptable, it would be included as a factor in the approval given for the development and would be linked to relevant conditions of authorization.

Biodiversity offsets are interpreted as the first step in producing a system where the principle of compensation for significant impacts on biodiversity and/or ecosystem services is integrated into a market for biodiversity conservation.

It is important to note that biodiversity offsets are but one of a number of instruments aimed at promoting conservation of the province's biodiversity. The need to monitor and evaluate changes in the status of ecosystems and species, progress towards stated conservation targets, and the effectiveness of the offset system, is critical, as is the need to adjust the biodiversity offsets system over time in response to these changes.

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## Glossary of terms and acronyms

<i>ASGISA</i>	Accelerated and Shared Growth Initiative of South Africa
<i>BBOP</i>	Business and Biodiversity Offsets Programme
<i>Biodiversity pattern</i>	Structure and composition of ecosystems
<i>Biodiversity process</i>	Ecological processes and functions that sustain biodiversity
<i>Biodiversity network</i>	Core areas and interlinking ecological corridors contributing to a biodiversity plan within an urban edge and/or in a municipal spatial development framework
<i>Bioregional Plan</i>	Plan adopted in terms of the NEM Biodiversity Act, highlighting Core Biodiversity Areas and priority ecological corridors/process areas
<i>Biodiversity Plan</i>	Any systematic conservation plan prepared for a region, at scales ranging from 1:250 000 (CAPE, SKEP) to 1:100 000 (STEP) to Cape Lowlands Renosterveld Project (1:50 000) to fine-scale plans (1:10 000), and including plans for mega-biodiversity corridors or areas (Greater Cederberg, Gouritz, Agulhas Plain, Baviaanskloof)
<i>BPO</i>	Best Practicable Offset
<i>CAPE</i>	Cape Action Plan for People and the Environment
<i>CBD</i>	Convention on Biological Diversity
<i>CFR</i>	Cape Floristic Region
<i>Compensate</i>	Make amends for, provide redress, make reparations, pay back
<i>Critical Biodiversity Area</i>	Sites that are irreplaceable or 'important and necessary' in terms of meeting targets for biodiversity pattern and process, and large enough and connected enough to be functional and persist in the long term.
<i>DEA&amp;DP</i>	Department of Environmental Affairs and Development Planning
<i>DEAT</i>	Department of Environmental Affairs and Tourism
<i>EAP</i>	Environmental Assessment Practitioner
<i>Ecological integrity</i>	The state or condition of an ecosystem that displays the biodiversity characteristic of the reference, such as species composition and community structure, and is fully capable of sustaining normal ecosystem functioning
<i>Ecological processes</i>	The dynamic attributes of ecosystems, including interactions between/among organisms and interactions between organisms and their environment. They are the basis for self-maintenance in an ecosystem.
<i>Ecosystem</i>	An ecological system with particular defining characteristics. In South Africa, ecosystems tend to be broadly grouped in terms of freshwater ecosystems, terrestrial ecosystems and marine ecosystems. Within these groupings, there are further sub-groupings of ecosystems (e.g. terrestrial ecosystems are described and defined primarily in terms of vegetation type). This guideline deals primarily with terrestrial ecosystems and wetlands (a type of freshwater ecosystem).
<i>Ecosystem services</i>	The direct or indirect benefits to society in general and communities in particular provided by ecosystems. <i>The Millennium Ecosystem Assessment 2003 classifies the services that ecosystems can provide into four broad categories: provisioning services, regulating services, cultural services, and supporting services</i>
<i>Ecosystem status</i>	Indicates the condition of an ecosystem relative to thresholds for its continued existence (or persistence), both in terms of the ecological processes to maintain ecosystem function and the conservation of the species and habitats characteristic of that ecosystem. Threatened ecosystems comprise Critically Endangered, Endangered and Vulnerable ecosystems.
<i>EIA</i>	Environmental Impact Assessment
<i>EMF</i>	Environmental Management Framework
<i>EMP</i>	Environmental Management Plan
<i>Fatal flaw</i>	A major defect or deficiency in a project proposal that should result in its being rejected

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<i>Fine-scale plans</i>	Biodiversity plans that have a high degree of confidence with regard to the accuracy of mapping vegetation and land cover at a scale of 1:50 000, and a lower degree of confidence at scales of 1:10 000
<i>Habitat</i>	Natural area that forms part of a broader ecosystem
<i>I&amp;AP</i>	Interested and affected party
<i>IDP</i>	Integrated Development Plan
<i>IEM</i>	Integrated Environmental Management
<i>Mitigation</i>	Measures to avoid, minimize, repair/restore or compensate for negative impacts
<i>NBSAP</i>	National Biodiversity Strategy Action Plan
<i>NEM</i>	National Environmental Management
<i>NEMA</i>	National Environmental Management Act 107 of 1998
<i>NEM Biodiversity Act</i>	National Environmental Management Biodiversity Act 10 of 2004
<i>NEMA EIA regulations</i>	R385, R386 and R387 of 21 April 2006 in terms of Chapter 5 of the NEMA
<i>NEMPA</i>	National Environmental Management Protected Areas Act 57 of 2003
<i>NSBA</i>	National Spatial Biodiversity Assessment 2005
<i>Offsets</i>	Measures to compensate for residual negative impacts, once all other mitigation measures to avoid, minimize and repair/restore impacts have been considered (i.e. offsets are seen as a 'last resort' form of mitigation)
<i>'Out of kind' offsets</i>	Offsets not targeting the same habitat as the one affected, but a different habitat. 'Trading up' is one of these offsets.
<i>PBO</i>	Public benefit organization in terms of the Income Tax Act 58 of 1962
<i>PGDS</i>	Provincial Growth and Development Strategy
<i>PSDF</i>	Provincial Spatial Development Framework
<i>PSDIP</i>	Provincial Sustainable Development Implementation Plan
<i>Rehabilitation</i>	Returning a disturbed, degraded or destroyed ecosystem to productive use, with the emphasis on repairing ecosystem processes and services (i.e. need not involve re-establishing species composition and community structure, or associated ecological integrity)
<i>Residual impacts</i>	Impacts that remain after the proponent has made all reasonable and practicable changes to the location, siting, scale, layout, technology and design of the proposed development, in consultation with the environmental assessment practitioner and specialists (including a biodiversity specialist), to avoid, minimize, repair and/or restore negative impacts on, amongst others, biodiversity
<i>Restoration (of an ecosystem or its habitat)</i>	An intentional activity that initiates or accelerates the recovery of a damaged, degraded or destroyed ecosystem with respect to its health, integrity and sustainability. An ecosystem has recovered - and is restored - when it contains sufficient biotic and abiotic resources to continue its development without further assistance or subsidy.
<i>RoD</i>	Record of Decision
<i>SANBI</i>	South African National Biodiversity Institute, established in terms of the NEM Biodiversity Act
<i>SDF</i>	Spatial Development Framework
<i>Securing (an offset)</i>	Acquiring an appropriate offset and protecting it in perpetuity
<i>SKEP</i>	Succulent Karroo Ecosystem Plan
<i>Spatial component of ecological process</i>	Spatial surrogates for landscape-scale ecological and evolutionary processes (ecological processes cannot be 'seen' in the landscape, so spatial 'indicators' are used as a practical substitute)
<i>STEP</i>	Subtropical Thicket Ecosystem Plan
<i>TOR</i>	Terms of Reference
<i>'Trading up'</i>	Offsets target an ecosystem of greater value or priority to biodiversity conservation from the one being impacted.
<i>WCPDC</i>	Western Cape Provincial Development Council

## 1. BACKGROUND

One of the general objectives of Integrated Environmental Management (IEM) and the Environmental Impact Assessment (EIA) process is to identify, predict and evaluate the actual and potential impacts of proposed developments on the biophysical environment, on socio-economic conditions and on cultural heritage.

Additionally, options for preventing and mitigating negative impacts and alternatives are evaluated with a view to prevent and minimise negative impacts and to maximise benefits. To ensure that development delivers socio-economic benefits without threatening the viability of the systems upon which these services depends, the disturbance of ecosystems and loss of biological diversity must be avoided, or where they cannot be avoided, they should be minimised and remedied. In certain instances the need exists to explore mechanisms to offset or compensate for unavoidable, residual impacts on biodiversity.

The concept of "biodiversity offsets" is relatively new and, internationally, there is neither a standard definition nor a consistent approach for determining offsets. Without a consistent approach and clarity on how to make use of biodiversity offsets, there is the risk of either no use or inappropriate use being made of biodiversity offsets. There is currently little understanding, clarity or agreement amongst role-players involved in development, planning and EIA processes on:

- What biodiversity offsets are;
- When to consider biodiversity offsets;
- The process and procedures to be followed when considering biodiversity offsets;
- The required public participation and stakeholder engagement process when considering offsets;
- How to incorporate biodiversity offsets into the EIA decision-making process;
- How to secure the offsets being proposed/considered; and
- How to monitor and manage offsets made.

The purpose of this guideline is to provide authorities, project proponents, conservation planners, town and regional planners, Environmental Assessment Practitioners (EAPs), specialists, non-government organisations (NGOs) and other stakeholders with guidance on answering the above questions. The guidance may facilitate discussion between these different role-players on the need for, and design and implementation of biodiversity offsets. As a biodiversity offset is a relatively new concept, with few examples of good practice to draw on, there remain many unanswered questions which can only be addressed over time through ongoing learning from pilot offset projects. It is expected that the learning from these projects would inform future editions of this guideline.

Once the concept of biodiversity offsets is established and accepted, pressure will grow to produce an offset system that achieves the targets of economic development and efficiency, ecological sustainability and integrity, and social justice without becoming an obstacle in that process. Based on examples world wide of other environmental compensation schemes, ranging from transferable development rights to carbon offsets, this means at least that the following factors need to be addressed:

- Receiving areas where offsets would achieve the maximum benefit for biodiversity conservation, need to be clearly identified and made known;
- The security and transferability of offsets need to be guaranteed;
- Development authorisations for residual biodiversity impacts of 'medium' to 'high' significance need to become increasingly dependent on offsets being secured;
- Financial and other incentives for conservation and restoration need to be integrated into a system of offsets;

- A stable and thus predictable policy and planning framework needs to be in place;
- Conservation of biodiversity and associated ecosystem services needs to be steadily integrated into the market-place;
- The institutional capacity of competent authorities and the provincial conservation agency, CapeNature, needs to be such that it meets the demands of the offset system;
- A biodiversity offsets committee needs to be established to review those Basic Assessment or EIA reports proposing offsets to compensate for residual negative impacts on biodiversity, and to advise the competent authority; and
- A monitoring and evaluation system needs to be in place to keep track of changes in the status of ecosystems and species, progress towards stated conservation targets, and the effectiveness of the offset system.

This guideline is written as a stepping stone towards the development of such a robust, workable biodiversity offset system supported by an appropriate policy framework. It is work in progress, but intends to clearly state the direction of this progress.

## 2. INTRODUCTION

This section addresses the following questions:

- What is meant by 'biodiversity' and 'ecosystem services'?
- What are biodiversity offsets?
- What is the rationale for biodiversity offsets in the Western Cape?
- When should biodiversity offsets be considered, and when should they not be considered?

### 2.1 What is meant by 'biodiversity' and 'ecosystem services'?

According to the National Environmental Management: Biodiversity Act (Act 10 of 2004), biological diversity or biodiversity means:

*"the variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part and also includes diversity within species, between species, and of ecosystems".*

The persistence of biodiversity depends on its '**pattern**' and on '**process**' (Box 1.

**Box 1: Biodiversity pattern and process** (after Brownlie 2005)

**“Pattern”**, encompasses biodiversity *structure* and *composition*. It refers to genetic variability, and the number and distribution in space and time of populations and species, communities, ecosystems and landscapes.

**“Process”**, also known as *function*, refers to the interactions and roles of living organisms, populations, species and communities, which allows the biodiversity pattern to persist. There are *spatially fixed* processes (e.g. linked to physical features such as soil or geological interfaces) and *spatially flexible* processes (e.g. where there are several options to link mountains and the coast) <sup>2</sup>.

Conserving processes requires a significantly larger proportion of the landscape than is needed to represent biodiversity pattern.<sup>3</sup> So, the sound management of land use in the vicinity of areas set aside for conserving pattern (e.g. protected areas) is essential.

**Important to note: background on biodiversity in impact assessment**

For background on biodiversity considerations in EIA, readers are referred to the following two guidelines that should be read in conjunction with this guideline:

- *Guideline for the involvement of biodiversity specialists in EIA processes* (Brownlie, S. 2005)
- *Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape* (De Villiers et al. 2005).

Biodiversity pattern and process underpin a range of **ecosystem services**.

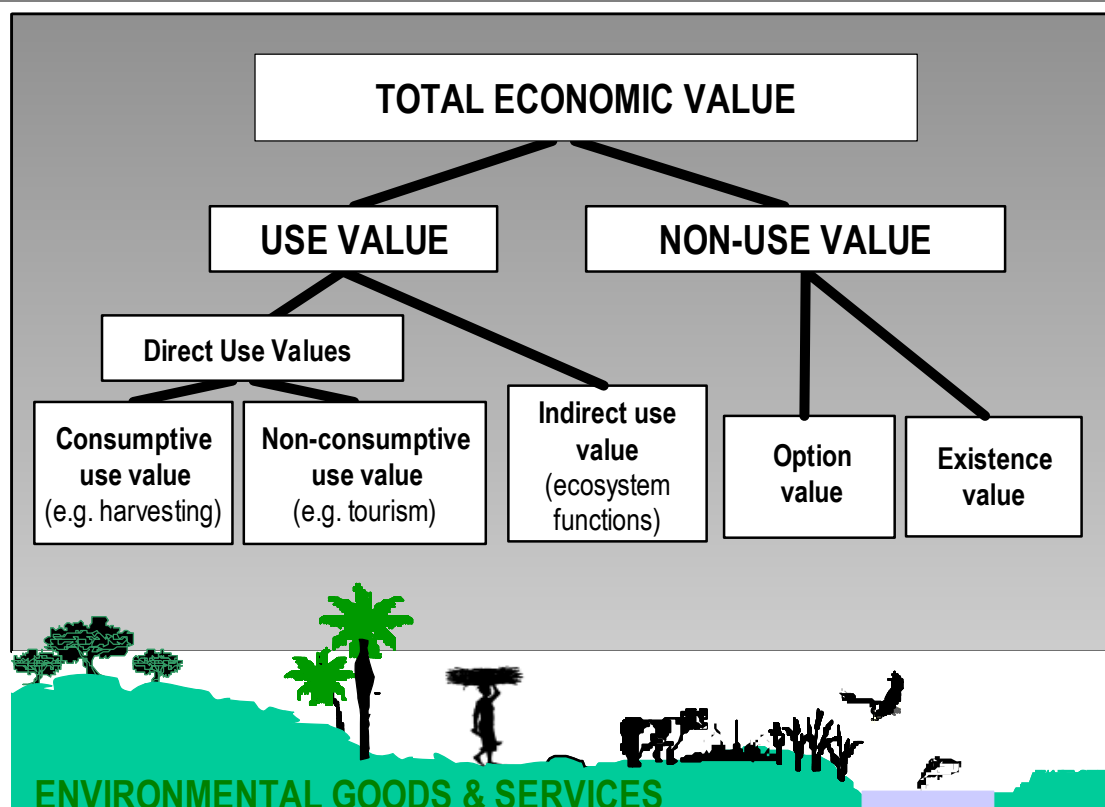
The National Environmental Management: Protected Areas Act (Act no 57 of 2003) refers to ecosystem services as ‘environmental goods and services’, and defines them to include:

*“benefits obtained from ecosystems such as food, fuel and fibre and genetic resources; benefits from the regulation of ecosystem processes such as climate regulation, disease and flood control and detoxification; and cultural non-material benefits obtained from ecosystems such as benefits of a spiritual, recreational, aesthetic, inspirational, educational, community and symbolic nature”.*

Ecosystem services have both use and non-use values to society (Figure 1 and Box 2).

<sup>2</sup> Rouget *et al.*, 2003.

<sup>3</sup> Pressey *et al.*, 2003.



**Figure 1 : Value categories making up total economic value** (after Turpie *et al* 2001)

## Box 2 : Use and non-use values of ecosystem services

The total economic value of environments embraces both their use and non-use values:

### Use values

- **Direct use value** covers direct *consumptive* outputs that can be consumed or processed directly, like wood, fish, meat, medicines, wild foods, etc. as well as direct *non-consumptive* uses such as tourism and recreation.
- **Indirect use value** covers ecosystem services like flood regulation, nutrient retention, etc.

### Non-use values

- **Option value** covers the value placed on keeping future options open for direct or indirect use of biodiversity and ecosystems in future, bearing in mind that some uses may not yet be known (e.g. medicinal or food properties of plants).
- **Existence values** refer to the intrinsic, aesthetic or cultural values of natural landscapes, ecosystems and biodiversity, irrespective of their use.

Environmental resource economists use various techniques to quantify these values. From an economic perspective **all** of the value categories outlined above are equally valid and should be considered to ensure efficiency and equity in decision making and send the right economic signals to prospective



developers in particular.

For background on economic considerations in EIA, readers are referred to the following DEA&DP guideline:

- *Guideline for the involvement of economic specialists in EIA processes (Van Zyl et al., 2005)*

For background on social considerations and links between livelihoods, health, wellbeing and ecosystem services (including goods provided by ecosystems), readers are referred to the following DEA&DP guideline:

- *Draft Guideline for the involvement of social specialists in EIA processes (Barbour 2007)*

## 2.2 What are biodiversity offsets?

### 2.2.1 Definitions

Several definitions for biodiversity offsets have been attempted, most notably::

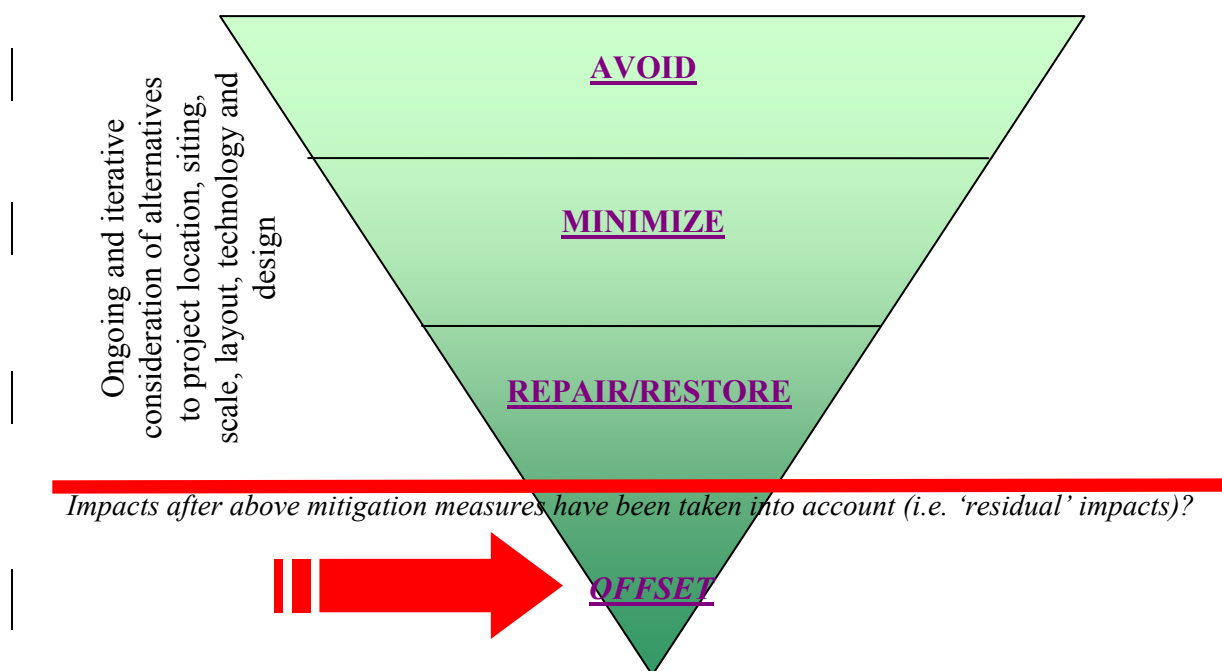
*'conservation actions intended to compensate for the **residual, unavoidable harm to biodiversity** caused by development projects, so as to ensure 'no net loss' of biodiversity. Before developers contemplate offsets, they should have first sought to avoid and minimise harm to biodiversity'*<sup>4</sup>

*'positive actions that conserve biodiversity to compensate for biodiversity loss arising from development, negotiated on a case-by-case basis' or 'one or more appropriate actions that are put in place to counterbalance (offset) the environmental impacts of development'*<sup>5</sup>.

Biodiversity offsets provide a mechanism to compensate for residual negative impacts on biodiversity **after** a developer has proven that a) all feasible and reasonable alternatives have been considered in arriving at the proposed development, and b) reasonable and responsible actions have been taken in the location, siting, scale, layout, technology and design of the proposed development to avoid, minimize and repair/restore associated impacts. That is, offsets are seen as a last resort option in the mitigation hierarchy (see Figure 2).

<sup>4</sup> Ten Kate *et al.* (2004). This definition is also accepted in the Provincial Spatial Development Framework (DEADP 2005a).

<sup>5</sup> Department of Environment and Conservation (NSW, Australia). BioBanking – a Biodiversity Offsets and Banking Scheme: conserving and restoring biodiversity in NSW. Working Paper. 2005.



**Figure 2 : Offsets to compensate for the residual negative impacts on biodiversity: the 'last resort' in the mitigation hierarchy**

Biodiversity offsets are a mechanism whereby development and conservation objectives can be achieved more effectively by not only focussing on the site of the development. When designed well, a biodiversity offset system may provide opportunities for the achievement of ecological integrity, economic efficiency and social justice.

### 2.2.2 Main approaches to biodiversity offsets

The predominant approach to biodiversity offsets is to provide a **'like for like or better'** area of habitat to compensate for that lost or negatively affected and/or result in an overall improvement in biodiversity conservation. In exceptional cases, **'trading up'** or providing an offset area of greater conservation significance may be considered if it would have greater conservation benefit from a strategic perspective. Offsets that do not involve securing and managing habitat but include funding research, education, staffing (etc), are generally believed to be unacceptable for impacts on biodiversity<sup>6</sup>. Currently, there are two main approaches to determining biodiversity offsets, namely a ratio-based and adjusted approach<sup>7</sup>, and the Business and Biodiversity Offsets Programme (BBOP)<sup>8</sup> 'accounting' approach, which is in the process of being developed.

<sup>6</sup> Department of Environment and Conservation, NSW, Australia. 2005.

<sup>7</sup> e.g. Government of South Australia (2005).

<sup>8</sup> BBOP4Doc9, August 2006 (draft internal document). Three types of accounting tools are being developed, namely structural accounting (the 'habitat hectare approach'), functional accounting and socioeconomic accounting tools

### ***2.2.3 When is an offset not an offset: voluntary donation of habitat for conservation***

Voluntary protection and management of habitat for biodiversity conservation purposes might be proposed by a developer as an integral part of the project proposal where that habitat could make a significant contribution to biodiversity conservation objectives in the province, and where the landowner is amenable to doing so.

In many instances, the proposed contribution of land for conservation purposes is not linked to the need to compensate for residual negative impacts on biodiversity of the proposed development, and would thus **not** constitute an offset. These proposals could, however, have major benefits for biodiversity conservation. It would be important for the authorities and/or conservation agency to evaluate any additional costs to them that would be associated with the proposal, prior to entering into a stewardship (or similar management) agreement.

However, should there be residual negative impacts on biodiversity of the proposed project that could be compensated by offsets, the land/habitat proposed by the developer for conservation purposes could fulfil that purpose. In this case, the approach to determining an appropriate offset given in this guideline should be applied to evaluate the adequacy of that land/habitat as an offset.

## **2.3 Biodiversity offsets in the Western Cape**

### ***2.3.1 The Western Cape context and challenges***

From a biodiversity perspective, the province has no parallel in South Africa (Box 3).

#### **Box 3 : Biodiversity in the Western Cape**

- The Western Cape contains significant elements of three out of 34 global biodiversity hotspots, namely the Cape Floristic Region, Succulent Karoo and Subtropical Thicket Biome.
- Sixty-six percent of the country's 21 Critically Endangered terrestrial ecosystems occur in the Fynbos Biome, which is almost exclusively associated with the Western Cape.
- The National Spatial Biodiversity Assessment (NSBA) has identified two of the Western Cape's major constituent bioregions, the Cape Floristic Region and the Succulent Karoo, as two of the nine areas that have been identified as priorities for national conservation action<sup>9</sup>.
- Lowlands renosterveld has been reduced to less than 9% of its original extent, occurring in some 18 000 fragments, half of which are less than 1 ha in size<sup>10</sup>. These highly threatened ecosystems are poorly protected.
- Of the seven Critically Endangered renosterveld types identified by the NSBA, five are 'hardly protected'<sup>11</sup>.

More than 94% of biodiversity in South Africa occurs outside the boundaries of formally protected areas<sup>12</sup>. In the Cape Floristic Region, which spans much of the Western Cape, an additional 42% of the

<sup>9</sup> Driver *et al* 2005

<sup>10</sup> Von Hase *et al* 2003

<sup>11</sup> Driver *et al* 2005

<sup>12</sup> Driver *et al* 2005.

extant area outside statutory protected areas needs to be placed under some form of conservation management in order to promote the persistence of biodiversity<sup>13</sup>.

The Province's biodiversity is one of the key enabling factors for socio-economic development in the Western Cape<sup>14</sup>. However land-intensive socio-economic development realities pose a significant threat to the Province's remaining biodiversity and will impact on human health and well-being and on the sustainability of economic development strategies<sup>15</sup>. Urban sprawl, ribbon-like coastal developments, extensive agriculture, and clustered developments outside the urban edge are placing more and more pressure on the limited supply of often endangered and even critically endangered ecosystems in the Western Cape<sup>16</sup>. In addition, conversion of wetlands and impacts of development on the biodiversity that underpins our water delivery systems is having a significant negative effect on scarce water resources. Conservation and sustainability targets are increasingly difficult to attain as a result of competing land uses.

Increasingly, policies, plans and development guidelines in the Western Cape recognise the value and importance of both biodiversity and ecosystem services in the province, and the inter-dependence of economic growth, social equity and the conservation of that biodiversity and those ecosystem services (Section 3.3). The challenge for developers, authorities and affected parties is to respond in such a way that development benefits are achieved and maximised without threatening the viability of the biophysical systems which enable socio-economic development. On the social front, the Province has been experiencing high levels of migration across the socio-economic spectrum and particularly from people with low levels of skills and literacy, desperate for opportunities to integrate with the main stream economy. These pressures are increased by the need for social justice with respect to access to land and housing, both areas where considerable shortfalls are apparent. The situation is compounded by a booming economy which has provided considerable benefits for those well-positioned to take the opportunities that have presented themselves, but which has exacerbated income, asset and spatial inequalities<sup>17</sup>. As highlighted in the Western Cape Provincial Spatial Development Framework (PSDF)<sup>18</sup>, the Province finds itself at a crossroad. Should it continue to follow its historic development path, which, while tried and tested, particularly regarding its ability to create short term financial profits, may be driving the Province further down the road of environmentally unsustainable development, social injustice and economic inequality, or should it take the less travelled sustainable development route? It has become apparent that innovative approaches to integrated environmental management (IEM) and environmental impact assessment (EIA) are needed if the sustainability of the developmental growth path already paved by the *iKapa Elilhumayo* Strategy and other lead strategies is to be ensured.

### ***2.3.2 Towards a system of biodiversity offsets in the Western Cape***

The exploitation of our biodiversity has made it apparent that drastic measures need to be introduced in order to save this beautiful Province for future generations. A biodiversity offset system is one approach towards ensuring more sustainable development in the Province, and can contribute to achieving the Provinces' vision of transforming into an "environment economy".<sup>19</sup>

<sup>13</sup> Cowling *et al.* 2003.

<sup>14</sup> See *Towards a Sustainable Development Implementation Plan for The Western Cape* (WCPDC/DEA&DP, 2005).

<sup>15</sup> See *Towards a Sustainable Development Implementation Plan for The Western Cape* (WCPDC/DEA&DP, 2005).

<sup>16</sup> *Provincial Urban Edge Guideline* (DEADP 2005d), *Western Cape Provincial Spatial Development Framework* (DEADP 2005a)

<sup>17</sup> *Western Cape Provincial Spatial Development Framework* (DEADP 2005a)

<sup>18</sup> *Western Cape Provincial Spatial Development Framework* (DEADP 2005a)

<sup>19</sup> This is an economy where ecosystem system goods and services are mainstreamed, building on the recognition that healthy ecosystems underpin healthy economies, especially an economy as dependent on the natural environment as the Western Cape. Biodiversity is an important contributing factor to ecosystem functioning, and ultimately the provision of economically valuable goods and services to society (see Eftec, 2005).

The 'no net loss' objective for biodiversity is unlikely to be realistic in a developing country such as South Africa. At the very least, there will be loss of biodiversity at genetic levels through ongoing reduction in size of populations through cumulative impacts of habitat conversion deemed to be acceptable by decision-makers.

The amount of biodiversity in the Western Cape is finite and of global value. For this reason, true compensation for residual negative impacts on biodiversity (i.e. reduction in that amount) could only be achieved either by restoring or re-creating natural habitat of comparable biodiversity. In some ecosystems, restoration<sup>20</sup> of degraded areas to a condition where the biological diversity closely approximates that of undisturbed habitat in that ecosystem, is feasible. However, in the ecosystems of the Western Cape, which are among the most species-rich per unit area in the world<sup>21</sup>, restoration is widely regarded by biodiversity specialists as impracticable: restoration efforts are often prohibitively expensive and seldom lead to levels of biodiversity approaching those in pre-disturbance habitat in the short to medium term<sup>22</sup>. Many of the arid and semi-arid terrestrial ecosystems are extremely difficult (if not impossible) to restore in the short to long term, and may take decades if not centuries to recover<sup>23</sup>. Added to this consideration is the fact that the 'duty of care' for the environment is a legal requirement (s28 of the National Environmental Management Act 1998), and the removal of alien invasive species – a key cause of degradation of habitat in the Western Cape – is currently required in terms of the Conservation of Agricultural Resources Act 43 of 1983, and will become a requirement of the NEM Biodiversity Act 2004 once a list of invasive species has been published in terms of that Act. That is, restoration of, and care for the natural environment and its biodiversity are existing legal requirements of landowners, lessees or persons with a right to use land. For this reason, an approach to compensation that seeks alternative strategies has to be sought, focusing on actions that conserve existing biodiversity as the people's common heritage rather than restoring biodiversity.

Figure 3 shows a broad approach to considering biodiversity offsets in the Western Cape.

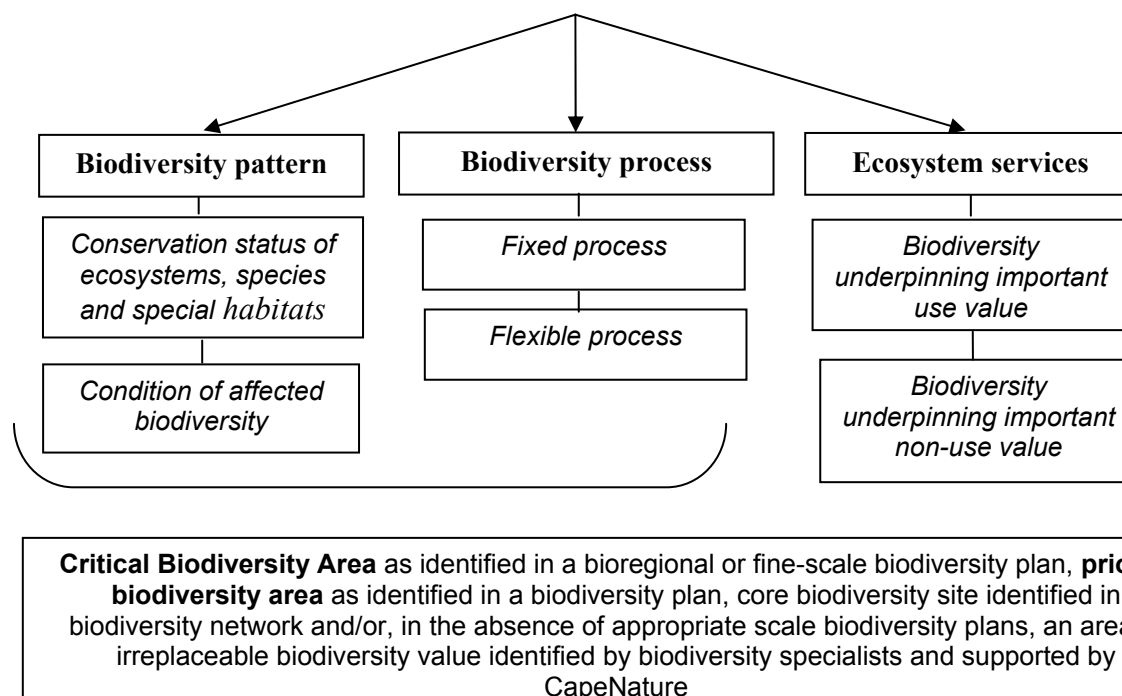
<sup>20</sup> It is important to distinguish between 'restoration', which means restoring the natural habitat to its former biological diversity; and 'rehabilitation', which means returning degraded or disturbed land to some form of land use that often involves completely different vegetation cover from that pre-disturbance.

<sup>21</sup> The Cape Floristic Region is home to about 9000 plant species and an astounding 1 435 Red Data Book plant species, most of which are highly localised endemics that persist in very small populations (Rebello 1992); the Succulent Karoo is home to 6356 plant species, 40% of which are endemic and 936 (17%) of which are Red Data Listed (Driver *et al* 2003) [in Brownlie *et al* 2005]

<sup>22</sup> It would be possible in some ecosystems to repair the physical and major biotic components so that ecosystem functioning can be re-instated. This step could facilitate further recovery of biodiversity. Provided that an ecosystem has not been completely destroyed, indigenous seed banks may persist and it may be possible in some ecosystems to manage recovery and exclude alien invasive plants (e.g. Holmes 2001).

<sup>23</sup> DeVilliers *et al* 2005

***Biodiversity offsets may be appropriate where there are significant residual negative impacts (i.e. after avoiding, minimizing, repairing or restoring negative impacts) on:***



**Figure 3 : Key considerations in the proposed approach to biodiversity offsets in the Western Cape**

## 2.4 Principles for biodiversity offsets

The following principles underpin biodiversity offsets<sup>24</sup>:

- Impacts must first be avoided by using all cost-effective prevention and mitigation measures. Offsets are only used to address the residual impacts.
- Offsets must never reward ongoing poor environmental performance.
- There may be thresholds where development cannot proceed because offsets cannot compensate for residual impacts on biodiversity. Offsets should not be pursued if there would be residual impacts of 'very high' significance on biodiversity, nor where the biodiversity values lost cannot be quantified or replaced.
- Offsets must ensure sustainable development through compensating for biodiversity impact by contributing to biodiversity conservation, and should conserve biodiversity of at least as high significance as that impacted by the proposed development.
- Offsets must be enduring, and should be monitored and managed adaptively to achieve biodiversity conservation objectives in the long term.
- Offsets must be based on sound science and enough reliable and relevant information.

<sup>24</sup> The principles listed below are adapted and drawn from a synthesis of principles used internationally (BBOP4doc14 (draft) 2006; Dept of Environment and Conservation, NSW, Australia 2005 and 2006; International Council on Mining and Metals 2005; WWF 2006).

- Offsets must be located appropriately, according to biodiversity priorities in the area and in support of strategic biodiversity plans.
- Offsets must be enforceable – through conditions, covenants or contracts.
- Offsets should not comprise actions or activities already required by law.
- Offsets in the most appropriate form must be secured before development commences, to give assurance of effectiveness.
- Offsets must provide long term security for tenure.
- Offset must provide long term security for management (specialist involvement where appropriate, management and/or restoration actions, monitoring and evaluation, auditing and reporting)
- Offsets must consider all significant impacts on biodiversity: direct, indirect and cumulative impacts.
- Assessment of biodiversity lost due to development and gained through the implementation of offsets must use the same currency and be based on sound ecological principles. Offsets:
  - must include consideration of pattern (structure and composition) and process (function),
  - must operate across scales (connectivity, corridors),
  - must consider the conservation status of ecological communities (conservation significance of ecosystem and species), and
  - must ensure long term viability and functionality of biodiversity.
- The design and implementation of biodiversity offsets must comply with all relevant law.
- Offsets must consider the risks that they may not achieve ecological outcomes (i.e. include contingency factor).
- Offsets must consider primarily the use but, where at all possible, also the non-use, values of biodiversity and ecosystem services to affected communities in particular, and society as a whole, and involve affected parties in their design.
- The consideration of offsets must take a precautionary approach in the context of a stakeholder engagement process that takes into account scientific knowledge about the uniqueness of the area impacted as well as the values ascribed to it by local communities.
- Offsets should not create more impacts that would in turn need compensation (unless the latter could be accommodated within the offset).
- Offsets should provide an opportunity for engaging with developers to enable them to make a long term contribution to biodiversity conservation.

## 2.5 Objective and desired outcome of biodiversity offsets in the Western Cape

**The objective** of biodiversity offsets in the Western Cape, through the development authorization and associated EIA process, is to ensure that residual impacts on biodiversity and ecosystem services that are of moderate to high significance (i.e. do not represent a 'fatal flaw' from a biodiversity perspective) are compensated by developers in such a way that ecological integrity is maintained and development is sustainable.

**The desired outcome** of biodiversity offsets is to ensure that:

- The cumulative impact of the development authorization and associated EIA process does not cause any ecosystem to become more threatened than 'endangered'<sup>25</sup> or the conservation status of species and the presence of 'special habitats'<sup>26</sup> to decline;

<sup>25</sup> The NEM Biodiversity Act 2004 makes provision (s52) for listing threatened ecosystems (critically endangered, endangered and vulnerable) and for listing (s56) threatened species (critically endangered, endangered and vulnerable). The listing of threatened ecosystems and species is anticipated during 2007. In the interim, South Africa's Red Data Books and Red Lists indicate threatened species, and the NSBA lists threatened ecosystems.

<sup>26</sup> As referred to in the NBSAP, and defined in some fine-scale biodiversity plans (e.g. calcrete and quartzitic patches, wetlands, etc). The identification of these 'special habitats' captures elements of significant biodiversity that would not be covered by

- Conservation efforts arising from the development application process, and contributing to improved protection of the Western Cape's unique species and ecosystems are focused in areas identified as priorities for biodiversity conservation; and
- Ecosystem services provided by affected biodiversity and on which local or vulnerable human communities - or society as a whole - are dependent for livelihoods, health and/or safety, are safeguarded.

*All potential biodiversity offsets should be evaluated against the objective and desired outcome.*

## 2.6 Structure of the guideline

The guidelines address the following key aspects of biodiversity offsets:

- The legal, policy and planning framework wherein offsets operate is given in **Section 3**.
- The incorporation of biodiversity offsets in the EIA and decision-making process is explained in **Section 4**. Offsets require a specific process within the existing EIA procedure.
- Guidance on the design of a biodiversity offset is provided in **Section 5**.
- **Section 6** gives guidance on the contents of the Offset Report and Offset Management Plan.
- **Section 7** concludes and **Section 8** provides a bibliography on biodiversity offsets.

## 3. CONVENTIONS, LAWS, POLICIES, PLANS AND GUIDELINES DIRECTING OR INFORMING BIODIVERSITY OFFSETS

This section provides information on the international, national and provincial legal, policy and planning framework guiding or informing biodiversity offsets

Several international conventions and guidelines, as well as national and provincial laws, policies, plans and guidelines, provide direction for, and/or inform the use of, biodiversity offsets as an instrument for environmental management.

### 3.1 International conventions, studies and/or guidelines informing biodiversity offsets

South Africa has ratified the international Convention on Biological Diversity (CBD), which means that it has an international obligation to work towards conservation of its biodiversity (Box 4).

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considering coarser indicators like threatened ecosystem or species. They could foreseeably include habitat known to be important for migratory species, for particular life-stages of threatened or commercially important species, to support keystone species that 'drive' ecosystems, and/or for locally rare or range-restricted species. In addition to being identified in fine-scale biodiversity plans, these features could be identified by CapeNature or biodiversity specialists.



**Box 4 : Convention on Biological Diversity**

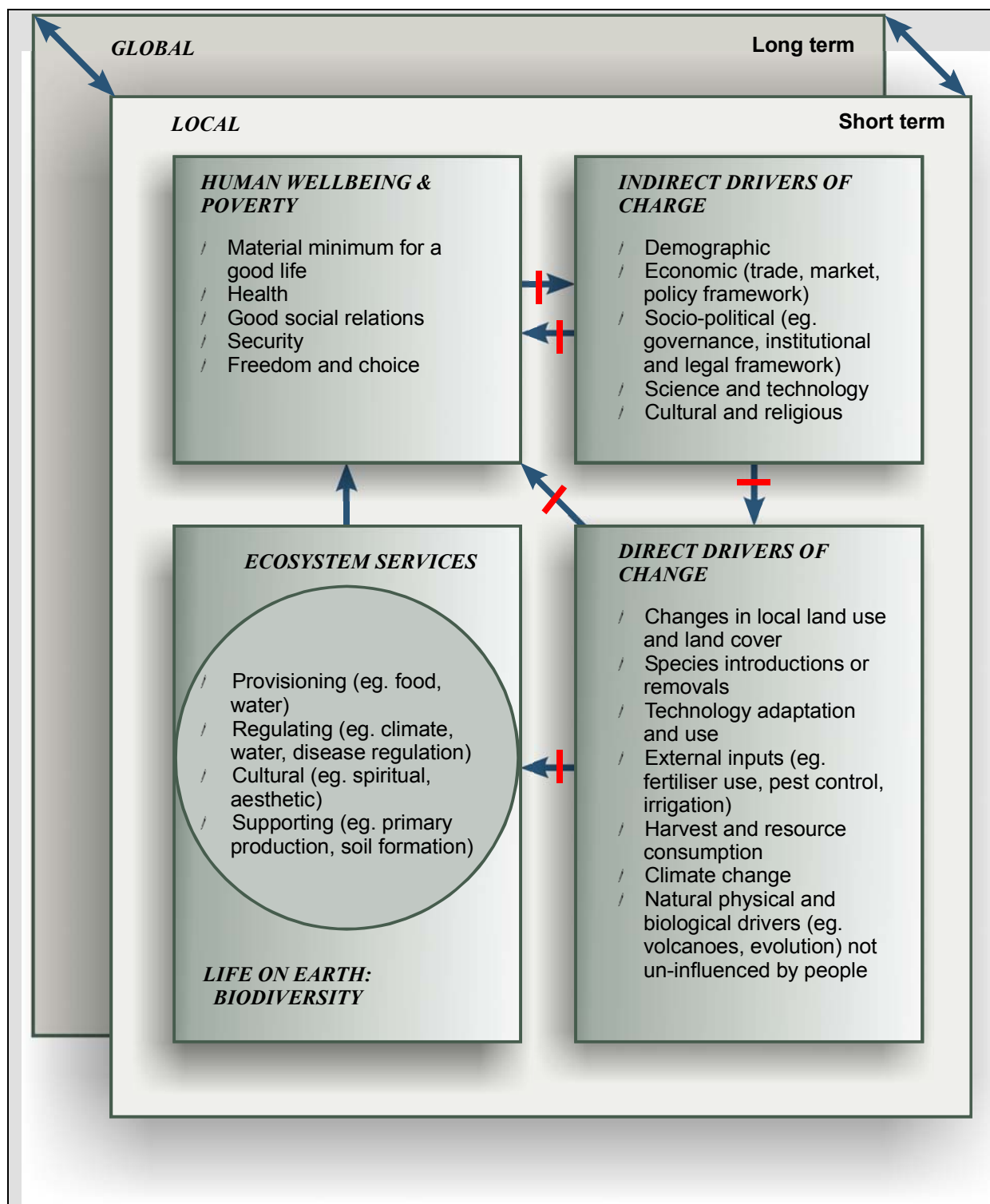
*The Convention on Biological Diversity (1992) gives an obligation to member countries to:*

1. *Protect species and ecosystems that warrant national or local protection, including:*
  - *ecosystems that are threatened, important for maintaining key ecological or evolutionary processes and/or functions, ecosystems that contain rich biodiversity or large numbers of threatened or endemic species, with social, economic, cultural or scientific value;*
  - *species and communities of species that are threatened, related to domesticated or cultivated species, and/or have medicinal, agricultural or other economic, social, cultural or scientific significance;*
  - *genotypes with social, scientific or economic significance.*
2. *Use indigenous biological resources sustainably; and*
3. *Share the benefits of biodiversity equitably.*

The CBD adopted Voluntary Guidelines on biodiversity-inclusive impact assessment in 2006.

The **Millennium Ecosystem Assessment** is an international work program designed to meet the needs of decision makers and the public for scientific information concerning the consequences of ecosystem change for human well-being and options for responding to those changes. As such, it provides a global perspective on the importance of biodiversity and ecosystem services. Figure 4 shows the Millennium Assessment Framework that highlights the value of ecosystem services to human wellbeing.

Table 1 summarizes the international conventions and studies informing biodiversity offsets.



Human wellbeing is partly dependent on ecosystem services. The drivers of change are affected by human wellbeing. Feedback [black arrows] occurs at all scales, from individuals to the entire globe. The red lines across the arrows represent points of intervention to influence feedback in beneficial ways.

**Figure 4 : Biodiversity-socioeconomic- human wellbeing links<sup>27</sup>**

<sup>27</sup> Source : The Millennium Ecosystem Assessment (2003) conceptual framework

**Table 1 : International conventions and studies informing offsets**

International Convention on Biological Diversity (CBD)	The CBD's voluntary guidelines on biodiversity-inclusive impact assessment. Voluntary Guidelines on Biodiversity-inclusive Impact Assessment (adopted at COP-8, 2006 <sup>28</sup> ) include the recommendation that an analysis of the likely success of mitigation measures should include that of the 'realistic potential to offset adverse project impacts'. In Section 23 it is stated that remedial action can take several forms, i.e. <i>avoidance</i> (or prevention), <i>mitigation</i> (by considering changes to the scale, design, location, siting, process, sequencing, phasing, management and/or monitoring of the proposed activity, as well as restoration or rehabilitation of sites), and <i>compensation</i> (often associated with residual impacts after prevention and mitigation).
Millennium Ecosystem Assessment (MA) and the Southern African component of the Millennium Ecosystem Assessment (Scholes and Biggs 2004)	<p>The MA focuses on ecosystem services (the benefits people obtain from ecosystems), how changes in ecosystem services have affected human wellbeing, how ecosystem changes may affect people in future decades, and response options that might be adopted at local, national, or global scales to improve ecosystem management and thereby contribute to human well-being and poverty alleviation.</p> <p>Particularly in sub-Saharan Africa, the condition and management of ecosystem services is a major factor influencing prospects for reducing poverty. The South African Component of the Millennium Ecosystem Assessment concluded, amongst others, that:</p> <ul style="list-style-type: none"> <li>▪ There is a high correlation between environmental sustainability and human wellbeing;</li> <li>▪ Livelihoods are often linked directly or indirectly to ecosystem services;</li> <li>▪ The greatest potential for limiting biodiversity loss is through preventing degradation of semi-natural ecosystems used outside of public protected areas.</li> </ul>

### 3.2 Laws informing and directing biodiversity offsets

Environmental conservation is safeguarded through the Constitution, the National Environmental Management Act 107 of 1998 (NEMA), and the Biodiversity Act 10 of 2004 (NEM Biodiversity Act). The government is the trustee of biodiversity, water resources and protected areas in South Africa<sup>29</sup>.

**Table 2 : Laws informing or directing offsets**

Constitution of the Republic of South Africa (Act 108, 1996), article 24 (b) – (c)	<i>"everyone has the right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development"</i>
National Environmental Management Act (NEMA) (Act 107 of 1998)	<p>The National Environmental Management Act (Act 107, 1998) states in s2(4)(k) that The environment is held in public trust for the people, the beneficial use of resources must serve the public interest and the environment must be protected as the people's common heritage.</p> <p>Section 2(4)(a) specifies that sustainable development requires the consideration of all relevant factors including the following:</p> <ul style="list-style-type: none"> <li>▪ that the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;</li> <li>▪ 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;</li> <li>▪ that a risk-averse and cautious approach is applied, which takes into account the</li> </ul>

<sup>28</sup> UNEP 2006

<sup>29</sup> Paterson 2005.

	<p>limits of current knowledge about the consequences of decisions and actions</p> <ul style="list-style-type: none"> <li>▪ 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;</li> <li>▪ that equitable access to environmental resources, benefits and services be pursued to meet basic human needs and ensure well-being. Special measures may be taken to ensure access by categories of persons disadvantaged by unfair discrimination</li> </ul> <p>Section 2(4)(p) states that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.<sup>30</sup></p>
National Environmental Management: Biodiversity Act 10 of 2004	<p>The objectives of this Act are within the framework of the National Environmental Management Act, include:</p> <ul style="list-style-type: none"> <li>▪ The management and conservation of biological diversity within the Republic of South Africa and the components of such biological diversity</li> <li>▪ The use of indigenous biological resources in a sustainable<sup>31</sup> manner; and</li> <li>▪ The fair and equitable sharing among stakeholders of benefits arising from bio prospecting involving indigenous biological resources; and</li> <li>▪ Giving effect to ratified international agreements relating to biodiversity which are binding on the Republic.</li> </ul> <p>The Act, amongst others, provides the framework for biodiversity management and planning, comprising a national biodiversity framework, bioregions and bioregional plans, and biodiversity management plans and agreements. It also provides for the listing of threatened and protected ecosystems (s52) and threatened species (s56), and for activities or processes within those ecosystems to be listed as 'threatening processes', thus triggering the need to comply with the NEMA EIA regulations. Promulgation of such lists is imminent.<sup>32</sup></p>
National Environmental Management Protected Areas Act 57 of 2003 (NEMPA)	<p>The objectives of this Act within the framework of the National Environmental Management Act, include the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes in order to:</p> <ul style="list-style-type: none"> <li>▪ Protect areas with significant natural features or biodiversity</li> <li>▪ Protect areas in need of long-term protection for the provision of environmental goods and services</li> <li>▪ Provide for sustainable flow of natural products and services to meet the needs of a local community</li> </ul> <p>Involvement of private landowners.</p> <p>The Act provides for the involvement of parties other than organs of State in the declaration and management of protected areas.</p>
The Conservation of Agricultural Resources Act (CARA, Act No. 43 of 1983)	<p>Plants of alien origin may invade ecosystems and become problem plants in areas away from their natural habitats. The mandate to combat invasive plants (defined as 'weeds and invader plants') rests with this Act.</p>

<sup>30</sup> According to the *polluter (or impacter) pays principle*, resource users should pay full costs of the use of resources including environmental damage and the costs of mitigating adverse effects on the environment. The failure of the market economy is widely acknowledged. Some costs are *externalised*, in particular the costs to biodiversity and the ecosystem services. The costs accrue to the natural economy as loss of biodiversity, and the economy of the society as costs of restoration or substitution of the ecosystem services. The costs are carried by the society as a whole, while the benefits are received by private individuals or companies (Suvantola 2004).

<sup>31</sup> The term 'sustainable' in relation to biological resources is defined as 'sustainable' in relation to the use of a biological resource, means the use of such resource in a way and at a rate that

a) would not lead to its long term decline

b) would not disrupt the ecological integrity of the ecosystem in which it occurs and

c) would ensure its continued use to meet the needs and aspirations of present and future generations of people

<sup>32</sup> Until threatened ecosystems and species are listed, South Africa's Red Data Books and Red Lists indicate threatened species, and the NSBA lists different categories of threatened ecosystems (critically endangered, endangered, vulnerable).

Income Tax Act 58 of 1962	Inclusion of 'conservation, rehabilitation or protection of the natural environment, including flora, fauna or the biosphere' as approved public benefit activities for purposes of s18A(1)(a) of the Income Tax Act (GN 403 of 26 April 2006). [In order to qualify as a 'public benefit organisation' under this Act and thus qualify for tax exemptions or reductions, the organisation must, amongst others, be a trust or association of persons, be incorporated under Section 21 of the Companies Act, register as a non-profit organisation under the Non-profit Organisations Act, and the organisation's sole objective must be to carry on a 'public benefit activity'.]
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### 3.3 Policies, plans and guidelines directing or informing biodiversity offsets

Not all environmental policies, plans and guidelines in the Western Cape specifically address biodiversity offsets. However, with few exceptions, they recognise the importance of the province's biodiversity and the need to conserve that biodiversity and the ecosystem services underpinned by biodiversity that ensure life-support systems (e.g. fresh water) or support human wellbeing.

The design of a biodiversity offset cannot be done in isolation and needs to take cognisance of the broader goals of economic development, such as halving of poverty and unemployment, as well as the promotion of conservation. The compensation for project-specific biodiversity impacts through an offset is influenced by several policies, plans and guidelines at different levels. A key influence are government plans for rapid economic development (at least 6% by 2010) to halve poverty and unemployment by 2014 through the Accelerated and Shared Growth Initiative of South Africa (ASGISA).

The significance of residual biodiversity impacts will be an outcome of the biodiversity assessment, carried out on a case-by-case basis. The social and institutional context is contained in several policy and planning documents that either inform, provide clear objectives and/or policy targets for, or guide the need for biodiversity offsets in specific areas.

**Policies and plans** informing biodiversity offsets include:

- The **National** Biodiversity Strategy Action Plan 2005
- The draft **National** Strategy for Sustainable Development 2006
- The draft **national** Policy Paper: a framework for considering market-based instruments to support environmental fiscal reform in South Africa 2006.
- The **Provincial** Strategy for Sustainable Development 2005 and **Provincial** Sustainable Development Implementation Plan (final draft for public comment, December 2006).
- The **Provincial** Growth and Development Strategy Green Paper 2006.

**Spatial planning** at national, provincial, local and urban levels is progressively more informed by the desired conservation status of land, thereby providing more clarity on the spatial framework wherein economic development can be accelerated. Spatial plans of relevance in guiding biodiversity offsets include:

- The **National** Spatial Biodiversity Assessment 2005.
- The **Provincial** Spatial Development Framework 2005.
- **Municipal** Spatial Development Frameworks that have taken into account systematic or biodiversity conservation plans.
- Plans for 'mega' biodiversity corridors or conservation areas in the **province** (e.g. Gouritz, Greater Cederberg, Agulhas Plain, Baviaanskloof).

- **LandCare Area Wide Plans** that have taken into account systematic or biodiversity conservation plans.
- **Environmental Management Frameworks** at various scales in the province and at municipal level that have taken into account systematic or biodiversity conservation plans.
- **Bioregional plans** within the province, when published in terms of the NEM Biodiversity Act<sup>33</sup>.
- **Biodiversity plans** at various scales within the province, including systematic conservation plans (e.g. CAPE, SKEP, STEP, mega-corridors, Figure 5) and fine-scale biodiversity plans (Figure 6)), and
- Plans for **biodiversity networks** within the urban edges of **municipal** areas (e.g. City of Cape Town).

Box 5 highlights which spatial plans are likely to be of most use with regard both to determining the significance of residual negative impacts on biodiversity, and designing appropriate biodiversity offsets.

#### Box 5 : Which spatial plan to use?

The following spatial plans would probably be most useful:

- The PSDF, for finding demarcated Core 2 areas (river and ecological corridors);
- Fine scale biodiversity plans as a 'best bet' for identifying areas of the utmost significance for biodiversity at a relatively accurate scale of mapping, followed by other biodiversity plans.

As a general rule, the most recent biodiversity plans at the finest scale should take precedence over biodiversity plans when assessing potential impacts, evaluating impact significance and determining optimum offset areas. That is, where a fine-scale plan has been prepared, that plan must be used.

Useful sources of information on biodiversity plans include:

- The SANBI Geographic Information System website (<http://bgis.sanbi.org>)
- Kerry te Roller, SANBI [[teroller@sanbi.org](mailto:teroller@sanbi.org)]
- Jeffrey Manuel, DEA&DP [[jmanuel@pgwc.gov.za](mailto:jmanuel@pgwc.gov.za)]
- The Fynbos Forum Ecosystem Guidelines (De Villiers *et al* 2005)

**Provincial DEA&DP guidelines:** The possibility for biodiversity offsets is explicitly recognised for certain developments in specific provincial guidelines<sup>34</sup>:

- Guideline for involving biodiversity specialist in EIA processes 2005;
- Guidelines for golf course/estate, or polo field/estate developments 2005; and
- Guidelines for resort developments 2005.

A summary of policies plans and guidelines providing direction on, and/or informing the use of biodiversity offsets is included in Table 3.

<sup>33</sup> Bioregional plans may be established by the Minister or MEC for environmental affairs in the province in terms of the NEM Biodiversity Act 2004

<sup>34</sup> The Urban Edge guideline 2005 (DEA&DP 2005d) sets outer limits of development around the urban area, but does not mention offsets. However, urban edges are significant in countering urban sprawl and working towards the broader objectives of the PSDF whilst contributing to the protection of natural resources

**Table 3: Policies, plans and guidelines directing biodiversity offsets**

Policies and Plans	Role in directing biodiversity offset options
National Spatial Biodiversity Assessment (NSBA) (Driver <i>et al</i> 2005)	<p>The NSBA establishes status for terrestrial, inland water, estuarine and marine ecosystems, protection levels and conservation priorities at a 1: 250000 scale nationally and suggested implementation options for priority areas. It provides the national context for development of biodiversity plans at the sub-national and local scale. For each vegetation type a defensible target has been determined, based on protecting 75% of species occurring in that vegetation type. Ecosystem status is thus based on the percentage of the original area remaining untransformed in relation to the biodiversity target, and a threshold for ecosystem functioning.</p> <p>Conservation priority areas indicate where there is a need for finer scale planning, expansion of the protected area system and integration of biodiversity-compatible development and resource management across the landscape and seascape, including on private and communal land.</p>
National Biodiversity Strategy Action Plan (NBSAP) (DEAT 2005)	Identifies the need to develop a national policy framework to guide the implementation of biodiversity offsets (off-site mitigation) in threatened ecosystems, ecological corridors and other special habitats, to minimize the impact of development on sensitive and irreplaceable habitats and ensure long-term persistence of threatened ecosystems and key ecological processes.
Draft National Strategy for Sustainable Development (DEAT 2006)	<p>This Strategy stems from Section 24 (b) of the Constitution and particular the phrase <i>"secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development"</i>.</p> <p>Although still in development, the final product is set to be used by government and stakeholders to enhance South Africa's long term planning capacity. It would specifically influence national and provincial development strategies, such as the National Spatial Development Perspective, the Provincial Growth and Development Strategies and other cross-sectoral development programmes. The draft National Strategy notes that the nation's biodiversity provides critical ecosystem services on which socioeconomic systems depend. Our ecosystems are the basis of our society and our economy; they provide vital services and are of great use and non-use value to society.</p>
The draft Policy Paper: a framework for considering market-based instruments to support environmental fiscal reform in South Africa (National Treasury 2006)	Recognizes that taxes that seek to internalise negative environmental externalities could be encompassed by the polluter-pays principle (one of the NEMA principles). It covers a range of measures that could provide incentives and/or support for biodiversity offsets, including differential rating system for properties where the landowner undertakes conservation activities; tax reductions or exemptions for funds dedicated for conservation-related activities (e.g., rehabilitation); and for donations for conservation purposes to a conservation agency or organization.
Towards a Sustainable Development Implementation Plan for the Western Cape: concept paper on sustainable development. (DEA&DP 2005e); and the provincial Sustainable Development Implementation Plan (PSDIP) Final Draft for public comment	<ul style="list-style-type: none"> <li>▪ Provides a framework that assists in developing a common understanding of the concept of "sustainable development" and enables decision makers to assess the extent to which their proposed policies, strategies and projects contribute to sustainability.</li> <li>▪ The PSDIP recognizes the inter-dependencies of economic growth, social equity and ecosystem services, and the need to stay within the ecological limits of the natural resource base.</li> <li>▪ Four priority areas, including (Priority Area 3) promoting resource efficiency and sustainability, and (Priority Area 4) – safeguarding ecosystem services.</li> <li>▪ Within Priority Area 4, priority actions include the development of a biodiversity accounting system, implementing programmes that promote biodiversity conservation, and expanding conservation areas and networks of protected areas.</li> </ul>

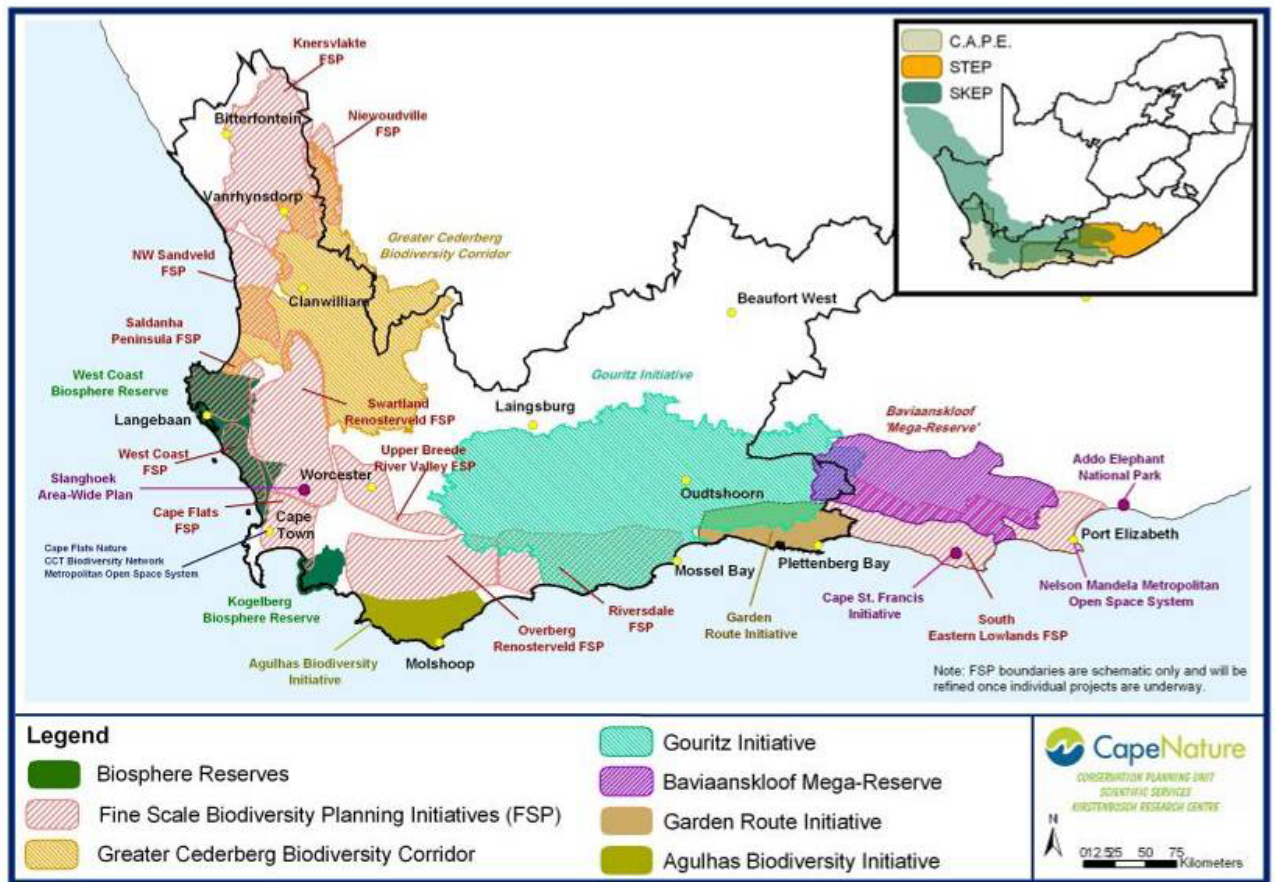
(DEA&DP 2006)	
Spatial Plans	Role in informing biodiversity offsets
Provincial Growth and Development Strategy Green Paper (Department of the Premier 2006)	<p>Economic growth is a prerequisite for boosting job creation, better quality human settlement and improved human well-being. The PGDS notes that:</p> <ul style="list-style-type: none"> <li>Environmental integrity is 1 of 4 key pillars of the 'shared growth and integrated development' path to 2014, with growth, equity and empowerment.</li> <li>Biodiversity embraces the richness in species as well as the wealth in endemic plants and animals. Protecting the natural resource base is essential to any economic and socially sustainable system, even when the full economic value of natural resources has not yet been calculated.</li> <li>Biodiversity protection and the protection of ecological hot spots are internationally recognized imperatives governed by specific international agreements. Land cover change is the most significant driver or decline in ecosystem health.</li> </ul> <p>The Strategy aims for a 50% improvement in environmental condition by 2014 (through urban edge and other guidelines; target is to reduce biodiversity loss and urban/agricultural land encroachment).</p>
Provincial Spatial Development Framework (PSDF) (DEA&DP 2005a)	<p>The PSDF addresses offsets for biodiversity pattern (based on ecosystem status) and aims to conserve ecological corridors (biodiversity process). It does not address offsets for ecosystem services, although the dependence of human wellbeing on ecosystems is noted<sup>35</sup>.</p> <p>Objective 8 of the PSDF is to 'protect biodiversity and agricultural resources' by</p> <ul style="list-style-type: none"> <li>Preventing the inappropriate conversion of biodiverse rich rural areas, existing agricultural activity and soil with agricultural potential and important cultural and scenic landscapes to other uses;</li> <li>Providing the highest protection to rivers and remaining areas of critically endangered biodiversity; and</li> <li>Ceasing development outside of urban edges.</li> </ul> <p>The PSDF defines 'Core 1' areas as including critically endangered remnants wherever they occur. These areas should not allow further development or conversion of land for agriculture. The PSDF defines important river and ecological corridors as 'Core 2' areas, comprising public or private land, the incorporation of which into protected areas should be incentivised. It envisages a network of interconnected ecological corridors, noting that some corridors have been identified through systematic conservation or biodiversity planning, but they still need to be precisely defined.</p> <p>The PSDF defines two types of buffer areas (areas of remaining natural habitat):</p> <ul style="list-style-type: none"> <li>Buffer 1 (contains <b>endangered</b> vegetation to some extent) in which further loss of habitat shall not be permitted unless there area significant biodiversity reasons for being lenient in respect of particular land.</li> <li>Buffer 2 (<b>vulnerable and least threatened</b> areas of biodiversity).</li> </ul> <p>Activities that have a minimal ecological footprint can be permitted in the Buffer Area 1 and 2. The use of offset mechanisms to retain critical thresholds of biodiversity while accommodating the need for Intensive Agriculture, is included as a necessary strategy. The PSDF notes that 'Policy and regulations to govern offsets should be introduced.</p> <p>Habitat incorporated within the medium term urban edge should exclude land of</p>

<sup>35</sup> Objective 8 of the PSDF (2005) notes that high levels of fauna and flora biodiversity are essential to ensure that the province is able to withstand climate change, provide the necessary ongoing environmental capital to sustain life and to sustain the province's unique environment that is an asset even on a world-scale, and which is essential for the future socioeconomic wellbeing and development of all its inhabitants.

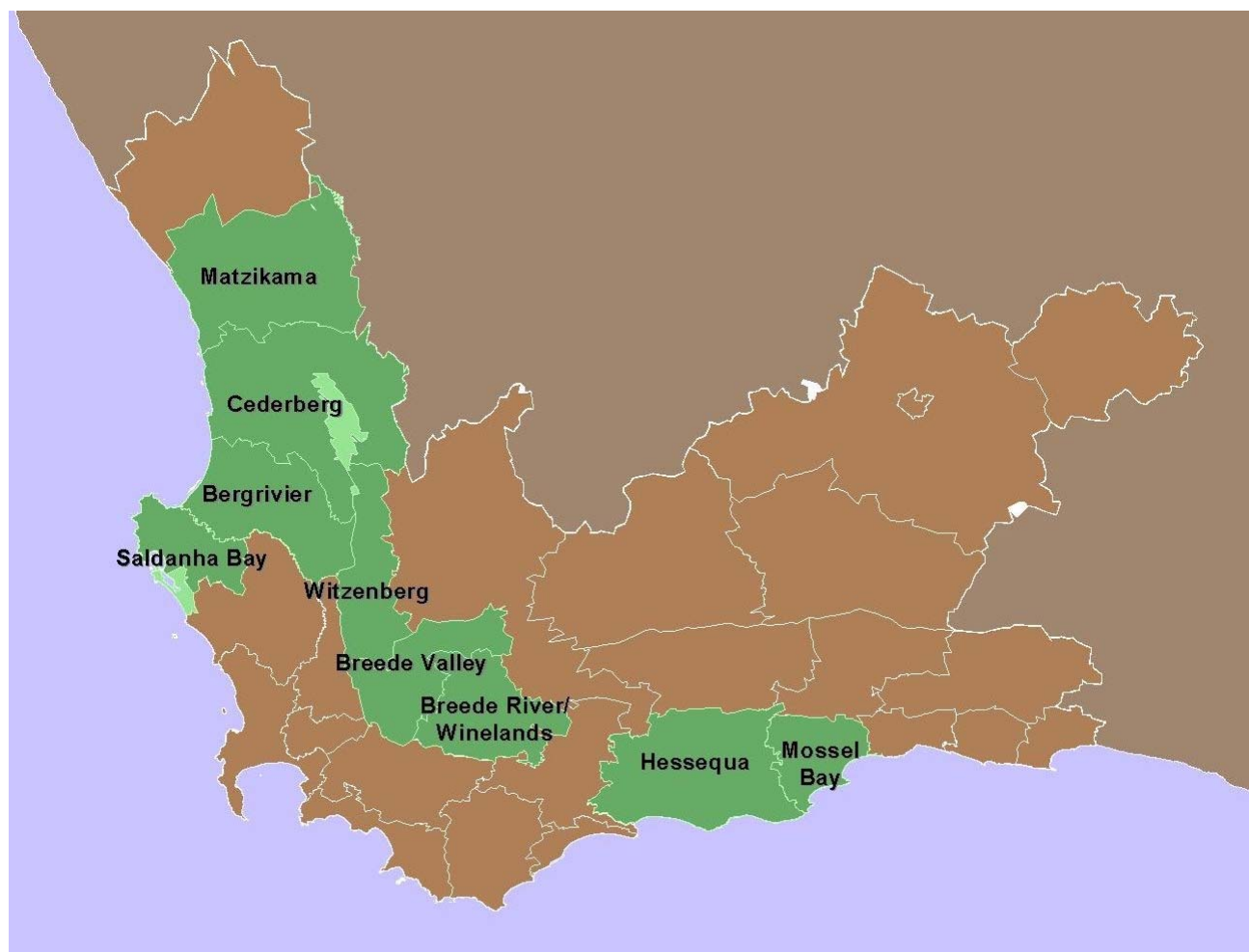


	<p>biodiversity significance. The PSDF's approach to development planning outside the urban edge is that of "Design with Nature", locating buildings in least environmentally sensitive land and striving to avoid harm to biodiversity.</p> <p>The DEA&amp;DP is aiming to approve the PSDF as a section 4.6 structure plan in terms of the Land Use Planning Ordinance 15 of 1985 (LUPO).</p>
Mega biodiversity corridor initiatives	Gouritz River, Greater Cederberg, Baviaanskloof, Agulhas Plain initiatives have identified important biodiversity corridors in the landscape.
Biodiversity plans (e.g. Cape Action Plan on the Environment (C.A.P.E.), Succulent Karoo Ecosystem Programme (SKEP), Subtropical Thicket Ecosystem Planning (STEP)), fine-scale biodiversity plans (see Von Hase <i>et al.</i> 2005))	<p>Identification of conservation corridors and conservation priority areas or Critical Biodiversity Areas at different scales (fine-scale plans with a high degree of confidence regarding the accuracy of mapping habitat at a 1:50 000 scale; others at larger scales).</p> <p>Identification of environmentally sensitive areas in which developments may be fatally flawed or may trigger the need for a biodiversity offset.</p> <p><b>Fine-scale plans</b> map Critical Biodiversity Areas (irreplaceable) and a Supporting Biodiversity Layer that includes 'land hungry' ecological processes such as important ecological corridors, catchments, groundwater recharge areas and climate gradients that simultaneously can play a key role in ecosystem service delivery. Critical Biodiversity Areas would be prioritized.</p>
Bioregional plans	May be established in terms of the NEM Biodiversity Act 2004 (none established to date); sets out the plan for the management of biodiversity and its components.
LandCare Area Wide Planning (DoA 2003)	<p>The tension between maintaining healthy and productive land for agricultural purposes and the protection and restoration of critical natural capital is addressed by the land area wide planning process by the Department of Agriculture. It is defined as (Department of Agriculture 2003):</p> <p><i>"a comprehensive problem solving process that integrates social, economic and ecological concerns over defined geographical areas. This process strives to sustain and improve environmental health through a natural resource management approach that integrates locally driven initiatives".</i></p>
Municipal Spatial Development Frameworks (SDFs) and Environmental Management Frameworks (EMFs)	<ul style="list-style-type: none"> <li>Spatial Development Frameworks are required in terms of the Municipal Systems Act 32 of 2000 and represent the spatial component of the Integrated Development Plan for a municipality. The natural environment and its conservation importance is one of the considerations to be addressed in the SDF, to guide location of development to less environmentally sensitive areas.</li> <li>Explicit provision is made in Chapter 8 of the NEMA EIA Regulations for EMFs. EMFs take into account conservation status and provide applicants with an early indication of areas where development would be appropriate, and the required level of EIA.</li> </ul>
Guidelines	Role in informing biodiversity offset options
Guideline for involving biodiversity specialist in EIA processes (Brownlie 2005)	<ul style="list-style-type: none"> <li>Compensation or offsets should only be considered after other biodiversity management actions (avoidance, mitigation, enhancement, rehabilitation and restoration) have been considered</li> <li>Offsets could include formal commitment to managing substitute areas of comparable or greater biodiversity value for conservation, entering into a secure and permanent conservation agreement with the conservation authority, setting aside protected natural areas, establishing a trust fund for biodiversity conservation, thereby enabling land acquisition or management, etc.</li> <li>Offsets should focus on areas of recognised value to biodiversity conservation, and on ensuring the persistence of landscape-scale processes.</li> </ul>
Guideline for Resort Development in the Western Cape (DEA&DP 2005c)	<ul style="list-style-type: none"> <li>Where relevant, it will be expected of a proposed resort development to provide satisfactory biodiversity offsets</li> </ul>
Guidelines for Golf Courses, Golf Estates, Polo Fields and Polo Estates in the Western	<ul style="list-style-type: none"> <li>Development that includes a golf course or polo field component may be located on the border between buffer areas and urban areas if resulting in achieving long term Biodiversity Offsets, i.e. the development takes place on degraded or disturbed land, which is not deemed as being of conservation</li> </ul>

Cape (DEA&DP 2005b)	significance and will result in the rehabilitation and ongoing maintenance of a significant land parcel/habitat/natural resource; and/or the applicant must indicate how the proposed development takes biodiversity offsets priorities, determined by the approved biodiversity plans, into account and how it will conform to and benefit such management systems.
Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape (De Villiers <i>et al</i> 2005)	<ul style="list-style-type: none"> <li>▪ Assist and inform land use planning, environmental assessment and decision-making about biodiversity in the province.</li> <li>▪ Provide information on main drivers of different ecosystems, main issues in, threats to and vulnerabilities of ecosystems, bottom lines for change to these ecosystems if they are to persist, guidance on development in, and management of ecosystems, and compensation or offsets for loss of biodiversity.</li> <li>▪ Give a useful overview of the spatial components of ecological processes in the landscape: fixed and flexible components.</li> </ul>



**Figure 5 : Biodiversity Plans and Initiatives**



**Figure 6 : Municipal areas in which fine-scale biodiversity plans are being prepared**

## 4. OFFSETS IN THE EIA PROCESS

This section answers the following questions:

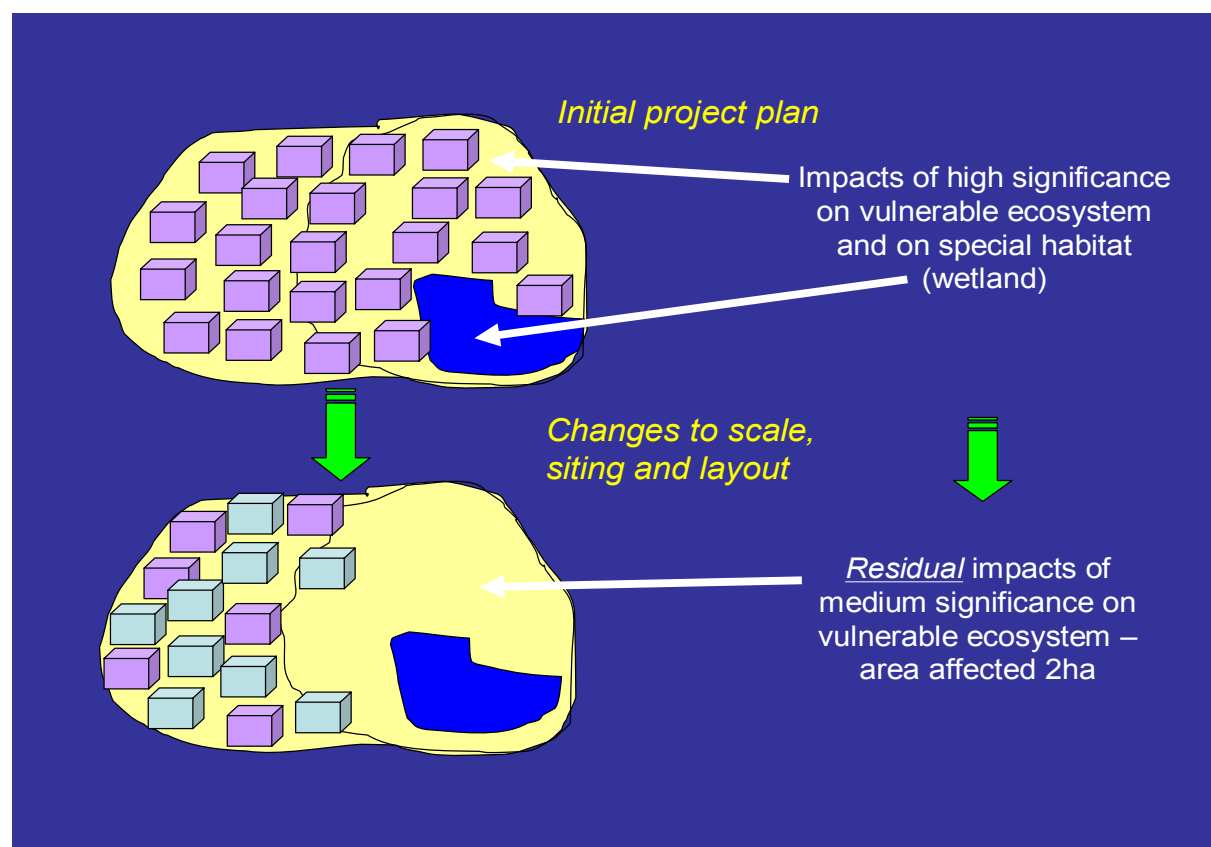
- When would biodiversity offsets be considered?
- When would biodiversity offsets not be considered?
- What general procedures should be followed when considering biodiversity offsets?
- What are the different roles and responsibilities in considering biodiversity offsets?
- How should biodiversity offsets be monitored and managed over time?

### 4.1 When would biodiversity offsets be considered?

In broad terms, biodiversity offsets would be considered to compensate for residual negative impacts on biodiversity of 'medium' to 'high' significance. The concepts of 'residual' impacts and of 'significance' are addressed in Section 4.1.1 and Section 4.1.2 respectively.

### 4.1.1 'Residual impacts'

'Residual impacts' are those impacts that remain after the proponent has made all reasonable and practicable changes to the location, siting, scale, layout, technology and design of the proposed development, in consultation with the environmental assessment practitioner and specialists (including a biodiversity specialist), to avoid, minimize, repair and/or restore negative impacts on, amongst others, biodiversity. A simple example is shown in Figure 7.



**Figure 7 : Illustrating the concept of 'residual impacts'**

#### Important to note: essential considerations before arriving at offsets as a possible option

Biodiversity offsets should only be considered after alternatives and successive mitigation options have been adequately addressed. That is, it is of the utmost importance with regard to 'arriving' at biodiversity offsets as a possible 'last resort' mitigation measure, to:

- Show that a positive, 'planning with nature' approach has been adopted;
- Give clear evidence that all reasonable and feasible alternatives to avoid or minimize negative impacts on biodiversity and valued ecosystem services have been duly considered; and
- Give clear evidence that the mitigation hierarchy has been followed, namely impact avoidance, impact minimization, and repair/restoration of impacted biodiversity.

Offsets are considered to compensate for **residual impacts**; i.e. the remaining impact once planned mitigation has been implemented. In some instances, proposed mitigation is unreliable, likely to be ineffective, and/or unlikely to be implemented (the so-called 'mitigation myth'). In these cases, residual impacts are inaccurate and underestimated.

*It is thus of the utmost importance in considering offsets to be sure that the proposed mitigation measure would be implemented (i.e. that both capacity and resources would be committed to mitigation) and would be effective. That is, that the risks associated with non-implementation or effectiveness of mitigation measures would be negligible.*

**Important to note: ability of applicant to implement mitigation**

Regulation 8(b)(iv) of the NEMA EIA Regulations the Department must take into account "the ability of the applicant to implement mitigation measures and to comply with any of the conditions subject to which subject to which the application may be granted".

#### **4.1.2 Impact significance**

The NEMA regulations require that **the significance** of potential impacts be evaluated, taking into account mitigation (s23, s32). To facilitate the integration of biodiversity offsets into the EIA system, therefore, it is useful to use the **potential significance of residual impacts** as a trigger for considering biodiversity offsets. The significance of an impact relates to the level of uncertainty, penalty and irreversibility of that impact<sup>36</sup>. The rating of significance draws on information and values, and generally combines consideration of a range of criteria.

The significance of an impact on the environment will be heavily influenced by the conservation status of the receiving ecosystem and associated species and the values of ecosystem services (Box 6)<sup>37</sup>.

**Important to note: consistency in evaluating significance**

Reliance on significance ratings in impact assessment can be misleading: depending on the approach used to arrive at the significance ratings, the ratings can mask the underlying issues and values. Also, the significance rating will vary depending on the scale at which significance is evaluated to allow comparison of development alternatives for decision making purposes. For example, impacts of very high significance to a small local community could be rated low at a national level, etc. It is important to remember that these 'low' impacts at national level would remain highly significant to the local community and could lead to loss of livelihoods, irreversible health effects, etc.

The methodology used to determine the significance of potential environmental impacts must be given in EIA Reports in terms of the NEMA EIA regulations. However, this methodology is not explicitly required for Basic Assessments.

***For the purposes of using significance ratings as a trigger for biodiversity offsets, and ensuring consistency in approach, it is of the utmost importance that the protocol developed in this guideline be used as the methodology for determining the significance of residual impacts on biodiversity and ecosystem services.***

Box 7 describes significance thresholds. Figure 8 depicts the main considerations that determine the potential significance of impacts on biodiversity.

The trigger for considering a biodiversity offset is the **significance of residual negative impacts on biodiversity**, as evaluated by a biodiversity specialist in collaboration with an environmental resource

<sup>36</sup> Sadler 1996

<sup>37</sup> Consideration of impacts on ecosystem services needs to consider both the use and non-use values of biodiversity and ecosystems; mitigation measures should, likewise, consider measures to avoid or minimize these use / non-use value impacts.

economist (and where appropriate a social specialist) where biodiversity underpins valued ecosystem services, and with input from CapeNature.

**Box 6 : Significance of residual negative impacts on biodiversity as a trigger for considering biodiversity offsets**

- Residual impacts of 'very high' significance represent a fatal flaw for development. In such a case, impacts would in all likelihood be irreversible or lead to irreplaceable loss of resources, would jeopardize ecological integrity and therefore could not be compensated;
- Residual impacts of 'medium' to 'high' significance would trigger an investigation into biodiversity offsets; and
- Residual biodiversity impacts of low significance would not require any offsets.

There may be '**exceptional circumstances**' that would influence the trigger for considering biodiversity offsets: these 'exceptional circumstances' could be situations where:

- a) The threatened (i.e. critically endangered, endangered or vulnerable) ecosystem, or threatened species, or special habitat to be affected is, with a high degree of certainty, unlikely to be viable or persist in the long term due to lack of connectivity with other areas of natural habitat, predicted trends/threats of surrounding land use and/or degree of isolation or fragmentation. The motivation for these 'exceptional circumstances' must be explicitly made by a biodiversity specialist, peer reviewed, and supported by CapeNature; and
- b) Despite residual negative impacts on biodiversity of 'very high' significance, the proposed development would deliver substantial benefits to society and there are no reasonable and feasible alternatives that could be pursued to realize these benefits.

The detailed table in Addendum 2 links impacts on biodiversity and associated ecosystem services with significance ratings, and gives guidance on when offsets would, or would not, be considered appropriate. It emphasizes the consideration of:

- Biodiversity and/or bioregional plans, biodiversity networks, as well as context-specific considerations, particularly where biodiversity plans at an appropriate scale have not yet been prepared, as a 'first filter' in determining the potential significance of residual negative impacts. Where there would be residual negative impacts on Critical Biodiversity Areas in bioregional or fine-scale biodiversity plans, priority/irreplaceable areas in other biodiversity plans, core sites in biodiversity networks, and/or habitat deemed by a biodiversity specialist and/or CapeNature to be 'irreplaceable' for conserving biodiversity, then these impacts would have 'very high' significance;
- Biodiversity pattern and process, including that biodiversity that underpins valued ecosystem services, as a 'second filter'.
  - **Biodiversity pattern** comprises ecosystems, species and 'special habitats', and reflects the 'scientific' value of biological diversity, as well as the value attached to keeping future options open or using that biodiversity. Residual negative impacts on critically endangered ecosystems or species would have a 'very high' significance;
  - **Biodiversity process** comprises fixed and flexible ecological processes, using the spatial components of ecological processes as clear spatial indicators of these processes. This measure reflects the 'scientific' value of maintaining biological diversity by ensuring that the processes that support biodiversity pattern persist, but also ensures the delivery of a wide range of ecosystem services. Residual negative impacts on irreplaceable spatial components of ecological processes would have a 'very high' significance ;
  - **Ecosystem services** have both use and non-use value to society, reflecting the value of biodiversity pattern or process underpinning those goods or services. (In many cases, residual impacts on the biodiversity underpinning valued ecosystem services may be addressed through pattern or process impacts. However, there may be instances where



valued ecosystem services rely on biodiversity pattern or process not identified using a strict 'biodiversity' approach (e.g. livelihoods may depend on a particular plant species that has little biodiversity importance, or on an 'least threatened' ecosystem for grazing). In these cases, it may be appropriate to consider offsets for residual negative impacts on that biodiversity). Residual negative impacts on irreplaceable ecosystem services of very high value to human communities or society would have a 'very high' significance.

#### Important to note: listing of threatened ecosystems and species

The process of listing threatened ecosystems and species in terms of Sections 52 and 56 respectively of the National Environmental Management: Biodiversity Act 10 of 2004 is currently underway. The listing will directly affect the evaluation of significance of impacts (and residual impacts) on these ecosystems and/or species. Until such time as the listing process has been completed, the ecosystem status of vegetation types and freshwater systems in the National Spatial Biodiversity Assessment (NSBA)<sup>38</sup> should be used as a reference, together with Red Data Books or Red Lists for species. In addition, key spatial/biodiversity plans should be drawn on for guidance on the importance of different areas (Table 3).

#### Box 7 : Significance thresholds for negative impacts on biodiversity

Threshold	Significance rating
<p>'Exclusionary'<sup>39</sup> threshold.</p> <ul style="list-style-type: none"> <li>Irreversible <b>and irreplaceable</b> loss of ecosystem or species (generally involving impacts on critically endangered ecosystems or species, or leading to a change in the status of ecosystems or species from endangered to critically endangered) with very high impact on international and national biodiversity</li> <li>Irreplaceable loss of areas constituting priority corridors or process areas at national or provincial levels</li> <li>Irreversible or irreplaceable loss of valued ecosystem services at national or provincial scale</li> </ul>	Very high
<p>Threshold of major potential concern<sup>40</sup>.</p> <ul style="list-style-type: none"> <li>Irreversible impact, leading to substantial change in ecosystem or species status within the endangered category, or from vulnerable to endangered, with high impact on national or provincial biodiversity</li> <li>Irreversible loss of areas constituting important corridors or process areas at provincial or local levels</li> <li>Impact leading to loss or deterioration of valued ecosystem services at provincial level</li> </ul>	High
<p>Threshold of potential concern.</p> <ul style="list-style-type: none"> <li>Irreversible impact leading to change in ecosystem status from least threatened to vulnerable; impacts with low impact on provincial but medium impact on local biodiversity</li> <li>Erosion of areas constituting important corridors or process areas at provincial or local levels</li> <li>Impact comprising a combination of impacts at a local level on two or more of the following a) a threatened ecosystem, b) threatened species, c) special habitats and d) ecological corridors or important process areas.</li> <li>Impact leading to loss or deterioration of valued ecosystem services at local level</li> </ul>	Medium
Negligible or no concern. e.g. low impact on local biodiversity or valued ecosystem services	Low

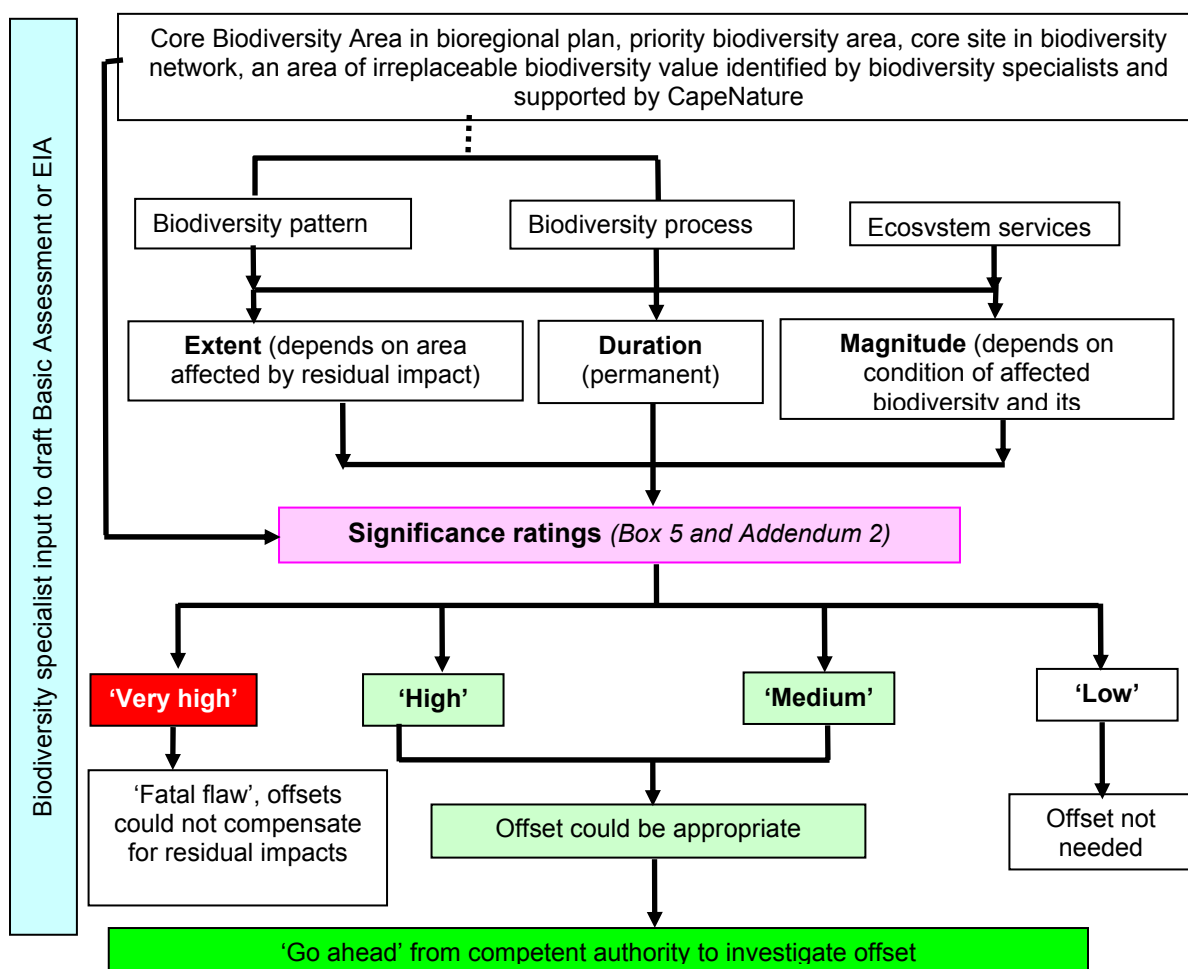
<sup>38</sup> Driver *et al* (2004).

<sup>39</sup> Lawrence Environmental, for Canadian Environmental Assessment Agency, 2000.

<sup>40</sup> "Threshold of potential concern"(TPC) is a term used as an early warning sign of adverse or unacceptable changes or trends which could prevent final objectives or target/s from being met.



Source: Adapted from Brownlie (2005)



## 4.2 When would biodiversity offsets *not* be considered?

Biodiversity offsets **would not** be considered by the authorities when:

- All reasonable and feasible alternatives to the proposed development that would meet the stated needs of that development **have not** been considered;
- All measures to avoid, minimise, repair or restore biodiversity impacts **have not** first been considered (including adopting a positive, 'planning with nature' approach as prescribed in both the DEA&DP guidelines<sup>41</sup> and the PSDF);
- All measures to manage impacts on biodiversity on the affected property **have not** been adequately addressed (including a construction and operational phase management plan, incorporating measures to conserve biodiversity, including alien invasive species control);

<sup>41</sup> Brownlie 2005

- Inappropriate use is made of offsets as a negotiation tool in an attempt to leverage environmental authorisation ;
- Residual impacts are of **very high** significance; in other words, ecological integrity would be compromised (for example when critically endangered ecosystems or ecosystems containing irreplaceable biodiversity or irreplaceable ecosystem services are proposed to be developed);
- Residual impacts are of **low** significance (and therefore there are no meaningful impacts to be compensated);
- Biodiversity losses would not be adequately compensated by offsets;
- The long-term security and viability of the proposed offset cannot be guaranteed; and
- Offsets come at too high a cost to society.

### 4.3 General procedures to be followed when considering offsets

In order to identify and evaluate the potential to compensate for unavoidable and residual negative impacts of a proposed development, the need for a biodiversity offset must be triggered, and potential offsets must be investigated and evaluated during the different EIA and decision-making process for that development (Sections 4.5-4.8). Figure 9 shows the sequence of steps in the EIA and decision-making process, integrating the consideration and evaluation of biodiversity offsets.

The possible need for an offset might be identified during the pre-application planning stages of a development, when significant residual impacts are anticipated. However, the actual need to offset the impacts of the development will only be known once all the options and alternatives to avoid, minimize or repair/restore the impacts (the so-called 'mitigation hierarchy') have been evaluated during the EIA process (Section 4.1.1) and the residual negative impacts on biodiversity have been found to be of 'medium' to 'high' significance (Section 4.1.2).

Box 8 outlines the key steps in evaluating the appropriateness of considering offsets in the EIA process.

#### Box 8 : Key steps in evaluating the appropriateness of considering offsets

Figure 10 is aimed primarily at officials within the decision-making or competent authority for evaluating whether or not it would be appropriate to consider biodiversity offsets. Key steps comprise:

- Checking that the relevant policy and planning context has been explicitly considered, and that the proposed project would be acceptable within that context<sup>42</sup>;
- Checking that the proponent has applied a positive, 'planning with nature' approach as required by the PSDF;
- Checking that an appropriate biodiversity specialist has given input to the EIA process, in line with the DEA&DP's guideline (Brownlie 2005);
- Checking that feasible and reasonable alternatives have been considered;
- Checking that the mitigation hierarchy has been satisfied by the proponent;
- Checking that there is negligible risk of mitigation measures that dictate the significance of residual impacts not being implemented or being ineffective.

If any of the above steps have not been satisfied by the proponent, s/he should be asked to address these shortcomings.

<sup>42</sup> It is assumed that the competent authority would use this check as a 'first filter' in evaluating the development proposal. Details of this step are beyond the scope of this guideline, and are not addressed here.

At this point in the EIA process it is important that the competent authority gives the 'go ahead' to the proponent (or appointed Environmental Assessment Practitioner (EAP) to investigate potential offsets; without formal confirmation that the investigation would be appropriate, the proponent could needlessly invest time, effort and money in the offset process.

The key attributes or requirements of a biodiversity offset that would adequately compensate for residual negative impacts, the best type of offset, and the best way to secure that offset, as well as how to manage it to ensure its persistence in the long term, should be determined through biodiversity specialist input during the final stages of the Basic Assessment or EIA. Specialist findings should be incorporated in an 'Offset Report' and 'Offset Management Plan' as part of a revised Basic Assessment Report or EIA Report/Environmental Management Plan (EMP), and made available to stakeholders for review and comment prior to finalisation. If the proposed offset were found to be acceptable by the competent authority, the offset should be included as a key deciding factor in the approval given for the development, and appropriate conditions of authorization should be attached to the RoD.

The inclusion of offsets in a generic EIA process is further discussed in Sections 4.4-4.10. It is prudent that project-specific offsets considered in the EIA process need to be guided and informed by the institutional and societal context (Section 3).

At the end of the EIA process, and for the purposes of evaluating and making decisions on biodiversity offsets, reports capturing the findings of that process should provide enough relevant and reliable information to answer the key questions in Box 9.

#### **Box 9 : Key considerations in deciding on the acceptability and adequacy of a proposed offset**

The following key questions need to be answered during the EIA process:

- Has an acceptable measure of residual negative impacts on biodiversity been determined?
- Has the optimum type of biodiversity offset been determined?
- Has the size of biodiversity offset that would adequately compensate for residual biodiversity impacts been reliably calculated?
- For the purpose of financial guarantees or monetary compensation, has the size of biodiversity offset been reliably 'translated' into a monetary terms?

*For offsets comprising physical habitat to be secured by the proponent:*

- Can adequate and appropriate offset/s be found that would compensate fully for the residual negative impacts on biodiversity, be functionally viable in the long term and contribute to biodiversity conservation in the province?
- Would these offsets be located in identified 'offset receiving areas'?
- Would the offsets for residual negative impacts on valued ecosystem service be acceptable to the main affected parties?
- Would the offset/s lead to residual negative effects on local communities that, in turn, would need to be offset? Or could any negative effects be mitigated within the proposed offset?
- Are there sufficient guarantees that the offset/s would be secured, managed, monitored and audited as required?
- Would the capacity of the institutions, organizations or other parties that would be responsible for these actions be sufficient to undertake them effectively?

Of relevance in the NEMA EIA regulations are provisions for the authorization to require a) that

the authorized activity may not commence before specified conditions are complied with (s38(2)(a)) (could ensure that the offset were secured before project activities began); b) management, monitoring and reporting of impacts on the environment throughout the life cycle of the activity (s38(1)(d)(ii)); c) the holder of the authorization to furnish the competent authority with environmental audit reports (s38(2)(c)); and d) any other conditions that the competent authority considers necessary for the protection of the environment (s38(2)(d)).

- Are there any unacceptable risks associated with the offset?

The flow chart given as Addendum 3 is aimed primarily at biodiversity specialists and EAPs, but would also be of use to biodiversity stakeholders and decision-making officials in answering the questions given above.

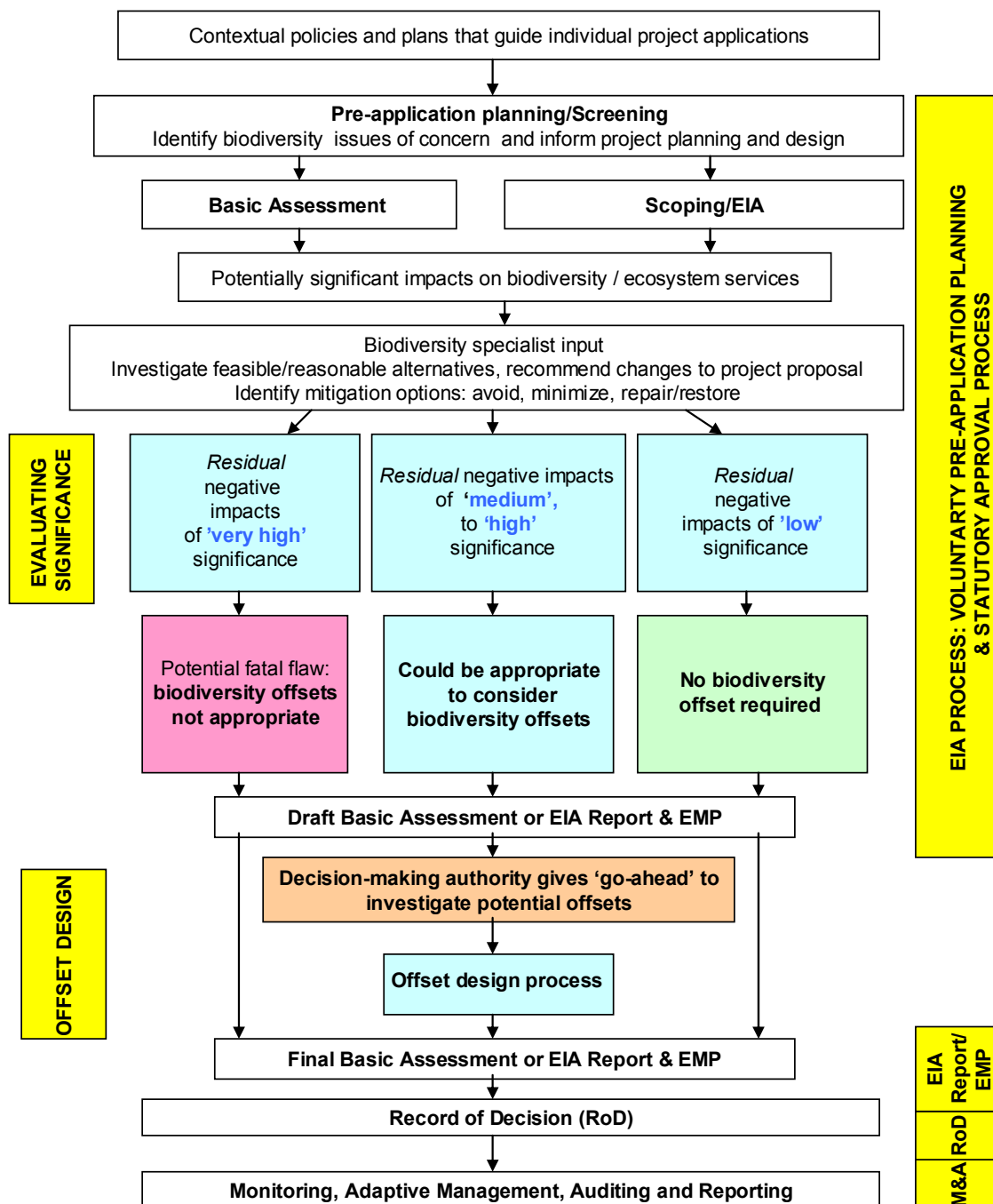


Figure 9: Biodiversity Impact Assessment and the Offset Design Process

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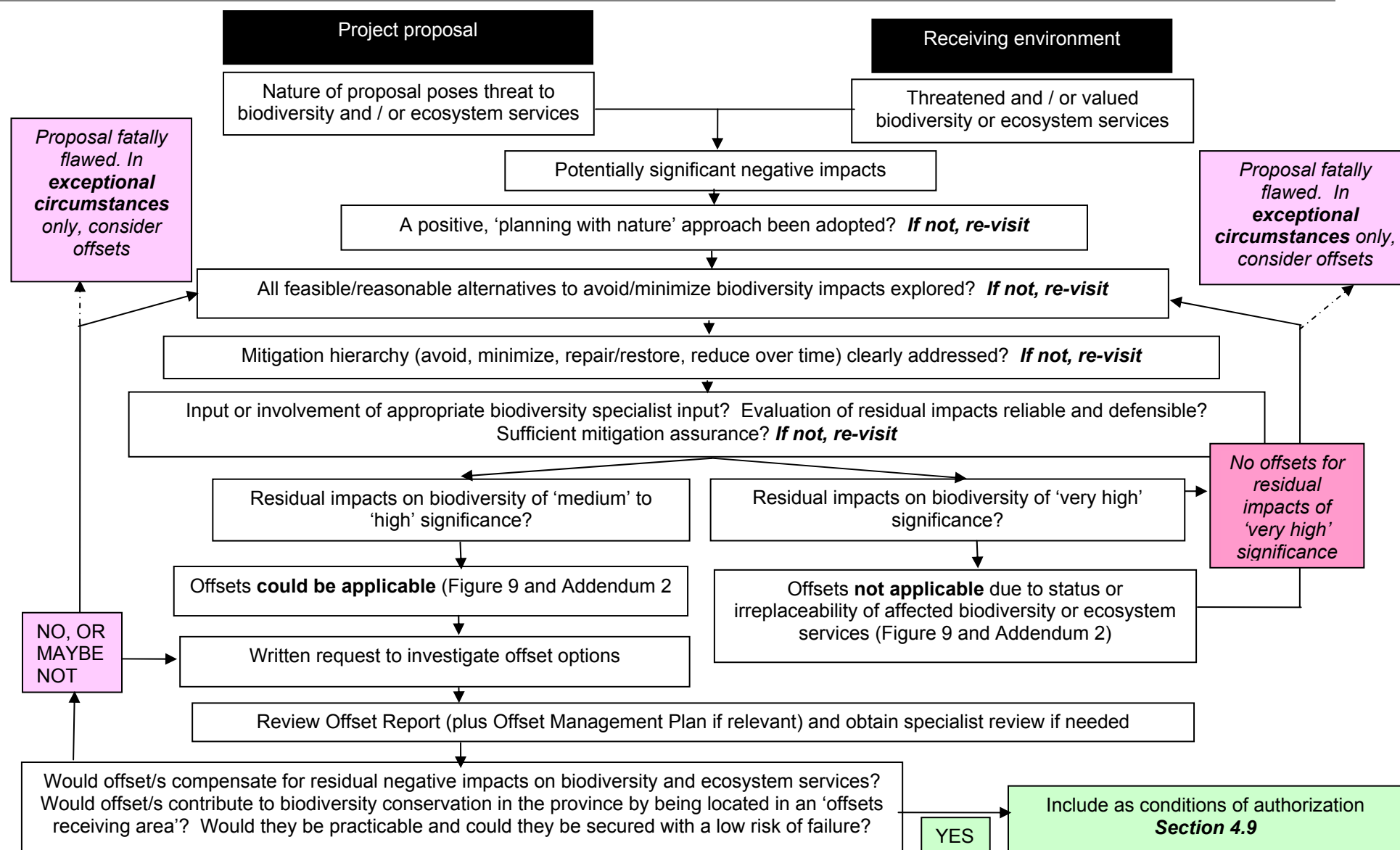
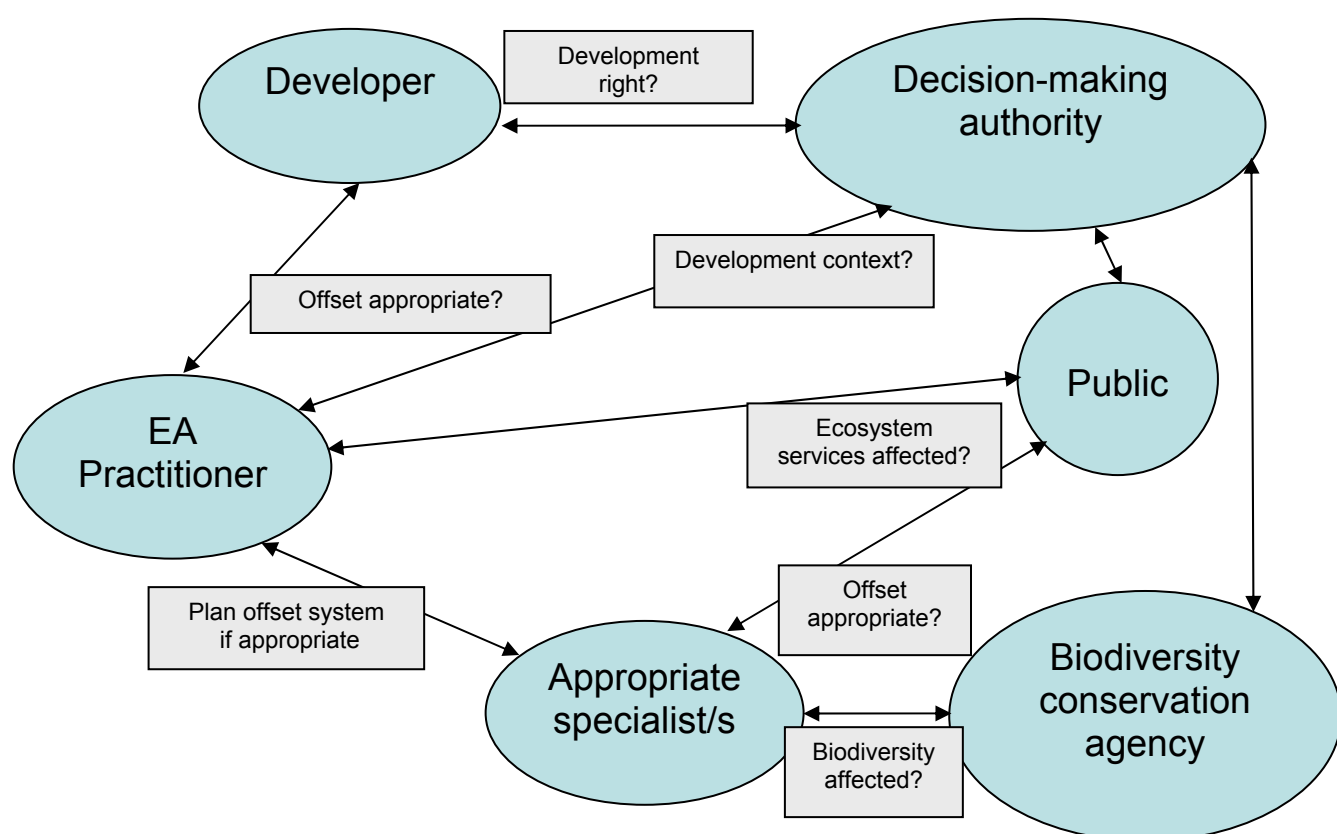


Figure 10 : Decision support system for the competent authority

## 4.4 Roles and responsibilities in considering biodiversity offsets

The purpose of this section is to provide a general model to define and simplify the different roles in a biodiversity offset system. Figure 11 provides a general model of the six main parties in a biodiversity offset project namely:

- The developer (acting on behalf of private shareholders);
- The decision-making authority (acting on behalf of the public);
- The biodiversity conservation agency (acting on behalf of biodiversity conservation);
- The environmental assessment practitioner (acting on behalf of the environment, appointed by the developer);
- Appropriate specialists (biodiversity specialist and, where appropriate, an environmental resource economist and social specialist, appointed by the environmental assessment practitioner and acting on behalf of the affected environment)); and
- The affected public (acting on behalf of particular communities or sectors of the public).



**Figure 11: Roles in a Biodiversity Offset System**

The roles and responsibilities of these six main parties are described briefly below.

1. **The decision making authority** is responsible for defining the processes and rules for the biodiversity offset system, and may finally grant the right for development when all rules and regulations governing the offset system have been adhered to. The authority acts on behalf of

third parties and ecosystems impacted by development and would seek a best practicable environmental option that meets the NEMA principles and maximises social welfare.

2. **The developer** may receive authorisation for the development from the authority on certain conditions, such as the need for a sustainable biodiversity offset. The developer is required to follow the processes and rules laid down by the authorities to protect the interests of third parties and the diversity of life in the natural environment. The developer may need to appoint an independent EAP and biodiversity specialists (amongst others) to exercise this responsibility.
3. **Representatives of non-government organizations, affected communities or other members of the public** act in their own interest, focusing on those impacts of development on their use or non-use values of biodiversity or ecosystem services that may negatively affect their wellbeing in particular ways (e.g. health, safety, livelihoods and/or vulnerability to natural hazards). They would seek a solution that ensures that their wellbeing would not be adversely affected by development and/or that offsets would be acceptable in terms of adequate and appropriate compensation.
4. The objects of the **provincial biodiversity conservation agency**, CapeNature, are to promote and ensure nature conservation (conservation of naturally occurring ecosystems, sustainable use of biodiversity and the promotion and maintenance of biodiversity in those systems)<sup>43</sup> in the province. Although not a decision-making body, it is mandated to conserve the province's biodiversity and should play a lead role in advising and/or giving formal comment to the competent authority on issues affecting biodiversity, including the adequacy of proposed biodiversity offsets. It is good practice for biodiversity specialists and EAPs to involve CapeNature in proposed developments that could adversely affect biodiversity and to engage regional ecologists and other appropriate staff with regard to optimum offsets.
5. **The Environmental Assessment Practitioner**, although employed by the developer, acts independently in the best interests of the environment in its entirety. Where impacts on biodiversity may be significant, the EAP should appoint a biodiversity specialist to give input to the EIA process, be it in the form of specialist advice during the basic assessment or as a specialist study during the scoping and EIA process. Where biodiversity supports valued ecosystem services, it may be appropriate for the EAP to appoint an environmental resource economist (and where appropriate a social specialist). All specialists should, with the involvement of affected public, advise on appropriate biodiversity offsets.
6. **Specialists** in the fields of biodiversity, environmental resource economics and/or social impact assessment are appointed to give site- and context-specific information, assess and evaluate potential impacts on biodiversity and ecosystem services, and, where appropriate, investigate and advise on securing and managing biodiversity offsets, involving interested and affected stakeholders in the process. As with the EAP, specialists act in the best interests of the environment.

#### Important to note: biodiversity specialists in EIAs

Biodiversity specialists should (Brownlie 2005):

- Be competent at interpreting and evaluating information and answering the "so what" and "to whom" questions, not simply providing descriptive information (e.g. species lists);
- Be independent and have appropriate formal training in his/her field of expertise;

<sup>43</sup> Western Cape Nature Conservation Board Act 15 of 1998.



- Have sufficient practical experience working in the specific ecosystems of the affected region, and preferably local area, to make him/her respected by peers;
- Be able to think beyond his/her immediate discipline, able to trace impact pathways and identify indirect or cumulative impacts, and think of biodiversity/human wellbeing interfaces (ecosystem goods and services);
- Have good knowledge relating to assessment techniques and to relevant legislation, policies and guidelines; and
- Be registered with South African Council for Natural Scientific Professions (SACNASP), and could also be certified by a professional body registering specialists in particular fields of biodiversity and/or ecology.

The roles and responsibilities of these parties during different stages of the EIA and decision-making process are described in detail in Addendum 4` of this Guideline. Sections 4.5-4.10 below provide a brief description of the main steps in each stage.

## 4.5 Pre-application planning and screening

The proponent should follow a *positive 'planning with nature'*<sup>44</sup> approach, to avoid residual negative impacts on biodiversity of greater than 'low' significance.

This phase should include the collection of adequate, reasonable and reliable baseline information in order to identify key biodiversity issues and risks, as well as priority areas for biodiversity conservation (identified in bioregional or biodiversity plans, Table 3) that should be avoided by, or would constitute high risks to, the project. When the project is located in a priority area for biodiversity, or in an area where biodiversity issues are considered to pose a potential risk to the project, the need to address project alternatives and the hierarchy of options for mitigation (Figure 2) rigorously, is emphasized. If, having clearly considered alternatives and mitigation options, it is clear that residual negative impacts on biodiversity would be significant, and where the proponent is intent on proceeding with submission of an application for environmental authorisation, then an evaluation of biodiversity offset options could need to be initiated during the final stages of the Basic Assessment or EIA process<sup>45</sup>. :

## 4.6 Basic Assessment

For development applications that require a Basic Assessment<sup>46</sup> the need for offsets to be considered would be indicated by the EAP with input from a biodiversity specialist in the Basic Assessment Report. The EAP and biodiversity specialist, in determining the potential significance of residual negative impacts on biodiversity, would have to consider not only the characteristics of the proposed development and associated activities, but also the main features of the receiving environment from a biodiversity perspective (Figure 3).

When residual negative impacts on biodiversity are found to be of 'medium' to 'high' significance, it may be appropriate to consider offsets. Reference should be made to Box 8 for guidance on deciding

<sup>44</sup> For a discussion on the positive planning approach see Brownlie (2005). Also refer to the PSDF's 'four-stage test' to be followed when planning development outside the urban edge.

<sup>45</sup> This indication does not imply biodiversity offsets would always be an option.

<sup>46</sup> Basic Assessment are defined in the Environmental Impact Assessment Regulations, 2006, made under section 24(5) of the National Environmental Management Act (Act No. 107 of 1998) and published in Government Notice No. R. 385 of 2006

whether or not investigation of offsets would be appropriate. It is essential that the main components of biodiversity that were used to inform the significance rating/s are made explicit, to provide a reliable point of departure for measuring, and compensating for, the biodiversity loss during the offset design process.

If the Department were of the opinion that biodiversity offsets could be appropriate, it would formally request that additional information, in the form of a specialist study outlining the proposed offset, be submitted together with a final Basic Assessment Report. The study should incorporate a process of stakeholder engagement. If, however, it is clear that all the issues would not be adequately addressed during the Basic Assessment process, and/or the EAP has indicated that there are significant issues that would require further investigation, the Department may instruct the applicant to undertake the Scoping and EIA process<sup>47</sup>.

The contents of an Offset Report and associated Offset Management Plan, to provide that information that would be required by the competent authority to evaluate a proposed offset (Box 9), are given in Section 6.

## 4.7 Scoping

The scoping process should identify biodiversity issues and concerns, and alternatives to that activity that would be feasible, reasonable, and could avoid or minimize negative impacts on biodiversity and valued ecosystem services. The scoping process should also develop the Terms of Reference (ToR) for biodiversity specialists to address key issues<sup>48</sup>. The ToRs should include the requirement that specialists adopt the approach to evaluating the significance of biodiversity-related impacts given in this guideline, to determine whether or not offsets are required (Section 4.1.2 and Addendum 2), and if so, to recommend appropriate offset options for further consideration and development during the environmental impact assessment.

The EAP should involve a biodiversity specialist during the scoping process where natural habitat would be affected by the proposed project, to identify potential biodiversity related issues. Although stakeholders may raise the need for impacts to be offset, and even make recommendations on the nature of such offsets during the scoping phase public participation processes, the environmental assessment practitioner will have to make it clear that the need for the biodiversity offset will need to be investigated and will be informed by the outcome of the impact assessment and the actual significance of the residual impacts on biodiversity.

## 4.8 Environmental Impact assessment

### 4.8.1 *Specialist biodiversity study*

The need to offset the biodiversity impacts of a development will only be known once all the options and alternatives to prevent, minimise and mitigate the impacts have been identified and evaluated during the environmental impact assessment process and the residual impacts on biodiversity and/or ecosystem services have been found to be of 'medium' to 'high' significance.

<sup>47</sup> Scoping and EIA are defined in the Environmental Impact Assessment Regulations, 2006, made under section 24(5) of the National Environmental Management Act (Act No. 107 of 1998) and published in Government Notice No. R. 385 of 2006

<sup>48</sup> See Brownlie 2005.

The biodiversity specialist's rating of the significance of residual biodiversity impacts, in collaboration with a social/socioeconomic specialist where there are important ecosystem services values involved, would determine when biodiversity offsets require further investigation (see Figure 9):

- When residual impacts on biodiversity are assessed to be of 'very high' significance, the biodiversity specialist should recommend that the project should not go ahead, as it contains a 'fatal flaw'. Therefore, approval for the development should be refused after the Basic Assessment or EIA Report without the need to investigate offsets<sup>49</sup>.
- When residual impacts on biodiversity are assessed by the specialist to be of 'medium' to 'high' significance, reasonable offsets for biodiversity loss would need to be investigated through the EIA process. More than one offset alternative should be considered where feasible prior to a preferred option being selected. The impacts associated with alternative offsets should be taken into account in the EIA process.
- When residual impacts on biodiversity are assessed to be of 'low' significance, there is no need for an offset to compensate for biodiversity impacts on condition that the recommendations for managing biodiversity impacts are implemented by the proponent.

The contents of Section 4.1.2 and Addendum 2 should be used to determine the significance of residual negative impacts on biodiversity, and whether or not it would be appropriate to consider offsets to compensate for these residual impacts. It is essential that the main components of biodiversity that were used to inform the significance rating/s are made explicit, to provide a reliable point of departure for measuring the biodiversity loss during the offset design process.

Where the assessment of the significance of residual impacts triggers the need to consider biodiversity offsets, this information should be clearly communicated by the EAP, based on input from the biodiversity specialist, to the competent authority, together with the need for related investigations<sup>50</sup>.

#### ***4.8.2 Draft EIA Report/EMP***

The draft EIA Report and EMP should include the findings and recommendations of the biodiversity specialist (and environmental resource economist and social specialist) where there would be significant residual negative impacts on ecosystem services), including suggestions for the proposed offset. (When residual negative impacts on biodiversity are found to be of 'medium' to 'high' significance, it may be appropriate to consider offsets (Figure 3).) Reference should be made to Box 8 for guidance on deciding whether or not investigation of offsets would be appropriate.

The purpose of this stage of the EIA process is to obtain stakeholder comments on the findings of the biodiversity impact assessment and, if recommended by the specialist/s, the proposed offset. In addition, the need for an offset, and confirmation that possible offsets should be investigated, must be tested with the authorities, with input from CapeNature. The authorities will refer to the planning context within the province and will need to act in the interests of broader society when making this decision. The authorities might ask for an independent review of the biodiversity assessment, EIA Report and/or EMP (at the cost of the proponent) and, if needed, request additional consultation with stakeholders (over and above the standard EIA public participation process) regarding the proposed offset.

<sup>49</sup> It must, however, be recognized that in some cases decisions are made to authorize developments even though they may have residual impacts on biodiversity of 'very high' significance. It is recommended that while offsets should in no way influence the decision in such instances, they may provide a degree of remedy and should not be completely disregarded. In exceptional circumstances only, where the proposed development would have substantial benefits to society as a whole and there were no alternative ways in which these benefits could be obtained, 'trading up' offsets could be considered by the authority.

<sup>50</sup> Such additional investigations could qualify as a 'specialised process' in terms of s1 of the NEMA EIA Regulations; namely a process to obtain information which is not readily available without undertaking the process and is necessary for information an assessment or evaluation of impacts of an activity.

Should a formal 'go ahead' be given by the decision-making authority to investigate biodiversity offsets on the basis of the draft EIA Report/EMP, then the proponent should commission the EAP to address potential offsets and co-ordinate and integrate specialist/s input<sup>51</sup>.

### ***4.8.3 Offset-design process***

The investigation and evaluation of potential offsets, as well as ways to secure, protect and manage those offsets in perpetuity, would need to be addressed in detail during the final stages of the EIA process. This process may require additional involvement of specialists and stakeholders to inform the offset design. The biodiversity specialist, together with an environmental resource economist (and where appropriate a social specialist) where there would be residual negative impacts on biodiversity supporting valued ecosystem services, should be appointed to identify and evaluate potential offset sites. It is important that key stakeholders be involved in the offset identification and evaluation process, and that there is broad acceptance of the ultimate offset proposed.

The outcome of the offset design process would be an Offset Report and, in the case of 'like for like' or 'trading up' habitat that is either on the development site or for which offset agreements to purchase or lease land have been reached, an Offset Management Plan. The contents of an Offset Report and Offset Management Plan, to provide that information that would be required by the competent authority to evaluate a proposed offset, are given in Section 6.

The Offset Report and Offset Management Plan must be made available for public comment prior to their finalisation and submission as part of the final Basic Assessment or EIA Report. The specialist reports must contain an explicit statement with regard to the adequacy of the proposed offset; i.e. whether or not it would fully compensate for the residual negative impacts on biodiversity and/or valued ecosystem services.

### ***4.8.4 Final EIA Report/EMP***

The Offset Report and, where relevant, the Offset Management Plan, would be submitted as additional specialist studies along with the final Basic Assessment (including planned mitigation and management) or EIA Report and associated EMP, as appropriate.

## **4.9 Decision by Authority**

On the basis of the final Basic Assessment Report or the final EIA Report/EMP the competent authority would make a final decision on the project.

The decision support system (Figure 10) should be used to guide decision making. Reference should be made to Box 9 for guidance on evaluating the adequacy and acceptability of a proposed offset.

Where the proposed offset would not compensate for significant residual negative impacts on biodiversity or result in benefits for biodiversity conservation, and/or where there would be a risk of residual irreversible impacts and/or irreplaceable loss of resources, and/or residual negative impacts could jeopardize ecosystem integrity, the proposed offset is unlikely to be acceptable. In this case, the proposed development would be refused by the authority.

<sup>51</sup> A biodiversity specialist would generally be required and, in some instances where there is a relatively high level of dependence on, or value attached to, those ecosystem services that would be residually impacted, a social / socioeconomic specialist could be required.

If the proposed offset were acceptable, the offset would be included as a deciding factor in the authorization of the development and would be specified as a condition of approval. For on-site offsets or off-site offsets involving habitat, the RoD would have to specify that the offset must be secured before development could commence. In addition, the RoD would have to specify the size of endowment required 'up front' for managing the offset site/s (Section 5.4.2).

Where financial guarantees are involved, a 'window' period would be specified within which the proponent could investigate and secure 'like for like' or 'trading up' habitat, as appropriate, strictly following the approach described in the offset design process (Section 5.3). The RoD would have to specify the size of financial guarantee required 'up front' as a condition of authorization (Section 5.4.2).

The rationale for accepting or approving a biodiversity offset must be transparently provided by the decision-maker, taking explicit account of the NEMA principles. Where loss of biodiversity is permitted, this rationale must demonstrate clearly how, and on what basis, trade-offs were made in the interests of sustainable development. In particular, it must be shown how these trade-offs took social equity into account; namely the fair distribution of probable costs and benefits of the proposed development, giving due consideration to the fact that the environment (ecosystems and biodiversity) is held in public trust and should be protected as the people's common heritage.

#### **Important to note: conditions of authorization**

Of direct relevance to biodiversity offsets, an environmental authorization may:

- Provide that the authorized activity may not commence before specified conditions are complied with (s38(2)(a)). It is very important that the required contractual agreements for the offset (e.g. land ownership, security of conservation areas) are met prior to the commencement of the development; and
- Include any other conditions that the competent authority considers necessary for the protection of the environment (s38(2)(d)).

## **4.10 Monitoring and Auditing**

For offsets comprising habitat, the implementation of the Offset Management Plan needs to be monitored and audited by the proponent (or appointed responsible party). The success of offsets has been high when monitoring and enforcement provisions are implemented<sup>52</sup>. Monitoring requirements and associated indicators, as well as the roles and responsibilities for monitoring and auditing compliance in terms of any conditions of the authorization and management targets, need to be explicitly defined in the EMP with a view to minimizing monitoring and evaluation costs to the authority and to the developer<sup>53</sup>. Changes to the Offset Management Plan might have to be made over time in order to ensure that offset objectives and management targets are met.

<sup>52</sup> Dept of Environment and Conservation, NSW, Australia 2006

<sup>53</sup> A monitoring programme will focus on management indicators on the area that has been set aside for the offset. Alternatively, and depending on the choice of metric (see Section 5.1), a monitoring programme could also focus on indicators of the economic value of biodiversity, and indicators related to the delivery of ecosystem services that have use of non-use value to affected human communities or society.

**Important to note: condition of authorization**

Of direct relevance to biodiversity offsets, an environmental authorization may:

- Require the holder of the authorization to furnish the competent authority with environmental audit reports (s38(2)(c)). Without monitoring, adaptive management, and performance audits, the success of biodiversity offsets would not be determined.

## 5. OFFSET DESIGN PROCESS

This section focuses on the following aspects of designing an appropriate biodiversity offset:

- Obtaining a measure of the residual loss of biodiversity as a consequence of the project
- Determining the best type of offset;
- Determining an appropriate size of the offset and, where applicable, its location;
- Deciding on the best way of securing the offset;
- Preparing an Offset Report; and
- Reaching agreements on offsets and developing an offsets management plan, where applicable.

There are currently a wide range of approaches used to determine offsets for biodiversity loss in South Africa. Addendum 5 gives a summary of selected case studies of biodiversity offsets in South Africa, to give an idea of this range. Clearly, there is no consistent approach to deciding what would constitute an appropriate offset. The lack of a consistent approach is undesirable in that it leads to uncertainty on the part of developers and the competent authority as to what would be expected of them. This Guideline attempts to introduce a consistent approach.

The selection, securing and management of the offset are vital if the intended benefits to biodiversity are to be realized and the sustainability of the project is to be supported. For this reason, a careful design process is needed. This process is categorized in six distinct steps (see Figure 12):

- Obtaining a measure of the residual loss of biodiversity as a consequence of the project;
- Determining the best type of offset;
- Determining the appropriate size of offset and, where applicable, its optimum location;
- Deciding on the best way of securing the offset, and ensuring that the offset option would be acceptable to the competent authority and CapeNature;
- Preparing an Offsets Report; and
- Reaching agreements on offsets and developing an Offset Management Plan, where applicable.

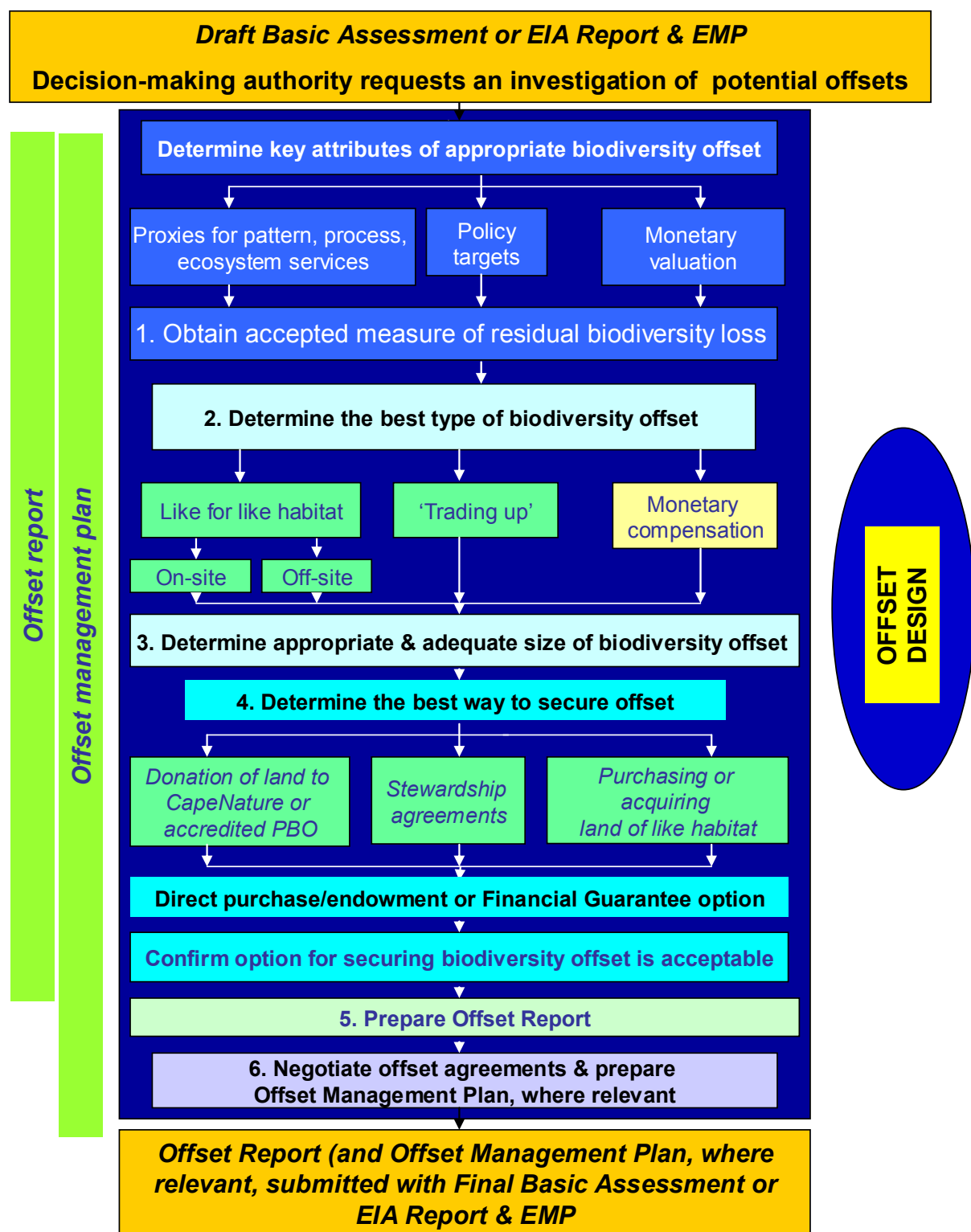


Figure 12 : Biodiversity Offset Design Process

## 5.1 Obtaining a measure of the residual loss of biodiversity

Once the decision-making authority has formally requested the developer or EAP to investigate biodiversity offsets, the explicit requirements of an offset that would adequately compensate for the residual negative impacts on biodiversity need to be determined. To this end, the actual loss of biodiversity and/or loss or deterioration of ecosystem services that must be compensated needs to be estimated.

The following approaches are useful in this respect:

- Use of ecological proxies to compensate for residual impacts on biodiversity pattern, process and ecosystem services; and
- Economic valuation of biodiversity to determine appropriate compensation.

In both cases, policy or conservation targets can be used to provide a defensible threshold against which to measure residual impacts and the adequacy of compensation.

Theoretically sound approaches to the valuation of biodiversity loss, whether for ecological proxies or for economic valuation, are still in development (Box 10)<sup>54</sup>. There are a number of different approaches used by different agencies world-wide to assess the equivalence of habitat (e.g. ratio-based and adjusted approaches<sup>55</sup> or various accounting approaches<sup>56</sup>), but there is no clear 'best' approach.

### Box 10 : Valuing biodiversity - ecological proxies and economic valuation<sup>57</sup>

There are two approaches at the centre of the debate on offset measurement methods, namely the use of ecological proxies (such as hectares or habitat functions) and the use of economic values of biodiversity and ecosystem services. In both cases, no uniform standard and simple solutions are available.

**Ecological proxies** refer to habitats that are ecologically similar to the residually impacted area, having comparable pattern and process, and delivering comparable ecosystem services.

Biodiversity and ecosystem services often have no market price and consequently a considerable amount of uncertainty can surround their real value and significance. In the last few decades, a number of **economic valuation** techniques (e.g. market value approaches, and surrogate and simulated market approaches<sup>58</sup>), have developed up to a point where these values can be imputed with reasonable confidence. The current economic techniques used to value biodiversity are based on the fact that people demand goods and services of natural systems not only as a source of raw materials but also as an amenity. Although these approaches are gaining in practical importance world-wide, their broad-based acceptance will take time. With reference to Figure 1, direct consumptive use values of ecosystem services are generally easiest and least controversially measured, while option and existence values are more difficult to measure and require the use of more controversial techniques.

Not all environmental impacts need to be converted to monetary values. The DEA&DP guidelines for economic specialist input into EIAs (Van Zyl *et al.*, 2005) advocate the quantification of monetary values only when there is a chance that they would be of a great enough magnitude to influence the overall economic desirability of a project. This principle of 'valuation only when necessary' should be applied to the consideration of biodiversity offsets.

In most cases, where the monetary value of residual impacts on biodiversity and ecosystem services is not quantified in the EIA, but they are still considered to be significant, the determination of suitable

<sup>54</sup> There are several sources on this topic. See, for example Eftic (2005), Mendes (2004).

<sup>55</sup> Government of South Australia (2005).

<sup>56</sup> Currently being developed by the Business and Biodiversity Offsets Programme (Kerry ten Kate, *pers comm.* 2007)

<sup>57</sup> See for example ELI (2002), Tucker (2003).

<sup>58</sup> Turpie *et al* 2001



magnitude of offsets would rely on specialist input, liaison with the affected community and relevant authorities to ensure that the magnitude of offsets have the greatest chance of being reasonable. In those rare cases in which the quantification of values is required in the EIA process, the value (in rands) associated with biodiversity losses that cannot be mitigated would be determined. These values could then act as a guideline for the magnitude of offset required. The appropriate form of the offset could then be decided in liaison with the affected community and relevant authorities.

As a preferred approach to the valuation or measurement of biodiversity loss, and for the purpose of biodiversity offsets in the Western Cape, the use of ecological proxies linked to an area-based policy and associated conservation targets<sup>59</sup> is recommended. This approach translates into the use of a basic offset ratio, adjusted according to a number of biodiversity and ecosystem services considerations (Section 5.3).

For residual impacts on affected ecosystems, special habitats, spatially defined components of important ecological processes (fixed and/or flexible corridors), it may be possible to estimate the size of the residually affected habitat (Box 11). For residual impacts on threatened species and non-spatially defined ecological processes, the effects of biodiversity loss are best 'translated' into a measure of habitat that would best compensate for that loss by biodiversity specialists in collaboration with CapeNature. Where there are residual negative impacts on valued ecosystem services, it would be necessary to 'translate' those services into the biodiversity pattern and process underpinning those services, and proceed as above.

In every instance, the context of biodiversity loss is of the utmost importance; i.e. the loss as seen against the 'bigger picture' of the conservation status of biodiversity in the province and/or the irreplaceability and/or irreversibility of the residual impacts.

#### Box 11 : Determining the size of residual impacts on biodiversity for offset purposes

**The size of residual impact, or the area affected,** is related both to the 'footprint' or direct impact of the proposed development on the property, as well as to the indirect impacts that are probable as a consequence of that development (e.g. downstream effects, long term impacts associated with removal of key ecosystem drivers or habitat fragmentation). That is, the residual impact may extend beyond the development footprint to influence part of the property on which development is situated or to the property boundaries (e.g. where fire would be excluded from a fire-driven ecosystem on that property), to a worst case scenario that would extend beyond the property boundary to the greater landscape (e.g. if a critical ecological corridor were interrupted or broken)

## 5.2 Determining the best type of biodiversity offset

Figure 12 refers. There are three main types of offset that could be considered, namely:

- **'Like for like' habitats or ecological proxies**, that could be located either on the development site (on-site offset) or at a distance from that site (off-site offset). These offsets are seen to be the most appropriate in the Western Cape. 'Like for like' offsets could either be secured directly by the

<sup>59</sup> Since biodiversity in different areas – and particularly in the Western Cape – may be significantly different from one site to the next, providing adequate compensation for loss is difficult. In addition, since the stock of biodiversity is a fixed amount at a given time, any loss effectively erodes that amount. For this reason, a 'like for like' offset in a ratio of 1:1 for lost biodiversity would not compensate for that loss.

developer (e.g. where an on-site offset is involved, or willing owners of land for off-site offsets have been identified), or through a mechanism of financial guarantees that would enable either the developer or the State to acquire and manage appropriate like habitat as a biodiversity offset (Section 5.4.2);

- **'Trading up'** habitats, that involves securing and managing an appropriate area of habitat of a more threatened status or higher conservation priority than that impacted by development. These offsets may be used where there is a greater immediate threat to an ecosystem of relative high priority, or a 'window of opportunity' to secure habitat of a relatively high conservation priority, as judged by a biodiversity specialist and supported by CapeNature. As with the above type, 'trading up' offsets could either be secured directly by the developer, or through a mechanism of financial guarantees (Section 5.4.2); and

**Important to note: 'trading up'**

The size (Section 5.3) of a 'trading up' offset should be the same as that required for the residually affected ecosystem (e.g. if an 'endangered' ecosystem were residually impacted, an offset ratio of 20:1 would be required).

- **Monetary compensation.** This type may include contributions to an accredited biodiversity conservation fund, revolving land trust or dedicated offsets fund<sup>60</sup>, for the purpose of acquiring and managing additional priority habitat, or provision of finance for the expansion or management of public protected areas. This type of offset is attractive and relatively simple for the developer, and effectively removes any responsibility for identifying and securing appropriate offsets in the landscape. However, it does place an additional burden on those institutions and organizations responsible for biodiversity conservation in the Western Cape to undertake these tasks; a burden that – depending on the capacity of these bodies – may be inappropriate and thus undesirable.

A fourth type of offset has been used in some countries, namely funding of biodiversity research<sup>61</sup>, education or capacity building in government agencies. However, this type of offset is generally viewed as unacceptable<sup>62</sup>, and is not considered for use in the Western Cape.

It is important that the key parties or communities who would bear the cost of, or be affected by, the residual negative impacts on biodiversity or ecosystem services should be given an opportunity to engage in the process of deciding on the type of biodiversity offset that would best compensate for these impacts.

<sup>60</sup> Developers can compensate for damage by making payments into these funds/trusts. Money in these trusts or funds must be ring-fenced for financing the acquisition and management of priority areas for biodiversity conservation. They should be administered preferably by a public benefit organization.

<sup>61</sup> In some cases it may not be feasible to provide an offset by designating new and additional protected area or demarcating land for conservation purposes. In such cases, other types of investments may be the best or only option for offsetting residual biodiversity impacts. One option is to support biodiversity research and education, training and awareness-raising. An example is a World Heritage Site that is at risk due to a lack of management planning. Research could be conducted in order to better understand the threats and thus manage the park properly.

<sup>62</sup> e.g. Department of Environment and Conservation, NSW, Australia. 2005.

### 5.3 Determining the appropriate size and location of offset

The approach to determining an appropriate size of offset (in terms of the physical area of the offset, and/or financial guarantees associated with that offset), and the optimal location of a 'like for like' or 'trading up' habitat offset, are addressed in separate sections below. Figures 13-15 illustrate the conceptual approach:

- Figure 13 shows the significance ratings of residual impacts as an informant to offset design;
- Figure 14 illustrates how to design offsets to contribute to meeting desired outcomes for biodiversity and sustainable development in the Western Cape; and
- Figure 15 shows how the basic offset ratio is adjusted to arrive at an adequate offset.

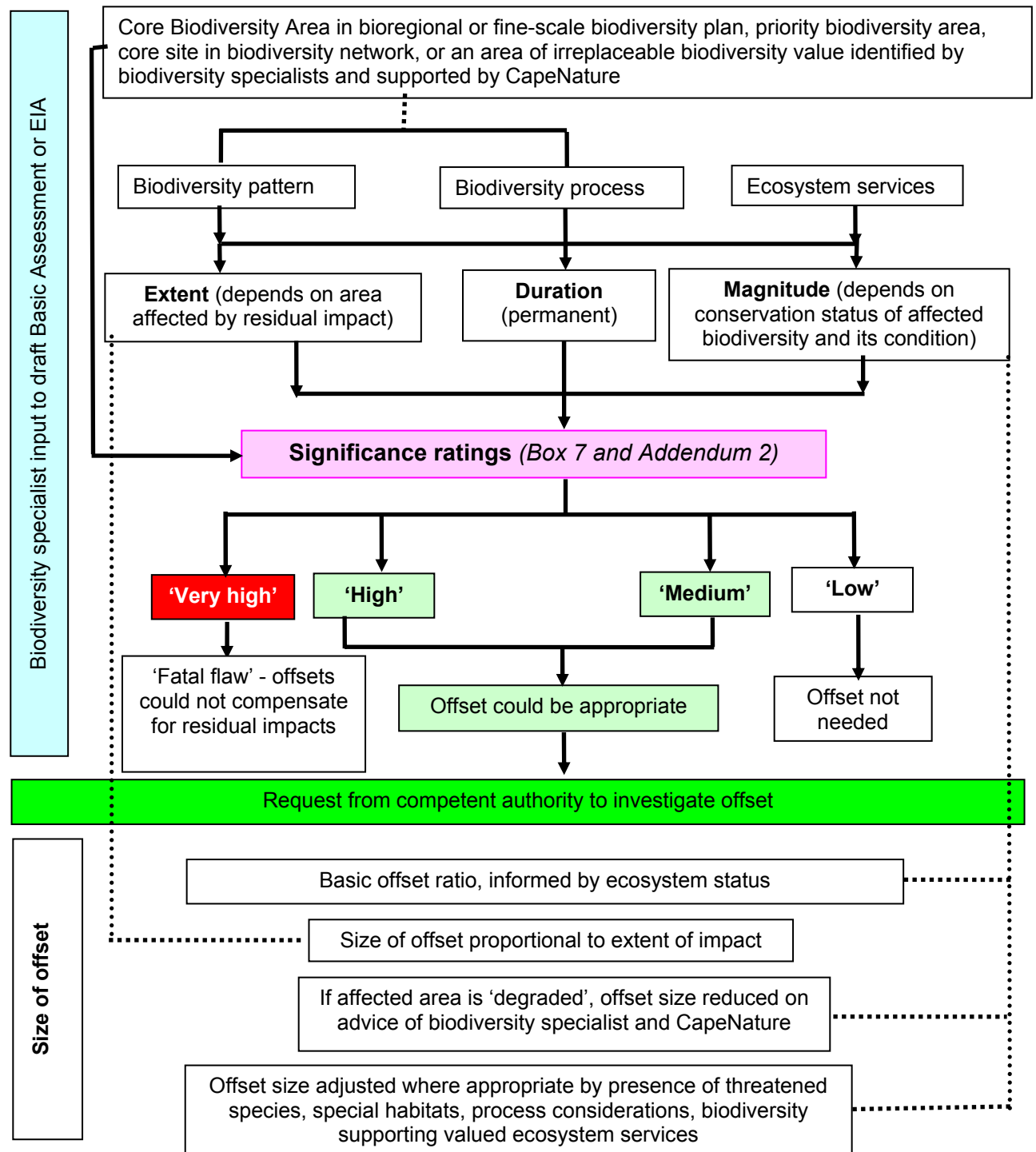


Figure 13 : Significance of residual impacts as an informant to offset design

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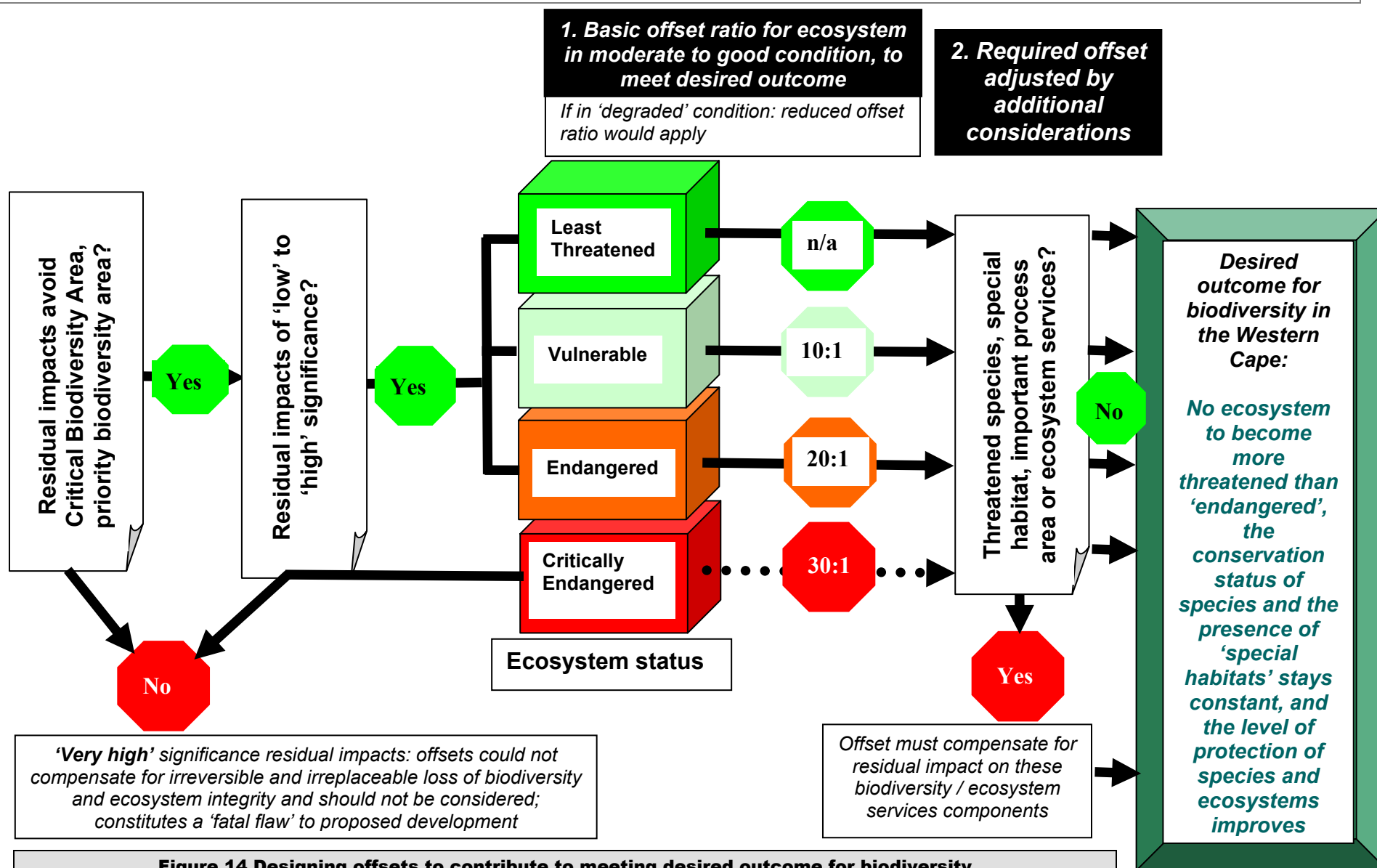


Figure 14 Designing offsets to contribute to meeting desired outcome for biodiversity

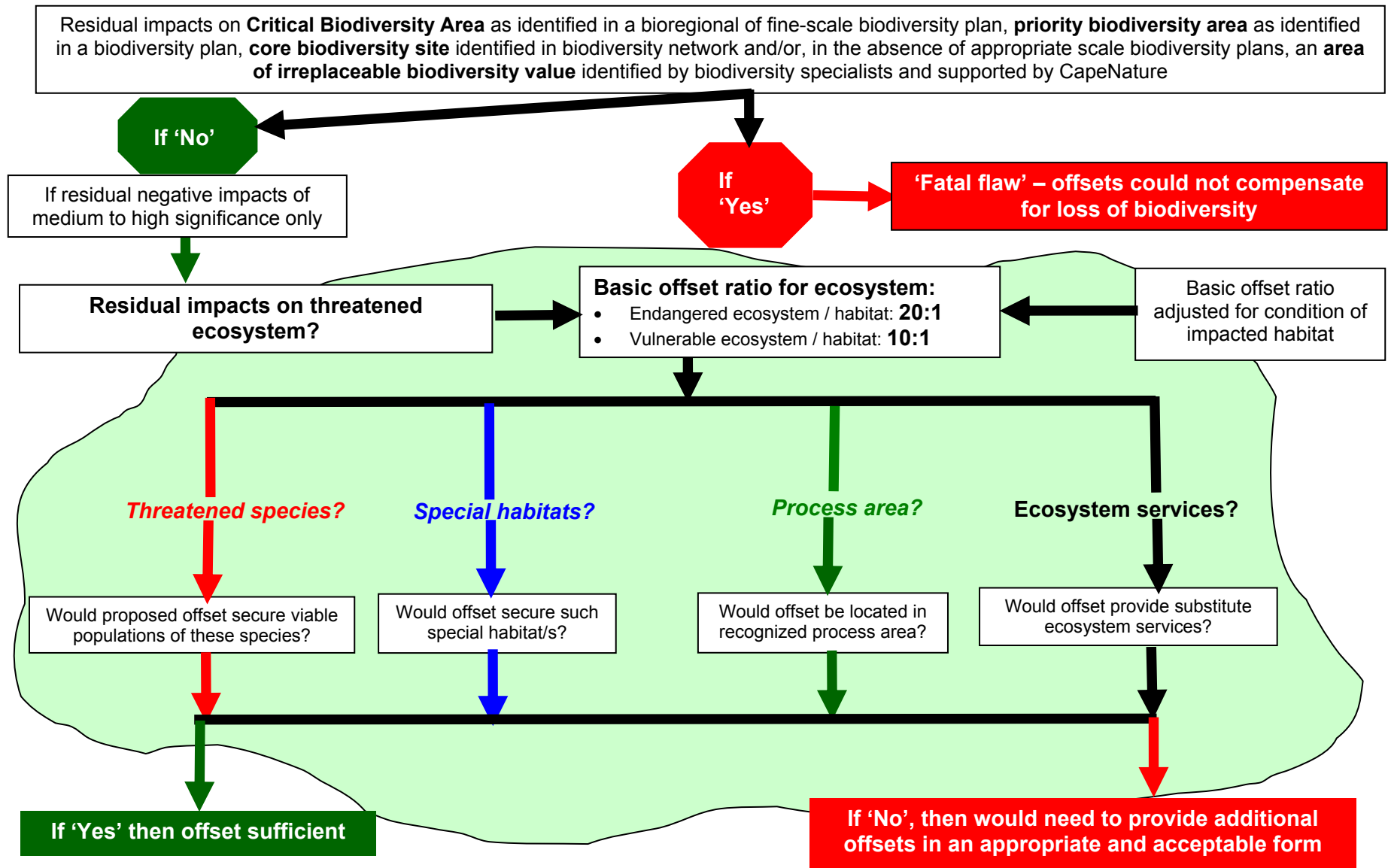


Figure 15 : Adjusting the basic offset ratio to arrive at an adequate offset

### 5.3.1 Size of offset

The size of the offset relates principally to **the physical area of that offset** that would be required to compensate adequately for residual negative impacts on biodiversity (Section 5.3.1.1-2).

However, in cases where a developer chooses to pursue the option of providing financial guarantees or monetary compensation (Section 5.4), the physical area of a suitable offset must be 'translated' into a **monetary measure**. This monetary measure must reflect:

- The probable costs of acquiring a sufficient area of suitable habitat, as determined through the sequence of steps covered in Section 5.3.1.1 and Section 5.3.1.2; plus
- The costs of managing, monitoring, auditing and obtaining specialist input regarding the management of, the offset.

The advice of the South African Biodiversity Institute (SANBI) and CapeNature should be sought with regard to this 'translation' of physical area into a monetary measure.

An appropriate **physical size of the offset** is decided in two main steps, namely:

- Using a basic ratio linked to the conservation status of affected ecosystems; and
- Adjusting the size of offset according to a range of additional considerations.

Box 12 highlights the advantages of using an adjusted, ratio-based approach to determine biodiversity offsets.

#### Box 12 : Why use a ratio-based approach?

The ratio-based approach has a number of advantages, namely it:

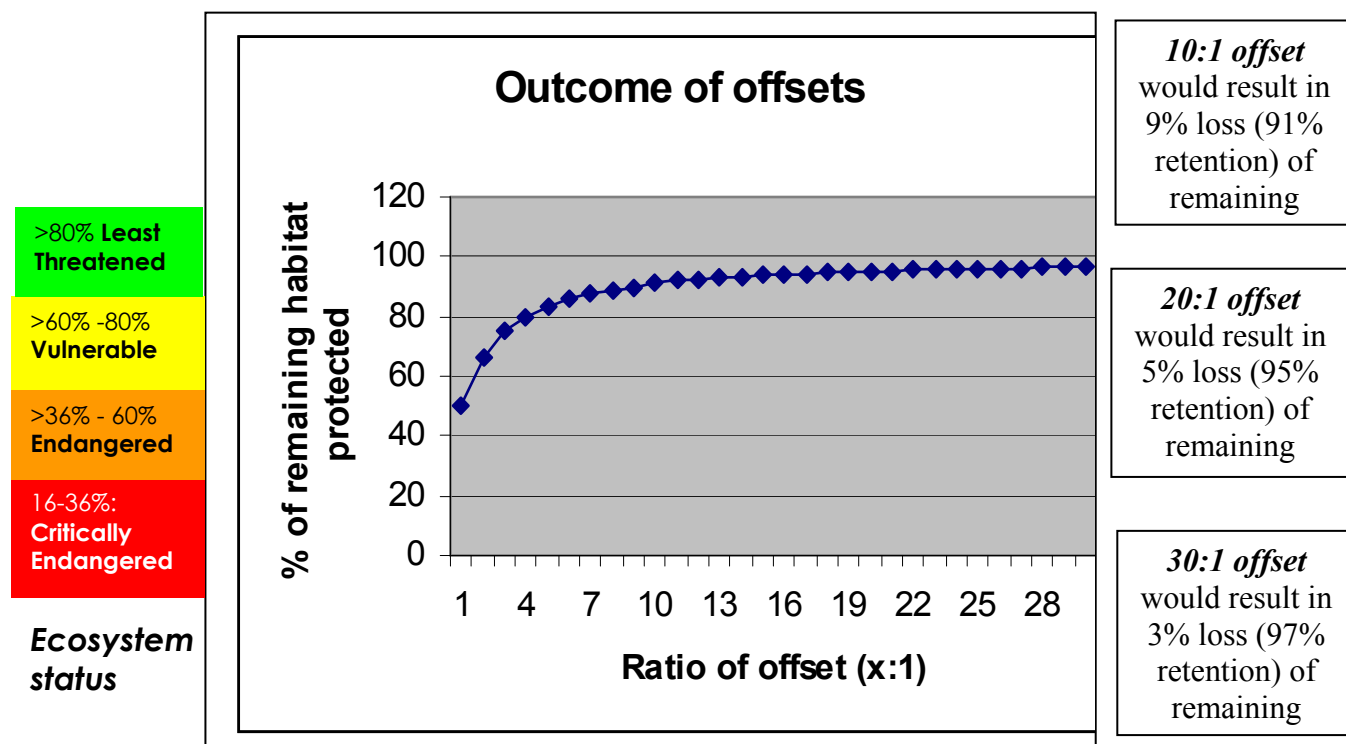
- Is uncomplicated, relative to accounting approaches;
- Provides a clear planning signal to avoid priority biodiversity areas;
- Significantly reduces further loss of threatened ecosystems (& species);
- Allows conservation targets to be approached quicker, in order to make decision making more predictable;
- Provides insurance against unforeseen consequences, poor management of developed areas, failure to comply with conditions of authorization, and the cumulative/synergistic effects of development on biodiversity and ecosystem services; and
- Takes a precautionary approach against uncertainties in impact assessment, data deficiencies, time lags in interpreting data on land cover and ecosystem status, and inherent uncertainties regarding response of ecosystems to climate change.

#### 5.3.1.1 The basic offset ratio

The basic offset ratio is informed by the ecosystem status of the residually impacted ecosystem<sup>63</sup>.

<sup>63</sup> Defined in the NSBA (Driver *et al* 2005)

Figure 16 shows the effect of different offset ratios on the percentage of habitat in a given ecosystem persisting over time. (It is assumed that the offset would secure areas of habitat for protection in the long term.) Depending on the exact percentage of the original ecosystem remaining<sup>64</sup>, offset ratios of from 4:1 to 10:1 could lead to the change in status of *vulnerable* to *endangered* respectively over time; an offset ratio of from 4:1 to 24:1 could lead to a change from *endangered* to *critically endangered*.



**Figure 16 : Basic ratio of offset linked to ecosystem status**

For the above reasons, **basic offset ratios** have been set as follows:

- Offset of 30:1 for residual impacts in critically endangered ecosystems, only where there are exceptional circumstances that would make consideration of offsets appropriate;
- Offset of 20:1 for residual impacts in endangered ecosystems;
- Offset of 10:1 for residual impacts in vulnerable ecosystems;
- No offset in least threatened ecosystems.

#### **Important to note: listing of threatened ecosystems and species**

Promulgation of regulations listing threatened ecosystems or species in terms of the NEM Biodiversity Act 2004 would affect the application of this guideline to offsets, since these ecosystems or species might differ from those currently provided in the NSBA and/or Red Lists or Red Data Books. The listed ecosystems or species would override the categories given in the NSBA. It is anticipated, however, that in the Western Cape there will be a big overlap between threatened ecosystems identified by the NSBA and the first set of ecosystems listed in terms of the Biodiversity Act<sup>65</sup>.

<sup>64</sup> Our National Spatial Biodiversity Assessment works on **16-36%** of remaining habitat for terrestrial ecosystems being '**critically endangered**', **>36%-60%** being '**endangered**', **>60%-80%** being '**vulnerable**' and **>80%** being '**least threatened**'.

<sup>65</sup> Amanda Driver and Kristal Maze, SANBI, *pers comm.* 26 February 2007



### 5.3.1.2 Adjusting the basic offset ratio

The basic offset ratio should be adjusted where appropriate, depending on a number of considerations, namely:

- The condition of the affected habitat;
- The presence of threatened species;
- The presence of special habitats; and
- The biodiversity process value of the affected habitat; and
- The importance of biodiversity underpinning valued ecosystem services.

Figure 15 illustrates the adjustment process.

Each of these considerations is addressed separately below. Readers should refer to Addendum 2 for detailed information on linking the residual negative impacts on biodiversity to appropriate offsets.

In extraordinary circumstances, where there would be residual impacts on threatened ecosystem/s, threatened species, special habitats, important process areas, and/or valued ecosystem services, a single biodiversity offset may not compensate adequately for all residual impacts. In these situations, composite offsets may be required.

#### a) The condition of the affected habitat

The condition of the residually affected habitat must be taken into account when determining an appropriate offset. Where the habitat is of 'moderate' to 'good' condition, then the basic offset ratio would apply. When the habitat is 'degraded' (Table 4) but not completely transformed, then the ratio would be reduced by as much as 50% on the advice of the biodiversity specialist in collaboration with CapeNature.

**Table 4 : Adjusting the basic offset ratio – condition of affected habitat**

<i>% of expected species supported by the affected habitat, compared with undisturbed site in a comparable vegetation type or ecosystem</i>	<i>Condition</i>	<i>Effect on basic offset ratio</i>
>75%	Good	None
>25% but <75%	Moderate	None
<25%	Degraded	Reduced ratio, as advised by biodiversity specialist / CapeNature

#### b) The presence of threatened species

Where the affected habitat contains threatened species, the significance of the residual impact on these species would depend on a number of variables, e.g. the size and viability of the affected population, and the contribution of the affected population to the persistence of the species. In some instances, it would be impossible to compensate for these impacts and the project would be fatally flawed. In cases where compensation were possible, either the proxy habitat considered as an offset should provide suitable habitat for the residually affected species, or it may be necessary to seek a separate offset that would provide adequate compensation through securing habitat with known viable populations of the same species.

#### c) The presence of special habitats

Where the affected area contains special habitats (Box 13), the significance of the residual impact would depend on particular type of special habitat, its rarity, the project context and the replaceability of that habitat. In some instances, it would be impossible to compensate for these impacts and the project would be fatally flawed. In cases where compensation were possible, either the proxy habitat

considered as an offset should include comparable special habitats, or it may be necessary to seek a separate offset that would provide adequate compensation through securing an area of known and comparable special habitat.

### Box 13 : 'Special habitats'

'Special habitats' are referred to in the NBSAP and defined in some fine-scale biodiversity plans (e.g. calccrete and quartzitic patches, wetlands, etc). This category of habitat, unlike the coarser descriptor of 'ecosystem', captures important elements of biodiversity that would not be detected by considering broader indicators like 'threatened ecosystem' or threatened species'.

'Special habitats' could foreseeably include habitat known to be important for migratory species, for particular life-stages of threatened or commercially important species, to support keystone species that 'drive' ecosystems, and/or for locally rare or range-restricted species. In addition to being identified in fine-scale biodiversity plans, these features could be identified by CapeNature or biodiversity specialists during the EIA process.

#### d) The biodiversity process value of the affected habitat

Where the affected area lies in a demarcated or recognized ecological corridor of importance to biodiversity conservation, the significance of the residual impact would depend on whether or not there were other options to ensure that those impacted processes could persist and ensure ecological integrity. In some instances, it would be impossible to compensate for these impacts and the project would be fatally flawed. In cases where compensation were possible, suitable tracts of habitat within Critical Biodiversity Areas or priority areas for ecological processes, identified in bioregional, fine scale or other biodiversity plans should be considered as an appropriate offset. The size of that offset would depend on the particular context and whether or not the impacted ecological process was 'land hungry', and should be informed by a biodiversity specialist in collaboration with CapeNature.

#### e) The importance of biodiversity underpinning valued ecosystem services

Where the affected area contains biodiversity that underpins ecosystem services of high use or non-use value to affected communities or society (i.e. there is high reliance on those services for livelihoods, as a poverty buffer, for health or wellbeing), the significance of the residual impact would depend largely on the level of dependence and whether or not acceptable and affordable substitutes for those degraded or lost services exist. In some instances, it would be impossible to compensate for these impacts and the project would be fatally flawed. In cases where compensation were possible, either the proxy habitat considered as an offset should deliver substitute services to affected communities or society, or it may be necessary to seek a separate offset that would provide adequate compensation through securing an area that would deliver these services.

### Important to note: evaluating residual impacts on ecosystem services

In South Africa, neither resource economic nor social impact assessments are routinely carried out as part of EIAs; it is generally only the larger, complex and/or controversial EIAs that commission these studies. As a result, EIAs seldom explicitly address the linkages and dependencies between biodiversity/ecosystem services and human wellbeing, including livelihoods and health aspects. In addition, the economic value of ecosystem services is seldom determined<sup>66</sup>. With regard to the value

<sup>66</sup> Not all environmental impacts need to be converted to monetary values: the DEA&DP guidelines for economic specialist input into EIAs<sup>66</sup> advocate the quantification of these values only when there is a chance that they would be of a great enough magnitude to influence the overall economic desirability of a project. With regard to valuing ecosystem services, direct consumptive use values are generally easiest and least controversially measured (i.e. converted to monetary values), while

of ecosystem services, readers are referred to the DEA&DP Guidelines on involving economic and social impact assessment specialists in EIA processes (van Zyl *et al* 2005, and Barbour, 2007, respectively).

Broadly speaking, biodiversity specialists would be best placed to determine the thresholds beyond which ecosystems would cease to deliver (or deliver an insufficient level of) a particular ecosystem service (e.g. quantity of harvestable goods, or water yield) that had use value. In cases where non-use values are the key values that would be lost, however, an environmental resource economist (and where appropriate a social specialist) would be needed in order to determine to what degree these values would decrease and whether there is a point beyond which they would be completely lost (for e.g. if an entire wetland with special social significance is destroyed as opposed to being altered and not destroyed).

Offsets for residual impacts on biodiversity may also address residual impacts<sup>67</sup> on ecosystem services, since biodiversity underpins these services.

Where an environmental resource economist or social specialist is not involved in the EIA process, it is important for the EAP and biodiversity specialist to answer a simple set of questions to determine the need for offsets to compensate for residual impacts on ecosystem services.

#### 1. **Local communities**

- What are the use values of the residually affected biodiversity (species, habitat, ecosystems) and associated ecosystem services? Are these values considered to be significant?
- What are the non-use values of the residually affected biodiversity (species, habitat, ecosystems) and associated ecosystem services? Are these values considered to be significant?
- Are local communities directly or indirectly dependent on the residually affected biodiversity and ecosystem services for their wellbeing (livelihoods, health, safety (e.g. protection against natural hazards such as floods), poverty buffer, etc)?
- Would local communities be left more vulnerable as a consequence of the proposed development?

#### 2. **Broader society**

- What are the use values of the residually affected biodiversity (species, habitat, ecosystems) and associated ecosystem services? Are these values considered to be significant?
- What are the non-use values of the residually affected biodiversity (species, habitat, ecosystems) and associated ecosystem services? Are these values considered to be significant?
- Is society directly or indirectly dependent on the residually affected biodiversity and ecosystem services for their wellbeing (livelihoods, health (e.g. clean water), safety (e.g. coastal buffer, flood protection), reliable water supply, etc)?

If any of the answers to the above questions is 'Yes', the impact could be significant and is likely to require the involvement of an environmental resource economist at least, to address the question of possible biodiversity offsets. Where offsets for the biodiversity underpinning those residual impacts on valued ecosystem services are already being addressed in terms of residual negative impacts on biodiversity pattern or process, it is important that consideration be given to their sufficiency to compensate both for loss of biodiversity and loss of ecosystem services.

option and existence values are more difficult to measure and require the use of more controversial techniques such as contingent valuation.

<sup>67</sup> i.e. remaining impacts once mitigation measures have been taken into account. These measures should address both the use and non-use values of biodiversity and ecosystem services.

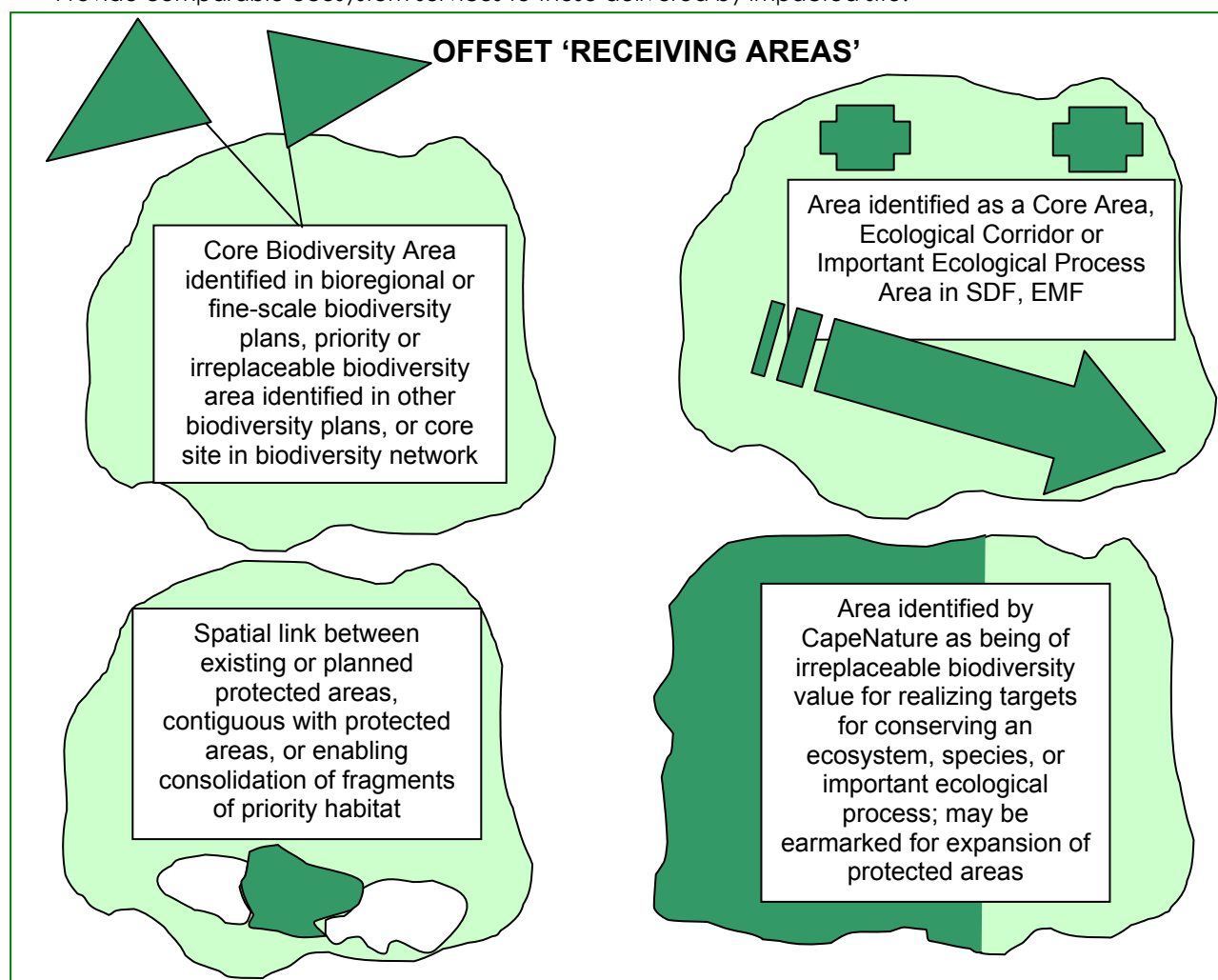
### 5.3.2 Locating offsets in the landscape – ‘offset receiving areas’

Where the developer chooses to purchase or otherwise secure the offset habitat, it is important to locate the biodiversity offset optimally.

Identifying potential offset areas should start by determining those sites with the highest priority for biodiversity conservation for the affected ecosystem, as flagged in bioregional plans, biodiversity plans and/or biodiversity networks. These areas are known as ‘receiving areas’ for offsets (Figure 17). As far as possible, offset sites should be connected to other formally protected sites and/or identified in expansion plans for protected areas.

Offsets should be located in the landscape to:

- Make the maximum contribution to securing, protecting and/or linking biodiversity priority areas, and consolidating ecological corridors in the landscape identified in the PSDF (i.e. Core 2), biodiversity, bioregional or conservation plans, SDFs, EMFs, fine scale plans, (etc). These areas are broadly grouped as ‘key receiving areas’ for offsets. CapeNature should play a key role in identifying appropriate offset areas<sup>68</sup>.
- Be close to the impacted site;
- Minimize fragmentation of habitat; and
- Provide comparable ecosystem services to those delivered by impacted site.



**Figure 17 : Priority receiving areas for biodiversity offsets**

<sup>68</sup> According to the PSDF (DEA&DP 2005), any ‘Core 2’ (ecological corridor areas without formal protection) should be brought up to Core Area 1 status (i.e. secured in perpetuity for conservation purposes).

Offsets could be considered both on the development site (on-site offsets) and/or beyond that site (off-site offsets).

- **On-site offsets** would be acceptable if they could make a meaningful contribution to achieving biodiversity conservation targets in the area in terms of pattern, and/or in terms of process (e.g. could help create ecological corridors or linkages with other priority conservation areas and/or across ecological gradients). Offset should not lead to loss of connectivity across landscape or isolation of important habitat, and should minimize fragmentation of habitat. Performance bonds or trust funds should be required to finance management of the site.

**Important to note: on-site offsets**

*When offsets are proposed on the same property, they should be explicitly and separately described in relation to compensating for residual negative impacts, once other on-site mitigation measures have been taken into account.*

- **Off-site offsets** should apply when appropriate offsets cannot be secured on the site. They would involve purchasing (or otherwise acquiring through formal agreement) land of like habitat, with performance bonds or trust funds to finance management.

## 5.4 Determining the best way to secure the biodiversity offset

According to s2(4)(k) of our NEMA, the environment is held in public trust for the people. The State is custodian of public goods and services in general, and biodiversity in particular, recognizing that they are required by and benefit society at large and not just the interests of certain individuals or sectors of society. For this reason, biodiversity offsets for residual impacts should ideally revert wholly or partially to the State. However, the State is not always in a position to deliver on the requirements of a biodiversity offset on its own. A potential solution to this problem would be to set up a public private partnership between the State (DEA&DP, CapeNature) and an independent Public Benefit Organization (PBO)<sup>69</sup>, that stands scrutiny and provides technical and other expertise. This PBO could provide the basic institutional platform for providing security to biodiversity offsets in the Western Cape.

This section looks at two aspects of securing biodiversity offsets, namely (i) the options for securing offsets, and (ii) the financial mechanisms to facilitate securing offsets.

### 5.4.1 Options for securing biodiversity offsets

Three options are available to secure biodiversity offsets in perpetuity, and ensure that they are managed appropriately in the long term, namely:

- Donation of land to CapeNature or an accredited PBO;
- Stewardship agreements; or
- Purchasing or otherwise acquiring land of like habitat

Each of these three options is addressed in a separate section below. The options are influenced by the type of biodiversity offset (e.g. 'like for like habitat' or ecological proxy, 'trading up' or monetary compensation), the location of the offset (i.e. whether on-site or off-site), whether the offset comprises one or a composite of approaches, and whether it is linked to other conditions of the RoD. All options

<sup>69</sup> Defined in the Income Tax Act 58 of 1962

should be given due consideration in the offset design process, and the final choice of option should be evaluated and endorsed by CapeNature and DEA&DP.

A number of other mechanisms could make a useful contribution to, or support the three options given below, but on their own would not be sufficient to secure offsets (e.g. rezoning).

#### **Important to note: Rezoning and biodiversity offsets**

Rezoning carries no direct management obligations, gives no permanent security to the biodiversity on site (i.e. future application for rezoning that lent itself to development could be made) and requires no auditing either of site management or its effectiveness in terms of conserving the biodiversity on site. For this reason, rezoning on its own would be insufficient to secure a biodiversity offset effectively.

Two options are not considered to be appropriate in the Western Cape, for reasons given below:

- Donating money for the management of under-funded municipal or provincial protected areas. There is a danger of private developers effectively substituting resources needed by a conservation agency, leading to less overall budget provided by the State for conservation. In addition, there is a risk of sinking additional funds into existing protected areas rather than securing habitat in compensation for residual negative impacts on biodiversity, thus undermining the very purpose of biodiversity offsets.
- Biobanking, mitigation or conservation banking, also referred to as credit trading schemes<sup>70</sup>, are not considered appropriate in the Western Cape at this stage. Although these schemes are intended to entail potential benefits in terms of aligning environmental policy with commercial decision-making processes through the use of the market mechanism, they generally require a high degree of institutional capacity and administrative sophistication. In addition, schemes in other parts of the world are relatively new and have had mixed success. Progress with these types of schemes in other countries should be monitored with a possible view to considering them in future.

It is important that the key parties or communities who would be affected by the residual negative impacts on biodiversity or ecosystem services should be given an opportunity to engage in the process of deciding on the best way of securing the biodiversity offset.

#### **5.4.1.1 Donation of land to CapeNature or an accredited Public Benefit Organization**

In certain cases, the simplest route to secure an appropriate offset area would be for the developer to purchase land and donate it to the provincial conservation agency or a recognized, accredited 'offsets PBO'<sup>71</sup> that is geared to handling such donations and has the approval of DEA&DP and CapeNature. An acceptably endowed capital fund for managing the offset area would also need to be established and transferred to the offset recipient. The size of that donation would have to be acceptable to the receiving party and relate to the costs of managing, monitoring and auditing the offset, as well as obtaining specialist advice where appropriate. The donation should be recorded in the RoD.

<sup>70</sup> e.g. Government of Western Australia 2006

<sup>71</sup> A Public Benefit Organization registered in terms of Section 18 of the Income Tax Act 58 of 1962, which is purpose built to stand scrutiny to the offsets transactions in the province, to administer the endowment fund created, and to purchase, where appropriate, suitable offsets sites. This would bring a large element of the requisite efficiency, lowered transaction costs, and fidelity to the biodiversity priorities of the Western Cape.

**5.4.1.2 Stewardship agreements**

Stewardship agreements are provided for in terms of the National Environmental Management Protected Areas Act 57 of 2003. In this option, the proponent commits to securing the offset site (either an on-site or off-site offset) through an agreement entered into with the member of the Executive Council in the Western Cape Province in whose portfolio provincial protected areas in the province fall, and the Board of CapeNature, to conclude an agreement to establish (and manage) a Nature Reserve in terms of subsection 23(1) or Protected Environment (subsection 28(1)) of NEMPA. Concurrence from CapeNature would be required.

An adequately resourced endowment fund for the offset site would have to be set up, directly related to the costs of managing, monitoring and auditing the offset, as well as obtaining specialist advice where appropriate. (If any actions were required from third parties (e.g. monitoring and/or auditing by CapeNature staff, or specialist botanical advice on management) they would have to be funded from that endowment according to an agreed schedule at specified rates.) The operations and payments from the fund must be stipulated in a schedule/annex to the Offsets Management Plan (Section 6.2).

**Important to note: rates reduction**

Land formally contracted to a statutory conservation agency and declared a protected area in terms of the NEM Protected Areas Act (Act 57 of 2003) would be excluded from rates in terms of the Local Government Property Rates Act 6 of 2004.

**5.4.1.3 Purchasing or otherwise acquiring land of like habitat or better**

If the targeted offset area were not owned or under the control of the proponent, then it could be pursued through outright purchase of the land or long term lease, with a legally enforceable commitment to concluding a stewardship agreement and pursuing the declaration of a protected area. In exceptional cases, or when such mechanisms become accepted, the agreement may be concluded through contract law. A proponent may well choose to appoint a third party service provider to facilitate any purchase or agreement as required, but would retain ultimate responsibility for ensuring that the offset is secured, managed, monitored and audited effectively, as required.

The involvement of CapeNature, DEA&DP and SANBI as stipulated above would be crucial to ensure that targets for biodiversity conservation were met and areas were securely set aside for conservation in perpetuity. In this regard, rezoning to Public Open Space or equivalent would be recommended to limit use rights on offset areas and to provide an additional means of safeguarding biodiversity on the site from future development. Rezoning would usually be concluded after any stewardship agreement had been finalized.

Where the size of available portions of land off-site that would meet the requirements of an appropriate biodiversity offset are either far too big or too small for purchase, and leasing a suitable area of land would not be feasible, then either the financial guarantee option (Section 5.4.2) would be attractive to enable alternative offset areas to be investigated and secured, or monetary compensation could be appropriate (Section 5.2).

### 5.4.2 *Financial mechanisms to facilitate securing offsets*

Two mechanisms are proposed to facilitate securing off-site offset areas, namely Direct Purchase and Financial Guarantees to DEA&DP.

In both the Direct Purchase and the Financial Guarantees cases:

- The partnership between CapeNature, DEA&DP and the PBO would provide formal endorsement of the proposed approach to selecting and securing adequate and appropriate offsets, and/or the size of the financial guarantees for acquiring and/or managing offsets. Anyone, including civil society, could approach the PBO in a transparent fashion, governed by a set of conditions, for funding to (1) purchase, or (2) manage, offset sites, to reduce the burden on the State, and allow the efficiencies of the private sector to benefit the offset outcome;
- Funds for management of the offset (including monitoring and auditing the offset site, as well as obtaining specialist advice where appropriate) would be required. In each case, the funds required for acquiring and managing the particular offset would have to be calculated on a case-by-case basis and endorsed by CapeNature or DEA&DP. Specific guidance should be obtained for determining the capital investment required, financial vehicle of choice, as well as the most efficient route for making payments for site management.

Characteristics peculiar to each of these two mechanisms are outlined below.

#### 5.4.2.1 **Direct Purchase of land for the offset**

- For Direct Purchase, the costs of acquiring the offset site would be borne directly by the proponent.

Direct purchase of the offset site by the proponent would be relatively straightforward, but would need some intricate timing in relation to the decision-making process. In cases where direct purchase is the chosen option the offer to purchase the offset site would have to be accepted, and the transfer completed, before the development could proceed. This fact suggests that it could be prudent for a proponent to pursue the investigation, identification and securing of an acceptable offset as early as possible in the EIA and decision-making process, even at risk.

#### 5.4.2.2 **Financial Guarantees**

- With Financial Guarantees, a mechanism would be set up for the State, or its partners, to pursue the acquisition of the offset.<sup>72</sup>
- It would be optimal for a single endowment fund for offsets to be established, which would include ring-fenced<sup>73</sup> portions for the acquisition and management of specific offset transactions. There would be merit in using an existing vehicle for this fund: possibly the Western Cape Conservation Board (CapeNature) Fund or a fund such as the WWF's Table Mountain Fund). Caution has been expressed against creating a new trust fund over which there may be insufficient oversight. A dedicated fund governed by an agreement between CapeNature, DEA&DP and an 'offsets PBO' might be the most appropriate solution in the long term.

Where either 'like for like habitat' or ecological proxy, or monetary compensation (Section 5.2), would be an acceptable form of offset, a 'window' period would be explicitly defined in the RoD

<sup>72</sup> It is assumed that this partnership would apply best practice EIA and the contents of this guideline, as relevant, to the acquisition of offsets, taking into consideration the potential socioeconomic impacts – both positive and negative – on local communities and society as a whole of acquiring priority habitat for biodiversity conservation purposes, with associated implications for ecosystem service delivery.

<sup>73</sup> Specifies that money would be used for an explicitly-defined purpose only



for the project in which the proponent could investigate and conclude the purchase of an appropriate biodiversity offset, and finalise an appropriate stewardship or management agreement for the site.

The dedicated offsets fund would receive a liquid financial bond in advance from development proponents required to finance biodiversity offsets for residual negative impacts of their projects on biodiversity. This amount could be drawn upon over the 'window' period, until a set date of expiry. If proponents managed to secure adequate and appropriate offsets during this period, the bond would be closed. If proponents failed to secure adequate and appropriate offsets during this period, they would lose any costs incurred and the entire bond would revert to the State. In the latter case, the State could outsource the asset management / investment, and the disbursement from that fund, to the PBO partner.

- Financial guarantees usually involve greater costs and risks, but could provide more flexibility to the development proponent. With this option, the applicant would provide guarantees in the form of cash or a bond (secured through sufficient liquid assets or surety, and in favour of the State) for a specified amount. This amount would comprise three separate sums which may be deployed in different ways, namely:
  - i. The probable cost of acquiring an appropriate offset area of adequate size in an optimum location (Section 5.3), plus
  - ii. The endowment for that area to cover costs of managing, monitoring, auditing and, where necessary, obtaining specialist advice on management, plus
  - iii. The cost of an administration and risk premium. The function of this premium would be to ensure that financial guarantees do not offer proponents an easy default route that would place a significant burden on both DEA&DP as the competent authority, and on CapeNature as the provincial biodiversity agency.

The proponent would be able to draw on the capital purchase amount of the bond during the 'window' period defined in the RoD, in order to conclude a transaction to secure an appropriate offset area.

This system allows the state (DEA&DP, CapeNature and possibly SANBI) to fulfil an oversight and technical advice role while allowing the proponent to drive the purchase and management of offsets if they choose. It is recommended that the state only be allowed to drive the process as a last resort should the proponent fail in this regard<sup>74</sup>.

#### Interesting to note: Potential for tax exemption or reduction in future

There appears to be potential for donations to funds dedicated for conservation-related activities and/or purposes to qualify for tax exemptions or reductions in future, provided that the recipient of these donations is a 'Public Benefit Organization' in terms of the Income Tax Act 58 of 1962.

To provide some incentive to proponents to provide financial guarantees, Treasury could be approached to allow these financial provisions the same tax treatment as those currently enjoyed by those for mine rehabilitation. Further relief could be provided for all offset land transactions by exempting them from transfer duty following the precedent set in the Provision of Land and Assistance Act (1993) or Capital Gains tax.

<sup>74</sup> International experience has shown that cash contributions from proponents to the State for both the purchase and management of offset or the management of existing protected areas are problematic in that they result in resource shifting by governments, place undue burdens on already stretched environmental agencies, often don't result in the required biodiversity outcomes and create a climate for possible corruption or maladministration.

**Useful to note: Costs of managing natural habitats**

With regard to the management of offset sites, it may be useful to note that:

- The smaller the parcel of land to be managed, the more expensive per unit area are the management costs;
- The more nutrient loading and/or pollution on the site, the greater the management costs;
- The more human interference/use (even positive recreational use). the greater the management costs;
- The more degraded the site, the greater the costs of management (associated with restoration effort); and
- The longer the history of alien vegetation on the site, the greater the management costs (of clearing alien plants).

In urban areas, the costs (2007) of managing natural areas for conservation are estimated at between R2 500/ha per year to R10 000/ha/year for worse case scenarios. In rural areas, costs of management could be up to a third lower<sup>75</sup>.

## 5.5 Reaching offset agreements

Where a 'like for like habitat' offset would be appropriate and would involve securing habitat off-site, and where the developer intends to purchase or lease appropriate land, it would be necessary to reach agreement with a suitable land-owner before developing an Offset Management Plan. Such a contract could include issues on ownership, access, possible title deed restriction, management, monitoring and evaluation, and auditing of the proposed offset.

## 5.6 Offset reporting

At minimum, an Offsets Report would need to be submitted to the competent authority as part of the final Basic Assessment or EIA Report. The Offsets Report would capture the findings of the offset design process (Sections 5.1-5.5) and present information on the proposed offset. The proposed offset could comprise one or more of the following:

- A 'like for like habitat' offset on-site that the proponent either owns or controls;
- A 'like for like habitat' offset off-site that the proponent owns, controls or has reached an offset agreement on;
- A 'trading up' offset, that the proponent owns, controls or has reached agreement an offset agreement on;
- A 'financial guarantee' offset where the proponent would pursue an appropriate 'like for like habitat' or 'trading up' offset during a specified 'window period'; or
- Monetary compensation.

Where an on-site offset is involved, and/or where the developer has secured an off-site offset, an Offsets Management Plan would also have to be submitted to the competent authority.

The scope and content of each of these documents is addressed separately in the following section<sup>76</sup>.

<sup>75</sup> Dalton Gibbs, City of Cape Town Nature Conservation, *pers. comm..February 2007*

## 6. Offset Report and Offset Management Plan

An Offset Report captures the main findings of the Offset Design process and plays a major role in informing decision-making on the proposed development.

An Offset Management Plan details how the proposed offset would be managed, monitored and audited, and what specialist advice would need to be obtained to inform that management.

Each of these documents is addressed in a separate section below.

### 6.1 Offset Report

The Offset Report should aim to answer the key questions given in Box 9, Section 4.3. At minimum, it should include the following information:

1. A description of residual negative impacts on significant biodiversity and ecosystem services requiring offsets.
2. An explicit statement on the required size of the biodiversity offset to compensate for these residual negative impacts.
3. A description of types of offset considered, giving defensible reasons for arriving at the proposed offset type.
4. An explicit and defensible statement of the option arrived at for securing the offset.
5. Where the proposed offset comprises 'like for like' or 'trading up' habitat:
  - 5.1 Description of stakeholder engagement process in identifying and evaluating the adequacy and acceptability of the proposed offset site.
  - 5.2 Description of any impacts on biodiversity, ecosystem services and/or associated socioeconomic factors associated with securing the proposed offset site.
  - 5.3 Description of potential offset site/s.
  - 5.4 Description of security of offset in terms of both tenure and management. The proposal should contain reference to the contracts and agreements governing the offset area.
  - 5.5 Evaluation of adequacy of proposed offset site by biodiversity specialist and, where relevant, an environmental resource economist and social specialist.
    - *Potential offset sites that would adequately compensate for residual impacts on a) biodiversity pattern (threatened ecosystems, threatened species and special habitats), b) biodiversity process, and c) on ecosystem services, while making a positive contribution to the long term conservation of biodiversity in the province;*
    - *Location of potential offset sites (i.e. located in a recognised 'offset receiving area'?)*;
    - *Where 'trading up' of habitat is involved, provide motivation for this type of offset in the specific context of the proposed development and its residual impacts;*
    - *Statement of functional viability of the proposed offset site in the long term;*
    - *Probable costs of managing, monitoring, auditing, and obtaining specialist input where necessary on managing, the offset site;*
    - *Responsibility for managing, monitoring and auditing the offset;*
    - *Statement regarding the adequacy of capacity of the institution, organization or other party to meet obligations in terms of above responsibilities;*

<sup>76</sup> The key factors that need to be considered in selecting a Best Practicable Offset (BPO) are informed by lessons on compensation mechanisms world-wide. See for example Bredin (2000), Townsend *et al* (2004) and Young (1992), and Dept of Environment and Conservation, NSW, Australia 2006.

- Evaluation of whether or not the proposed offset would ensure that society as a whole, and affected communities in particular, would not be left more vulnerable or less resilient as a consequence of the proposed development [i.e. describe the probable positive and negative impacts of the offset on other parties and a description of who would benefit from, and who would bear the costs of, the offset. In addition, provide assurance that, where offsets are to compensate for loss of biodiversity underpinning valued ecosystem services, the proposed offsets would be affordable, accessible and acceptable to the main affected parties];
- Any negative impacts on local communities and/or society as a whole as a consequence of the proposed offset. If yes, how these negative impacts would be avoided;
- The significance of residual negative impacts on biodiversity, if any, after the proposed offset/s have been implemented; and
- Land uses that would be compatible with biodiversity conservation objectives, and controls on those land uses. In particular, where an offset for residual negative impacts on biodiversity also provides offsets for residual impacts on ecosystem services, assurance should be provided that the latter would not compromise the biodiversity value of that offset (e.g. if biodiversity to be a direct-use resource, then use could lead to degradation of that biodiversity / ecosystem).

5.6 Details of the offset agreement/s between all parties involved.

5.7 The distributional or equity effects of the offset: the probable positive and negative impacts of the offset on other parties and a description of who would benefit from, and who would bear the costs of, the offset.

5.8 Economic efficiency of the offset. The proposal needs to include estimates of the broader economic gains or losses of the offset.

5.9 Administrative costs of the offset.

5.10A brief statement of any residual negative impacts once the proposed offset has been taken into account.

6. Where the proposed offset involves either financial guarantees or monetary compensation:

6.1 Details of the proposed offset amount and the basis on which it was determined. The Offset Report should show the measure of residual biodiversity loss, the size of an appropriate offset that would adequately compensate for that loss, and the 'translation' of that offset size into the costs of acquiring and managing a suitable offset (Section 5.3.1).

6.2 Details of the receiving party/ies or fund/s.

6.3 Details of any agreement/s between parties involved.

6.4 Schedule of payments, where appropriate.

6.5 For financial guarantees, an appropriate 'window period' within which the proponent can investigate and secure appropriate 'like for like' or 'trading up' habitat as an offset.

6.6 Performance auditing and reporting schedule.

#### **Important to note: CapeNature's input to decision-making**

For all proposed biodiversity offsets, a statement from CapeNature either supporting and endorsing the selection and design of that offset, with recommended conditions, and/or rejecting the proposed offset (with reasons) should be required by the decision-maker as a key decision-making informant.

## 6.2 Offset Management Plan

Where appropriate, and depending on the type of offset and the offset option, the proponent would prepare an Offset Management Plan.

Opportunities should be created for stakeholders to be able to contribute to, or participate in the management of the proposed offset, and give input to proposals regarding its management.

The contents of the Offset Management Plan should be as follows:

- Management (and, where appropriate, a restoration) plan with clear objectives, targets, actions, responsibilities, and timing<sup>77</sup>.
- Monitoring and evaluation, appropriate corrective or adaptive management in response to monitoring results, and audit requirements.
- For large-scale or mega-projects, an independent body should be established to monitor and oversee the area set aside as an offset, to ensure it continues to maintain the characteristics for which it was set aside. Such a body should include independent technical experts, community representatives and the provincial conservation agency.
- Performance auditing and reporting requirements.
- Schedule of costs linked to management plan and associated activities, specialist input, management of offset bond or trust fund.

## 7. CONCLUSIONS

This guideline provides the first steps towards using biodiversity offsets as a policy instrument for environmental management in the Western Cape. Biodiversity offsets in the Western Cape will form part of the clearly defined statutory EIA approval process and a specific offset design process is proposed in this guideline.

The guideline provides a framework for deciding when it would (and would not) be appropriate to consider biodiversity offsets, and an approach to determining adequate offsets to compensate for residual negative impacts on biodiversity and/or ecosystem services. It specifies the stages in the EIA and decision-making process when offsets should be addressed, and gives guidance on the criteria to be used in determining, evaluating and/or reviewing proposed offsets.

The guideline explains how offsets can be recommended by environmental assessment practitioners, in conjunction with biodiversity (and other) specialists, be proposed by developers, and evaluated by the competent authorities. As this is a relatively new concept in environmental management, even internationally, it is realized that a phase of learning from pilot biodiversity offsets is needed that should inform future editions of this guideline.

Biodiversity offsets are interpreted as the first step in producing a system where the principle of compensation for residual impacts on biodiversity is orderly integrated into the EIA and decision-making process, in support of sustainable development in the Western Cape. In addition, this first step could foreseeably give rise to a market for biodiversity conservation and restoration. It provides an additional

<sup>77</sup> Where the area is to be declared a nature reserve in terms of the National Environmental Management Protected Areas Act, the requirements of that Act with regard to management and monitoring would have to be satisfied.

environmental management tool to contribute to the achievement of sustainable development in the Western Cape Province.

Currently there may be adequate areas in the Western Cape that could serve as offset areas. With time, however, these opportunities would dwindle as development continues within a finite total land area in the province. The emphasis on securing habitat as an offset might need to shift to monetary compensation when available habitat becomes increasingly scarce. However, every effort should be made to secure and protect habitat as a 'first prize'.

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## Addendum 1 : Stakeholders engaged in developing and finalizing the provincial guideline on biodiversity offsets

The provincial biodiversity offsets guideline, building on and strengthening the Final Draft Guideline (June 2006), was finalized through a consultative process during the period January-March 2007. The process benefited from the inputs and comments provided by a wide range of individuals, specialists and organizations.

The following people attended the biodiversity offsets workshop held on the 21 February 2007:

Name	Surname	Organisation
Tammy	Baudains	Department of Environmental Affairs and Tourism
Mark	Botha	Botanical Society
Susie	Brownlie	deVilliers Brownlie Associates
Liz	Day	Consultant
Charl	De Villiers	Botanical Society of SA, and IAIAsa
Martin	De Wit	De Wit Sustainable Options (Pty) Ltd
Bernard	De Witt	EnviroAfrica
Christabel	Geland	CapeNature
Gerhard	Gerber	Department of Environmental Affairs and Tourism
Doug	Jeffrey	Doug Jeffrey Environmental Consultants
Nick	Helme	Bick Helme Botanical Surveys
Pat	Holmes	City of Cape Town
Onno	Huyser	Table Mountain Fund, WWF
Mary Jane	Morris	MEGA consultants
Gregg	Oelofse	City of Cape Town
Genevieve	Pence	Conservation planning consultant
Samantha	Ralston	CapeNature
Rashaad	Samaai	Department of Environmental Affairs and Tourism
Marcia	Sheraton	Provincial Treasury
Jan	Smit	Provincial Department of Agriculture
Kate	Snaddon	The Freshwater Consulting Group
Francis	Steyn	Provincial Department of Agriculture
Chuckeka	Tivani	Department of Environmental Affairs and Tourism
Hugo	Van Zyl	Independent Economic Researchers
Fabio	Venturi	Department of Environmental Affairs and Tourism
Anne Lise	Vlok	Cape Nature
Anton	Wolfaardt	Cape Nature

??? specialists in the field of biodiversity and/or ecosystem services commented on the draft Concept Paper that was used as the basis for discussion in a workshop held on 21 February 2007.

Name	Surname	Organisation
Timm	Hoffman	Leslie Hill Institute for Plant Conservation, UCT.
Shirley	Pierce Cowling	Consultant, Eastern Cape
Kerry	Ten Kate	Business and Biodiversity Offsets Programme
Paul	Mitchell	Business and Biodiversity Offsets Programme
Marc	Stalmans	International Conservation Services
Jo	Treweek	International Association for Impact Assessment
Donavan	Kirkwood	CapeNature
Samantha	Ralston	CapeNature
Onno	Huyser	Table Mountain Fund, WWF
Liz	Day	Freshwater Consulting Group
Anne Lise	Vlok	CapeNature
Gerhard	Gerber	DEA&DP
Charl	De Villiers	Botanical Society of South Africa
Genevieve	Pence	Conservation Planning consultant

The following people kindly provided information on offset case studies:

Andrew Blackmore, Ezemvelo KZN Wildlife  
 Peter Coombes, Frank Pieterse, Anglo-Platinum  
 Anne Lise Vlok, CapeNature  
 Thea Jordan, Umhlathuze Municipality

**The Final Draft of the guideline (June 2006)** was developed through a consultative process and benefited from the inputs and comments provided by a wide range of individuals and organizations. The following people attended the public workshop:

Name	Surname	Organisation
Mark	Botha	Botanical Society of South Africa
Verna	Bowie	CapeNature
Susie	Brownlie	De Villiers Brownlie Associates
Ronelle	Clarke	City of Cape Town
Alan	Cluett	Holcim South Africa
Liz	Day	Freshwater Consulting Group
Tania	de Waal	Department Environmental Affairs and Development Planning
Martin (facilitator)	de Wit	De Wit Sustainable Options Pty (Ltd)
Wendy	Engel	CapeNature
Gerhard	Gerber	Department Environmental Affairs and Development Planning
Paul	Hardcastle	Department Environmental Affairs and Development Planning
Nick	Helme	Nick Helme Botanical Surveys
Sharlin	Hemraj	National Treasury
Terence (facilitator)	Jayiya	JAYMAT Enviro Solutions
Doug	Jeffrey	Doug Jeffery Environmental Consultants
Don	Kirkwood	CapeNature
Graham	Main	De Beers
Jeff	Manuel	Botanical Society of South Africa
Christo	Marais	Working for Water
Frauke (facilitator)	Münster	ERM Southern Africa
Erwin	Obermeyer	National Treasury
Mare-Liez	Oosthuizen	Department Environmental Affairs and Development Planning
Janse	Rabie	Nicholas Smith & Associates
Sam	Ralston	Wildlife & Environment Society SA
Rowena	Smuts	Conservation International
Kate	Snaddon	Freshwater Consulting Group
Lisa	van Aarde	Planning Partners
Hendrik	van der Hoven	Hendrik van der Hoven

In addition, thirty-three people completed expert opinion surveys (sorted by name):

Name	Surname	Organisation
Mark	Aken	Anglo Coal
Nitasha	Bijanth-Pillay	Department Environmental Affairs and Development Planning
Andrew	Blackmore	Ezemvelo KZN Wildlife
Mark	Botha	Botanical Society of SA
Verna	Bowie	CapeNature
Jan Hendrik	Briers	Dept Minerals and Energy
Susie	Brownlie	deVilliers Brownlie Associates
Julie	Carlisle	Nature's Valley Trust
Alan	Cluett	Environmental Consultant
Brent	Corcoran	Maloti-Drakensberg Transfrontier Project
Peter	Croal	CIDA
Stephen	Davey	Amathemba Environmental Consulting
Anneke	de Kok	Anneke de Kock Environmental Consultants
Willem	de Lange	Western Cape Department of Agriculture
Louis	de Villiers	Louis de Villiers attorney, WESA
Philip	Desmont	Conservation consultant

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John	Dini	<i>Working for Wetlands (SANBI)</i>
Lozelle	du Plessis	<i>Department of Agriculture</i>
Dian	Grant	<i>Grant Johnston Associates</i>
Nick	Helme	<i>Nick Helme Botanical Surveys</i>
Patricia	Holmes	<i>City of Cape Town</i>
Don	Kirkwood	<i>CapeNature</i>
Michael	Mangnall	<i>Ninham Shand</i>
Lynette	Munro	<i>Environmental Evaluation Unit UCT</i>
Mellisa	Naiker	<i>Department Environmental Affairs and Development Planning</i>
Samantha	Ralston	<i>Wildlife &amp; Environment Society SA</i>
Mark	Rynhoud	<i>Geological &amp; Environmental Services</i>
Mark	Sasman	<i>Ecosense CC</i>
Kate	Snaddon	<i>The Freshwater Consulting Group</i>
Danie	Swanepoel	<i>Department Environmental Affairs and Development Planning</i>
Yvette	van Wijk	<i>Garden Route Botanical Garden Trust</i>
Russel	Wise	<i>CSIR</i>
Anton	Wolfaardt	<i>CapeNature</i>

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### Addendum 2 : Guidance for the consideration of offsets in relation to the significance of residual negative impacts on biodiversity and ecosystem services, having taken account of measures to avoid, minimize and or repair/restore these impacts

	Description	Significance rating of residual impacts	Potential to consider offset	Type of offset – outside Urban Edge	Type of offset – inside Urban Edge
<b>A : Overarching considerations as a 'first filter'</b>					
<b>Biodiversity and/or bioregional plans, biodiversity networks</b>	Any habitat identified as a Critical Biodiversity Area in a published bioregional or fine-scale plan, or as a priority biodiversity area in other biodiversity plans, and/or as a core site in a biodiversity network.	<b>Very High</b> – would constitute a 'fatal flaw': an irreversible impact; one which would result in irreplaceable loss of biodiversity and ecological integrity. Proposed development should not proceed.	No offsets should be considered, except in exceptional circumstances	In exceptional circumstances only: secure and protect significant areas identified in the fine-scale plan that could provide a substitute for impacted area in ratio of 30:1	In exceptional circumstances only, secure and protect priority areas within biodiversity network/EMF at ratio of 5:1, or secure offsets beyond the urban edge at a ratio of 30:1
<b>Context-specific considerations, particularly where biodiversity plans at an appropriate scale have not yet been prepared</b>	An area of irreplaceable biodiversity value identified by biodiversity specialists and supported by CapeNature. That is, any habitat where its size, connectivity, structure, composition and condition would make it irreplaceable for ensuring the persistence of an ecosystem or species.	<b>Very High</b> – would constitute a 'fatal flaw': an irreversible impact; one which would result in irreplaceable loss of biodiversity and ecological integrity. Proposed development should not proceed.	No offsets should be considered		
<b>B : Biodiversity pattern and process, and ecosystem services issues as a 'second filter'</b>					
<b>Biodiversity pattern</b>	Ecosystems				
	Critically Endangered (irreplaceable loss) ecosystem <sup>78</sup> identified	<b>High to Very High</b> – would constitute a 'fatal flaw': an irreversible impact; one which	None for 'very high'; possible for 'high' and in	In exceptional circumstances only: secure and protect critically endangered ecosystem	In exceptional circumstances only: secure and protect

<sup>78</sup> Unless otherwise stated, the ecosystem status relates to habitat in that ecosystem of 'moderate' to 'good' condition, rather than 'degraded'.

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	in biodiversity plan and ratified by biodiversity specialist and/or CapeNature	would result in irreplaceable loss of biodiversity and ecological integrity. Proposed development should not proceed.	'exceptional circumstances' <sup>79</sup>	in relatively good condition, where it would contribute to biodiversity planning priorities, or priority endangered habitat at ratio of 30:1	critically endangered habitat at ratio of 2:1, contributing to urban biodiversity networks, EMF, or secure offsets beyond the urban edge at a ratio of 30:1
	Endangered ecosystem, identified in biodiversity plan and ratified by biodiversity specialist and/or CapeNature	<p><b>Medium to High</b>, depending on area to be residually impacted, presence of threatened species and/or special habitats, position in the landscape in relation to broader spatial components of ecological processes<sup>80</sup>, and the condition of the impacted habitat<sup>81</sup>.</p> <p><i>As a broad guide only<sup>82</sup>, loss of &gt;1ha of endangered habitat in moderate to good condition would constitute a 'medium' significance impact; loss of &gt;5ha in moderate to good condition would be considered a 'high' significance impact. Where threatened species and/or special habitats were present, areas &lt;5ha could be 'bumped up' to 'high' significance.</i></p>	Possible	<p>Like for like or better habitat, ratio at minimum 20:1 for endangered ecosystems, consistent with / contribute to Critical Biodiversity Areas identified in bioregional or fine scale biodiversity plans, priority areas in other bioregional plans, PSDF (particularly Core 2), municipal SDFs and biodiversity networks, EMFs.</p> <p><i>[Refer to species and special habitat sections below for guidance where applicable]</i></p>	Like for like or better habitat, ratio at minimum 1:1 for endangered ecosystems, consistent with / contribute to priority areas identified in urban biodiversity networks, EMF. Alternatively, secure offsets beyond the urban edge at a ratio of 20:1
	Vulnerable ecosystem, identified in biodiversity plan	<b>Medium to High</b> , depending on area to be residually impacted, presence of threatened species	Yes	Like for like or better habitat, ratio at minimum 10:1, consistent with / contribute to Critical	No offset needed

<sup>79</sup> Please see Section 4.1.2 for an explanation of 'exceptional circumstances'

<sup>80</sup> Refer to the Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape (De Villiers *et al* 2005) for a useful discussion of how to apply consideration of these components in planning and environmental assessment.

<sup>81</sup> If the affected habitat supports >75% of expected species compared with an undisturbed site in a comparable vegetation type or ecosystem, it would be in 'good' condition; if >25% but <75% it would be in 'moderate' condition, and <25% it would be 'degraded'

<sup>82</sup> The evaluation of significance would need to be carried out by an appropriate biodiversity specialist; the variables and contextual considerations are complex.

<sup>83</sup> The evaluation of significance would need to be carried out by an appropriate biodiversity specialist; the variables and contextual considerations are complex.

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	and ratified by biodiversity specialist and/or CapeNature	and/or special habitats, and position in the landscape in relation to broader spatial components of ecological processes, and the condition of the impacted habitat.  <i>As a broad guide only<sup>83</sup>, loss of &gt;1ha -5ha of vulnerable habitat that contained threatened species and/or special habitats, or &gt;5ha of vulnerable habitat in moderate to good condition, would constitute a 'medium' significance impact; loss of &gt;5ha-10ha of vulnerable habitat that contained threatened species or special habitats, or &gt;10ha of vulnerable habitat in moderate to good condition, would constitute a 'high' significance impact.</i>		Biodiversity Areas identified in bioregional or fine scale biodiversity plans, priority areas in other bioregional plans, PSDF (particularly Core 2), municipal SDFs and biodiversity networks, EMFs.  <i>[Refer to species and special habitat sections below for guidance where applicable]</i>	
	Least threatened ecosystem, identified in biodiversity plan and ratified by biodiversity specialist and/or CapeNature	<b>Low to High</b> , depending on the area to be residually impacted, presence of threatened species and/or special habitats, and position in the landscape in relation to broader spatial components of ecological processes, and the condition of the impacted habitat.  <i>As a broad guide only<sup>84</sup>, loss of &gt;5ha-20ha of least threatened habitat that contained threatened species and/or special habitats, would constitute</i>	Not necessary for 'low', possible for 'medium' and 'high'	Where threatened species and/or special habitats trigger the need for offsets in least threatened systems, offsets should focus on securing and protecting habitat for those threatened species / containing those special habitats. <i>[Refer to species and special habitat sections below for guidance where applicable]</i>	No offset needed

<sup>84</sup> The evaluation of significance would need to be carried out by an appropriate biodiversity specialist; the variables and contextual considerations are complex.



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		a 'medium' significance impact; loss of >20ha -50ha of least threatened habitat that contained threatened species and/or special habitats would be considered a 'high' significance impact.			
	Species				
	Critically Endangered species, assessed by biodiversity specialist and/or CapeNature, and drawing on GIS databases of known rare species occurrences	Likely to be <b>Very High</b> – would constitute a 'fatal flaw': an irreversible impact; one which would result in irreplaceable loss of biodiversity and ecological integrity. Proposed development should not proceed	None, except in 'exceptional circumstances' <sup>85</sup>	In exceptional circumstances only: secure and protect all remaining habitat for the affected Critically Endangered species, and carrying out a 'search and rescue' operation on the affected site prior to development	In exceptional circumstances only: securing and protecting all remaining habitat for Critically Endangered species within the urban edge and carrying out a 'search and rescue' operation on the affected site prior to development
	Endangered species, assessed by biodiversity specialist and/or CapeNature, and drawing on GIS databases of known rare species occurrences	<b>Medium to Very High</b> , depending on size and viability of affected population, and contribution of affected population to the persistence of the species.	Possible for 'medium to high' impacts, offsets considered only in exceptional circumstances for 'very high'	Secure and protect habitat with known viable populations of the same species, its location preferably contributing to provincial priorities for biodiversity conservation. Size of offset related to habitat of viable population of the same species; rely on specialist guidance.	Habitat with known viable populations of the same species, contributing to urban biodiversity network/EMF. Size of offset related to habitat of viable population of the same species; rely on specialist guidance.
	Vulnerable species, assessed by biodiversity specialist and/or CapeNature, and drawing on GIS databases of known rare species	<b>Low to High</b> , depending on size and viability of affected population, and contribution of affected population to the persistence of the species.	Possible	Secure and protect habitat with known viable populations of the same species, its location preferably contributing to provincial priorities for biodiversity conservation. Size of offset related to habitat of viable	Habitat with known viable populations of the same species, contributing to urban biodiversity network/EMF. Size of offset related to habitat of viable population of

<sup>85</sup> Please see Section 4.1.2 for an explanation of 'exceptional circumstances'

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	occurrences			population of the same species; rely on specialist guidance.	the same species; rely on specialist guidance.
	Least Threatened species assessed by biodiversity specialist and/or CapeNature, and drawing on GIS databases of known rare species occurrences	<b>Low</b>	Not necessary		
	Special Habitats				
	'Special habitat' recognized in fine-scale biodiversity plan, by CapeNature or by a biodiversity specialist	<b>Medium to Very High</b> , depending on the particular special habitat, its rarity, the project context and the replaceability of that habitat	Possible for 'medium to high' impacts, offsets considered only in exceptional circumstances for 'very high'	Secure, restore (if appropriate), protect and manage comparable special habitats. Size of offset related to special habitat affected; rely on specialist guidance.	Comparable special habitats that would contribute to urban biodiversity networks, EMF. Size of offset related to habitat affected; rely on specialist guidance.
<b>Biodiversity process</b>	Fixed process				
	Fixed process at provincial to local level, identified on PSDF or biodiversity or bioregional plans (i.e. limited alternatives or substitutes and could be important in enabling the persistence of biodiversity or delivery of ecosystem services of provincial importance)  <b>Important:</b> unless the scale of available plans supports high confidence	<b>Likely to be Medium to Very High</b> , depending on the type of process and context.  If essential to maintain evolutionary processes OR processes that underpin function of important, valued or valuable ecosystems, OR processes that underpin critical ecosystem services (i.e. with health or livelihood implications) then impact would be 'very high' and no offsets should be considered. If 'high' or 'medium' residual significance, then offsets could be considered.  <i>As a broad guide only, where the</i>	No offsets should be considered for 'very high', possible for 'high' or 'medium'	Protect Critical Biodiversity Areas identified in bioregional or fine scale biodiversity plans, priority ecological corridors or process areas in other biodiversity plans, PSDF (particularly Core 2), municipal SDFs and biodiversity networks.  Area of offset would depend on context but could involve offset ratios of up to 20:1 for land-hungry processes. The advice of a biodiversity specialist, supported by CapeNature, should inform the offset size.	Secure and protect priority areas within biodiversity network/EMF at ratio of 1:1

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	<p>predictions, it is critical that residual impacts on connectivity and the spatial components of ecological processes are addressed, evaluated and ground-truthed by an appropriately qualified biodiversity specialist in consultation with CapeNature</p>	<p><i>residual impact would be on largely undisturbed vegetation within a demarcated ecological corridor or Critical Biodiversity Area, any residual impact on that corridor would constitute an impact of 'very high' significance. Where a number of options exist for conserving a representative area of the spatial components of ecological processes in the landscape, then the advice of a biodiversity specialist, supported by CapeNature, should inform the significance rating.</i></p>			
	Flexible process				
	<p>Flexible<sup>86</sup> process at provincial or local level (i.e. some alternatives or substitutes), identified on bioregional or biodiversity plans, and/or by biodiversity specialist</p>	<p>Likely to be <b>Low to High</b>, depending on the number of options in the landscape, the type of process and the particular context.</p> <p>The advice of a biodiversity specialist, supported by CapeNature, should inform the significance rating</p>	Possible	<p>Must be low risk of irreversible impact on continued function, appropriate location in landscape is critical - must be consistent with NSBA, should target Critical Biodiversity Areas in bioregional or fine-scale biodiversity plans, or priority ecological corridors or ecological process areas in other plans. Area of offset would depend on context but could involve offset ratios of up to 20:1 for land-hungry processes. The advice of a biodiversity specialist, supported by CapeNature, should inform the offset size.</p>	<p>Contribute to priorities in biodiversity network / EMF, ratio of up to 2:1, depending on context; must allow persistence of key ecological processes</p>
<b>Ecosystem services</b>	<p>Locally valued or important, can be easily substituted to</p>	<b>Low to Medium</b>	Possible	<p>Must provide 'like for like or better' substitute to use, area served, access and value, substitutes must be</p>	

<sup>86</sup> It is important to note that the term 'flexible' does not imply that there would always be alternative areas that would act as an ecological corridor! In many cases, land in low-lying areas that could be suitable for a corridor from mountains to the coast has been extensively transformed, and options for creating linkages are absent.

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	play the same role in ecosystem, as identified by biodiversity / environmental resource economics specialist/s			acceptable to affected parties at no costs to these parties. Substitutes for ecosystem services must ensure local livelihoods, health or wellbeing are not compromised.	
	Locally valued or important, no local substitute (i.e. irreplaceable) or substitute at high cost, as identified by biodiversity specialist / environmental resource economist	<b>High to Very High</b> , depending on type of ecosystem service and level of reliance for livelihoods, health and wellbeing	Consider only in exceptional circumstances.	Must provide 'like for like or better' substitute to use, area served, access and value, substitutes must be acceptable to affected parties at no costs to these parties. Substitutes for ecosystem services must ensure local livelihoods, health or wellbeing are not compromised.	
	Provincially valued or important, as identified by biodiversity specialist / environmental resource economist	<b>High to Very High</b> , depending on type of service and levels of reliance for livelihoods, health and wellbeing	Consider only in exceptional circumstances.	Must provide 'like for like or better' substitute to use, area served, access and value, substitutes must be acceptable to affected parties at no costs to these parties. Substitutes for ecosystem services must ensure local livelihoods, health or wellbeing are not compromised.	

**PLEASE NOTE: 'Exceptional circumstances'**

'Exceptional circumstances' could be those situations where:

- The threatened (i.e. critically endangered, endangered or vulnerable) ecosystem, or threatened species, or special habitat to be affected is highly unlikely (>95% certainty) to be viable or persist in the long term due to lack of connectivity with other areas of natural habitat, predicted trends/threats of surrounding land use and/or degree of isolation or fragmentation. The motivation for these 'exceptional circumstances' must be explicitly made by a biodiversity specialist, peer reviewed, and supported by CapeNature; and
- Proposed development would deliver substantial benefits to society and there are no reasonable and feasible alternatives that could be pursued to realize these benefits.

## Evaluation of probable residual impacts

## Residual impact on:

## Biodiversity pattern:

- Status of ecosystems
- Status of species
- Special habitats

## Biodiversity process:

- Key drivers or processes underpinning ecosystems persistence and integrity
  - Fire
  - Predator-prey
  - Plant-herbivore
  - Seasonal migration

- Spatially fixed processes?
  - Soil interfaces
  - Upland-lowland interfaces
  - Vegetation interfaces
  - Sand movement corridors
  - River corridors

- Spatially flexible processes?
  - Upland-lowland gradients or corridors
  - Macro-climatic gradients E-W, N-S

## Ecosystem services:

- Use value: Important species, habitat or ecosystems for health, livelihood, or as poverty buffer? e.g.
  - Food or fuel
  - Grazing
  - Medicines
  - Water quantity or quality
  - Productive soils for agriculture
  - Fibre (including access to above)

- Non-use value: Important species, habitat or ecosystems for health, social or cultural wellbeing, or resilience? e.g.
  - Coastal protection
  - Disease regulation
  - Recreation and tourism
  - Water purification
  - Cultural/religious value

- Critically Endangered (CE), endangered (E) or Vulnerable (V) ecosystems?
- 'Irreplaceable' habitat?
- Special habitats?

- Threatened species?
- Local endemic or range-restricted species?

Major constraint on ability of key processes to persist?

Any important spatially fixed processes or spatial components of ecological processes identified in biodiversity/bioregional plans?

Impacts on recognized or formal ecological corridor, in biodiversity plans, PSDF, SDFs, EMFs?

Any important spatially flexible processes?

Any important use values to affected parties or society?

Affected parties or communities dependent for livelihoods, health and/or safety on ecosystem services?

Any important non-use values to affected parties?

Residual negative impacts on CE ecosystems, CE spp?

If EN or V spp, local endemics or special habitats, are there areas of like habitat and/or habitat with known populations that could be secured?

If E/V ecosystems, are there areas of the same ecosystem type / known habitat for spp that could be secured?

Alternative areas that could be secured to ensure persistence of processes?

Proposed development will affect Critical Biodiversity Area or irreplaceable ecological corridors?

Are there alternative areas or corridors that could be secured to ensure persistence of these spatially flexible processes?

- Can important ecosystem services be easily substituted?
- Would substitutions be affordable and accessible?
- Would substitutions be of equivalent cost to public as a whole?
- Would substitutions be acceptable to affected parties?

Offsets would **not** be appropriate other than in **exceptional circumstances**. Investigate alternative project design, location or layout to avoid significant residual negative impacts

**If yes**, then investigate biodiversity offsets where appropriate **if no**, investigate alternative project design and location or layout to avoid significant negative impacts on biodiversity or ecosystem services

Would offset compensate for impacts on biodiversity pattern, process and ecosystem services?

s5.1,s5.3, Addndm 2

Would offset be acceptable to key stakeholders?

s 5.3, Addndm 2

Is there merit in 'trading up' for better strategic value to biodiversity conservation?

s 5.2, Addndm 2

Would separate offsets be required for residual impacts on ecosystems, process areas, species, special habitats and/or ecosystem services?

s 5.3

What would be the best option or 'vehicle' to secure offset?

s 5.4

Who would be responsible for securing and managing the offset? Would there be there sufficient capacity?

s5.4, s6.2

Can offset be enforced? Are risks associated with offset acceptable?

s4.9, s6.1,s6.2

**Addendum 4 : Roles and responsibilities of different stakeholders in the EIA and decision-making process**

Process	Responsibility and tasks					
	Developer / proponent	Decision-making / competent authority	Environmental Assessment Practitioner	Specialist/s	Public representative	CapeNature (provincial agency)
<b>STRATEGIC PLANNING</b>						
Laws, policies and procedures	Takes note when planning a project that has biodiversity impacts	DEADP to specify offset rules and procedures responsible (DEAT on national level)	Keep up to date with recent laws, policies, guidelines	Take into account all relevant laws, policies and procedures		Conservation planners provide input
Biodiversity, including fine-scale, planning	Takes note when planning a project that has biodiversity impacts	DEA&DP and/or NEMA Biodiversity Act 2004 to define threatened ecosystems, ecological corridors and special habitats	Keep abreast of latest biodiversity plans	Take into account all relevant biodiversity plans		Input on threatened ecosystems and species, ecological corridors and special habitats
Spatial planning	Takes note when planning a project that has biodiversity impacts	DEADP, district and local municipalities responsible for ensuring that biodiversity plans are incorporated and reflected in SDFs, EMFs	Keep up to date with new, and in preparation, bioregional plans, LandCare Area-Wide plans, SDFs, EMFs, etc.	Take into account all relevant biodiversity plans, bioregional plans, PSDF, LandCare Area Wide plans, SDFs, EMFs	To engage in planning processes, input on important ecosystem services	Input to spatial planning initiatives with regard to important and priority biodiversity areas
<b>ENVIRONMENTAL IMPACT ASSESSMENT PROCESS</b>						
Basic Assessment (Part 2 of Chapter 3 of the NEMA EIA Regulations, R385 of 2006)						
Pre-application planning	Developer may be advised by EAP to source opinion from biodiversity specialist.  When it is clear that there would be unavoidable and significant negative impacts on biodiversity, and the developer is intent on proceeding with a development application, it is probable that offsets would be required, <i>if appropriate</i> .		Undertake baseline biodiversity study/site assessment to identify key biodiversity issues and risks (including potential fatal flaws) and inform project planning proactively, so as to avoid and minimize negative impacts on biodiversity ('positive planning').	Where involved, provide specialist input to EAP in accordance with DEA&DP guidelines (Brownlie 2005)		To advise EAPs, developers on potentially significant impacts on biodiversity of regional importance
Basic Assessment Report	To enable the consideration of all reasonable and feasible	May ask for methodology used to evaluate significance of impacts on biodiversity to be explicitly described.	Assess project impacts on biodiversity, including consideration of reasonable and	Where involved, provide specialist input to EAP in accordance with DEA&DP guidelines (Brownlie	Through stakeholder engagement and the opportunity to	To engage in EIA process as a key stakeholder,

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Process	Responsibility and tasks					
	Developer / proponent	Decision-making / competent authority	Environmental Assessment Practitioner	Specialist/s	Public representative	CapeNature (provincial agency)
	<p>alternatives, and mitigation measures.</p> <p>Developer responsible for submitting Basic Assessment report</p>	<p>May ask for input from applicant on reasonable and feasible alternatives (e.g. where alternatives not adequately investigated).</p> <p>May ask for the application to be subject to a scoping and EIA (e.g. where insufficient reliable information)</p> <p>Considers application, evaluates whether an offset would be appropriate, using <b>decision support system</b> (Figure 10).</p> <p>If appropriate, would request developer / EAP to investigate potential offsets as a separate study (the competent authority may ask for 'specific information' to be included in the Basic Assessment Report).</p>	<p>feasible alternatives. Address mitigation measures (avoid, minimize, repair/restore). Obtain biodiversity specialist input where impacts on biodiversity could be significant. Refer to Addendum 2</p> <p>If information is sufficient to evaluate reliably the potential significance of impacts on biodiversity and ecosystem services: 'residual impacts of 'low' significance would not require offsets; residual impacts of potentially medium to high significance would indicate the need to investigate potential offsets; and residual impacts of 'very high' significance reflect a 'fatal flaw' in the proposal.</p> <p><b>A clear statement should be made as to the need for, and appropriateness of, investigating offsets.</b></p> <p>Where there are significant issues and impacts that require further investigation, a more detailed specialist assessment should be commissioned.</p>	<p>2005).</p> <p>The methodology for evaluating significance of impacts presented in this guideline should be used. Refer to Section 4.1.2, and Addendum 2</p> <p>Advise on other feasible and reasonable alternatives that should be investigated to avoid or minimize impacts on biodiversity and ecosystem services.</p> <p>Where it is clear that, when all appropriate alternatives and effective and probable mitigation options have been adequately addressed, there would be residual impacts on biodiversity or ecosystem services of 'medium' to 'high' significance, <b>recommend that offsets be investigated</b>. Residual impacts of 'very high' significance would represent a fatal flaw to the proposal. Impacts of low residual significance would not require offsets.</p>	<p>comment on the draft Report, may raise biodiversity issues and / or ecosystem services issues.</p>	<p>identifying potentially significant impacts on biodiversity of regional importance.</p> <p>Where the investigation of offsets is recommended, CapeNature to give formal comment on the need and appropriateness of looking into offsets.</p>
Investigate offsets	Engage in identification and evaluation of potential offset sites, involve appropriate specialists to provide necessary advice (e.g. biodiversity specialists, environmental resource economist, social specialist, legal expert, CapeNature (where stewardship agreements are an option), etc.).	<p>May request additional involvement of interested and affected parties in the offset design process.</p> <p>Require Offset Report (refer Section 6.1).</p>	<p>Develop feasible offset project that would compensate for residual impacts on biodiversity and ecosystem services.</p> <p>Appoint biodiversity specialist to identify, evaluate, and advise on management of, the most appropriate offset/s. Liaise with proponent. Key stakeholders (particularly affected parties) should be given the opportunity</p>	Give input on the specific characteristics of the biodiversity that would be impacted, and considerations that should inform identification of potential offset site/s. Where appropriate, work with social/socioeconomic specialist where there would be residual negative impacts on ecosystem services. Help identify potential offset areas that would compensate for residual impacts	Where offsets are considered, may give inputs on possible offsets and their acceptability.	With regard to offsets, advise on the location and opportunities for optimum offset sites that could make best contribution to biodiversity conservation in the province, give input on site-specific issues and associated management, and

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Process	Responsibility and tasks					
	Developer / proponent	Decision-making / competent authority	Environmental Assessment Practitioner	Specialist/s	Public representative	CapeNature (provincial agency)
			<p>to participate in identifying and evaluating potential offsets.</p> <p>Prepare Offset Report, with input from specialists (Section 6.1)</p> <p>Develop Offset Management Plan, where relevant, with specialist/s input (refer Section 6.2).</p> <p>Integrate Offset Report and Offset Management Plan, where relevant, into Basic Assessment Report.</p>	<p>on both biodiversity and ecosystem services (in collaboration with environmental resource economist/social / specialist, where appropriate). Refer to Figure 17</p> <p>Make explicit evaluation of the adequacy of the proposed offset/s in terms of fully compensating for residual negative impacts on biodiversity or ecosystem services (i.e. sufficient, or additional offsets required?).</p> <p>Advise on required management of potential offset site/s.</p> <p>Evaluate any impacts of securing and managing the offset site/s on biodiversity / ecosystem services.</p>		<p>identify any specific studies that should be undertaken</p>
		<p>May ask for specialist review of offset reports.</p> <p>Should ensure that a formal statement has been received from CapeNature on the adequacy (or otherwise) of the proposed biodiversity offset.</p>	<p>Offset Report and Offset Management Plan, where relevant, to be made available to key stakeholders for comment, before submitting to authority for decision.</p>		<p>May submit comment on reports</p>	<p>Review draft Basic Assessment Report and submit formal comment on the adequacy (or otherwise) of the proposed offset/s to the competent authority.</p>
Decision on application		<p>Basic Assessment Report considered by decision-making authority, including consideration of the proposed offset (refer to <b>decision support system</b>, Figure 10). Authorization is granted or rejected. Authorization is granted or rejected. Conditions attached to Record of Decision (RoD) may include: requirements to secure offset or provide financial guarantees or management endowments prior to commencing project; compliance</p>			<p>May appeal decision.</p>	



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Process	Responsibility and tasks					
	Developer / proponent	Decision-making / competent authority	Environmental Assessment Practitioner	Specialist/s	Public representative	CapeNature (provincial agency)
		monitoring and auditing (s38 of EIA Regulations)				
Project go-ahead and implementation of EMP	Parties to agreement negotiate and sign final offset contract, as appropriate depending on nature of offset option.					CapeNature engages with developer and decision making authority if offset falls under Stewardship Programme
Monitoring and audit	Developer responsible for submitting review of progress as measured against EMP to authorities	Provides guidance on good practice monitoring and auditing. Conditions stipulate frequency of auditing, reporting May request adaptive or corrective action based on audit reports.		Independent specialist may be needed for monitoring and audit review to ensure it complies with agreed Offset Management Plan and ROD.	May be involved in, or assist with, monitoring and evaluation of offset	May be involved in, or assist with, monitoring of offset, and/or advise on adaptive or corrective action if appropriate.
Scoping and EIA (Part 3 of Chapter 3 of the NEMA EIA Regulations, R385 of 2006)						
Pre-application planning	Appoints EAP, and may be advised by EAP to involve a biodiversity specialist either during the scoping phase and/or during the EIA phase.  When it is clear that there would be unavoidable and significant negative impacts on biodiversity, and the developer is intent on proceeding with a development application, it is probable that offsets would be required, <i>if appropriate</i> .		Undertake baseline biodiversity study/site assessment to identify key biodiversity issues and risks (including potential fatal flaws) and inform project planning proactively, so as to avoid and minimize negative impacts on biodiversity ('positive planning').	Where involved, provide specialist input to EAP in accordance with DEA&DP guidelines (Brownlie 2005)		To advise EAPs, developers on potentially significant impacts on biodiversity
Scoping and Scoping Report	To enable the consideration of all reasonable and feasible alternatives, and mitigation measures.	May ask applicant to consider reasonable and feasible alternatives, where alternatives appear not to be adequately investigated (refer to <b>decision support system</b> , Figure 10)	Identify, in part through public participation, the key biodiversity/ecosystem services issues and risks, and reasonable and feasible alternatives that would avoid or minimize negative impacts on biodiversity or ecosystem	Where involved, assist in identifying and evaluating the potential significance of key impacts (Figure 8 and Addendum 2), possible alternatives or changes to the proposal that would avoid or minimize impacts on biodiversity	Interested and affected parties may identify biodiversity or ecosystem services issues and propose alternatives to the proposed activity that	To advise EAPs, developers on potentially significant impacts on biodiversity of regional importance

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Process	Responsibility and tasks					
	Developer / proponent	Decision-making / competent authority	Environmental Assessment Practitioner	Specialist/s	Public representative	CapeNature (provincial agency)
			<p>services.</p> <p>Obtain biodiversity specialist input where impacts on biodiversity would potentially be significant. Figure 8 and Addendum 2</p> <p>The Plan of Study for EIA should describe the involvement of the biodiversity (and other) specialists, and the proposed scope of those specialist studies. Terms of Reference for these studies should be included where at all possible. Specialists should be required to adopt the methodology for evaluating significance of impacts on biodiversity provided in this guideline (Section 4.1.2).</p>	<p>and ecosystem services (refer to the DEA&amp;DP guidelines on involving biodiversity specialists in EIA processes, Brownlie 2005).</p> <p>May assist in fine-tuning Terms of Reference for more detailed studies during the EIA.</p>	would be reasonable and feasible.	
Draft EIA Report, EMP	Developer responsible for submitting draft EIA Report/EMP	<p>Considers application, evaluates whether an offset is appropriate, using <b>decision support system</b> (Figure 10)</p> <p>If the residual negative impacts on biodiversity or ecosystem services are of 'very high' significance, then biodiversity offsets would not be appropriate since they could not compensate for the loss of biodiversity, loss of ecosystem services and/or ecological integrity. <i>In exceptional cases only, where the proposed development would have substantial benefits to society as a whole, and there were no alternative ways in which these benefits could be obtained, then 'trading up' of offsets could be considered as a condition of authorization (refer to Section 5.2, Addendum 2).</i></p>	<p>Co-ordinates and integrates findings of specialist studies (biodiversity and, where appropriate, environmental resource economics/ social studies) into draft EIA Report / EMP.</p> <p><b>A clear statement should be made as to the need for, and appropriateness of, investigating offsets.</b></p>	<p>Assess and evaluate the residual significance of impacts of the proposed project on biodiversity and ecosystem services.</p> <p>The methodology for evaluating significance of impacts presented in this guideline should be used (refer to Section 4.1.2, Addendum 2).</p> <p>The methodology for evaluating the significance of potential impacts on biodiversity and ecosystem services must be described, and the degree to which the impact can be mitigated, reversed, and may cause irreplaceable loss of resources, must be stated.</p> <p>Where it is clear that, when all appropriate alternatives and effective and probable mitigation options have been adequately addressed, there would be residual</p>	May comment on the EIA process and specialist studies undertaken, and/or on the draft EIA Report/EMP	<p>To advise EAPs, developers on potentially significant impacts on biodiversity of regional importance</p> <p>Where the investigation of offsets is recommended, CapeNature to give formal comment on the need and appropriateness of looking into offsets.</p>

Process	Responsibility and tasks					
	Developer / proponent	Decision-making / competent authority	Environmental Assessment Practitioner	Specialist/s	Public representative	CapeNature (provincial agency)
		If offsets would be appropriate (refer to <b>decision support system</b> , Figure 10) then request EAP to investigate and evaluate the effectiveness and acceptability of potential offsets in compensation of residual impacts, as a separate study.	Integrate biodiversity specialist study findings into EIA Report and EMP.	<p>impacts on biodiversity or ecosystem services of 'medium' to 'high' significance, <b>recommend that offsets be investigated</b> as potential compensation. Residual impacts of 'very high' significance would represent a fatal flaw to the proposal. Residual impacts of 'low' significance would not require an offset (unless it were voluntary; Section 2.2.3).</p> <p>Assist in preparing an appropriate EMP to manage impacts on biodiversity and ecosystem services.</p> <p>Provide specialist input to EAP in accordance with DEA&amp;DP guidelines (Brownlie 2005)</p> <p>Advise on need and appropriateness of considering biodiversity offsets.</p>	May comment on proposal to investigate biodiversity offsets	Give guidance on the value of biodiversity loss and suitable types of compensation
Investigate offsets	Engage in identification and evaluation of potential offset sites, involve appropriate specialists to provide necessary advice (e.g. biodiversity specialists, environmental resource economist/ social specialist, legal expert, CapeNature (where stewardship agreements are an option), etc.)	<p>May request additional involvement of interested and affected parties in the offset design process.</p> <p>Require Offset Report (Section 6.1.)</p>	<p>Develop feasible offset project that would compensate for residual impacts on biodiversity and ecosystem services.</p> <p>Appoint biodiversity specialist to identify, evaluate, and advise on management of, the most appropriate offset/s. Liaise with proponent. Key stakeholders (particularly affected parties) should be given the opportunity to participate in identifying and evaluating potential offsets.</p> <p>Prepare Offset Report, with input from specialists (Section 6.1)</p> <p>Develop Offset Management Plan,</p>	<p>Give input on the specific characteristics of the biodiversity that would be impacted, and considerations that should inform identification of potential offset site/s. Where appropriate, work with social/socioeconomic specialist where there would be residual negative impacts on ecosystem services. Help identify potential offset areas that would compensate for residual impacts on both biodiversity and ecosystem services (in collaboration with environmental resource economist/social specialist, where appropriate). Refer to Figure 17</p> <p>Make explicit evaluation of the</p>	Should be involved in the identification and evaluation of potential offset sites when offsets are to be considered, and determine their likely acceptability as compensation.	Advise on the location and opportunities for optimum offset sites that could make best contribution to biodiversity conservation in the province, give input on site-specific issues and associated management, and identify any specific studies that should be undertaken.

Process	Responsibility and tasks					
	Developer / proponent	Decision-making / competent authority	Environmental Assessment Practitioner	Specialist/s	Public representative	CapeNature (provincial agency)
			where relevant, with specialist/s input (refer Section 6.2)  Integrate Offset Report and Offset Management Plan, where relevant, into EIA Report.	adequacy of the proposed offset/s in terms of fully compensating for residual negative impacts on biodiversity or ecosystem services (i.e. sufficient, or additional offsets required?).  Advise on required management of potential offset site/s.  Evaluate any impacts of securing and managing the offset site/s on biodiversity / ecosystem services.		
		May ask for specialist review of reports submitted	Offset Report and Offset Management Plan, where relevant, to be made available to key stakeholders for comment		May submit comment on reports	Review draft EIA Report and submit a formal statement on the adequacy (or otherwise) of the proposed offset to the competent authority.
	Negotiates offset with relevant parties.  Obtains in-principle agreement and drafts formal documents to secure, protect and manage offset	May provide support in identifying areas and owners			May be involved in offset negotiations,	May provide support in identifying areas and owners
Final EIA Report and proposed Environmental Management Plan (EMP)	Developer responsible for submitting final EIA Report and EMP	DEADP evaluates report.  Should ensure that a formal statement has been received from CapeNature on the adequacy (or otherwise) of the proposed biodiversity offset.	Offset Report and Offset Management Plan, where relevant, integrated into EIA Report and EMP. EIA Report and EMP submitted to authorities			
Decision on application		EIA Report and EMP are considered by decision-making authority, including consideration of the proposed offset (refer to			May appeal decision.	

Process	Responsibility and tasks					
	Developer / proponent	Decision-making / competent authority	Environmental Assessment Practitioner	Specialist/s	Public representative	CapeNature (provincial agency)
		<p><b>decision support system</b>, Figure 10).</p> <p>Authorization is granted or rejected. Conditions attached to Record of Decision (RoD) may include: requirements to secure offset or provide financial guarantees or management endowments prior to commencing project; compliance monitoring and auditing (s38 of EIA Regulations).</p>				
Project go-ahead and implementation of EMP	Parties to agreement negotiate and sign final offset contract, as appropriate depending on nature of offset option.					CapeNature engages with developer and decision making authority if offset falls under Stewardship Programme
Monitoring and audit	To monitor and manage offset site, submit performance audit at required intervals	DEADP provides guidance on good practice monitoring and auditing. Conditions stipulate frequency of auditing, reporting. May request adaptive or corrective action based on audit reports		Independent specialist may be needed for monitoring and audit review to ensure it complies with agreed Offset Management Plan and ROD.	May be involved in, or assist with, monitoring and evaluation of offset	May be involved in, or assist with, monitoring and evaluation of offset

### Addendum 5 : Selected examples of biodiversity offsets in South Africa<sup>87</sup> [Source: Expert opinion surveys, this study]

Proponent	Name of Offset	Status	Size of offset	Offset context
Anglo Coal	Isibonelo Off-Site Wetlands Rehabilitation	Project	Together the two wetlands to be rehabilitated (Dunns farm and Thubalihle wetlands) cover an area of 46 hectares	<p>Coal originates from wetlands. One of its precursors, peat, forms only in permanently saturated wetlands, where the decomposition of dead plant matter is retarded by low oxygen levels. The consequence of this relationship, still observed today, is the occurrence of shallow coal deposits in parts of the landscape that frequently still contains wetlands. Where this is the case, it is usually not possible to mine the coal using open cast methods, without destroying many hectares of wetland.</p> <p>The authorisation for mining near Kriel in Mpumalanga has introduced a new factor into the equation that might help balance out the destruction. In Mpumalanga, Anglo Coal is funding the rehabilitation of equivalent wetlands in the same catchments as wetlands that will be lost through a new open cast coal mine. It is the first time that such wetland offsite mitigation has been made a condition of mine authorisation.</p>
Mount Royal Golf and Country Estate	Renosterveld conservation area in the northern section of the development site and a Renosterveld Management Trust Fund.	Record of Decision	The fund is to the total of R 5.5 million	<p>The proposed development entails the upgrade of the existing 9-hole golf course into an 18-hole course, with residential (726 units) and commercial/tourism components. The proposed Mount Royal Estate (developed in four phases) totals 162.1 ha of which 30% is earmarked for development; the rest will be left for open space and the golf course.</p> <p>Authorisation has been granted in terms of Section 22 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) solely for the purposes of undertaking the activity referred to above. Renosterveld is given a 100% irreplaceability value (i.e. most remaining remnants is crucial for conserving a representative portion of this vegetation type), requiring that a conservation area be established in the northern section of the development site in accordance with the area identified by the specialist botanist, and must be rezoned to Open Space III and incorporated as a Contractual Nature Reserve into Cape Nature's Stewardship Programme, before construction of any of the dwellings commences. A Renosterveld Management Trust Fund must be established and used for the management of conservation areas within the development, as well as for three other Renosterveld sites within the Swartland Municipal Area.</p>
Ncandu, Newcastle, KZN	Ncandu dam properties	Project	1000 ha of land	<p>The Newcastle Town is building a dam for drinking water since it has already been estimated that in 2015 the town is likely to run out of water. It has already been established that the dam construction will result in the loss of biodiversity since 18 ha of land will be damaged by the construction.</p> <p>In exchange for flooding 18 ha of a provincial reserve, the proponent purchased over 1000 ha of the dam's catchment area, and set aside funds to manage this and the remaining area to control</p>

<sup>87</sup> Although these case studies do provide an indication of the possibilities of an offset system these should be interpreted as having taken place before the development of this guideline.

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Proponent	Name of Offset	Status	Size of offset	Offset context
				invasive plants. The 1000 ha of land will be handed over to Ezemvelo KZN Wildlife for conservation.
Pulp United , Bleached Chemi Thermo Mechanical Pulp mill, Empangeni, KwaZulu Natal	Wetland restoration	Project	A ratio of 10:1 recommended for offset	An Industrial Development Zone was established in an irreplaceable wetland grassland hotspot with numerous endemic and threatened species and habitats, and in a key ecological corridor. A specialist biodiversity survey identified a number of areas that could be restored back to Kwambonambi Grassland (less than 1% of this vegetation type left) and coastal wetlands. An "in principle" agreement between the Umhlathuze Municipality and Ezemvelo KZN Wildlife formed the basis of the Record of Decision for the development, whereby the loss of part of the corridor is to be offset by a conservation plan that includes the rehabilitation of agricultural or other land to serve in maintaining connectedness at critical points. A condition of the RoD is that construction may not commence prior to finalisation of that agreement. (No land was readily available and the municipality would need to purchase land (or go through a series of land swaps).
Mbombela Council, Nelspruit, Mpumalanga	Phumlani	Stalled proposal	Twice the area of the impacted site.	Area to be impacted was zoned as irreplaceable on the Mpumalanga Biodiversity Plan, and proponent had not considered alternatives. Proponent proposed to acquire a vacant site close by the proposed development, with an area almost double that of the planned site. A biodiversity similarity analysis of the two sites was undertaken and reflected an 85% overlap of species. Conservation agency was to manage that site. <i>[The Phumlani proposal has stalled since about 60% of the proposed development site comprises wetlands and cannot be developed, so offset will not take place!]</i>
Owners of Kingsburgh Shopping Mall, KZN	Kingsburgh Mall / Lovu estuary	Project	Management of forest on the Lovu estuary; size uncertain.	Proponent has agreed to fund the management of a forest on the Lovu estuary in perpetuity once the Mall is opened, to offset the Mall's impact on a stretch of coastal forest.
Nurture Park Development, Mossel Bay, Western Cape	Nurture Park / Diosma Reserve	Current initiative	Link from Diosma Reserve to Pinnacle Point Conservation Area on the coast	The offset is to act as an ecological corridor. At least 0.5% of the total turnover of the development, as well as a monthly levy towards the management of this corridor area. A trust fund to be established for these funds. Furthermore, all the rare species on the Nurture Park site must be rescued and planted in the <i>Diosma</i> Reserve and ecological corridor area. This rescue action must be carried out by an expert in the field of plant rescue at the developer's cost. A long-term environmental management plan must be compiled for the conservation area.
Anglo Platinum, Potgietersrust Platinums Limited, Limpopo	Mokopane Golf Course protected area and two farms	Proposal under consideration	The BBOP structural accounting approach, using a benchmark, is being applied to determine the size of offset. A range of socioeconomic approaches are being used to determine an optimum offset for impacts on livelihoods.	Mine is located on previously state-owned communal land. People dependent on fuelwood and biodiversity for livelihoods. Planning process ensure that two watercourses and a freshwater spring would be avoided. Mining expansion will impact 2,250 ha. Offset includes an area adjacent to Nylsvley Nature Reserve (Ramsar Site), plus 17 different habitat types on degraded farmland. About 2000 households will be affected by mine expansion; offset options to provide livelihoods are being explored by the mine and are the priority issue in considering offsets.