Western Cape Guideline on Biodiversity Offsets

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PLEASE NOTE: This guideline has amended and substantially expanded on the Final Draft Guideline, Edition 2, dated April 2007, prepared by Susie Brownlie, Mark Botha, Nick Helme and Hugo van Zyl, in turn a revision of a June 2006 version by Martin de Wit (De Wit Sustainable Options (Pty) Ltd), Frauke Münster (ERM Southern Africa (Pty) Ltd) and Terence Jayiya (Jaymat Enviro Solutions CC).

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Executive Summary

The concept of 'biodiversity offsets' is relatively new, and there is no standard method to determine 'the right' biodiversity offset. There is growing interest in offsets in South Africa and the national Department of Environmental Affairs is currently drafting a policy framework for biodiversity offsets. A draft guideline on biodiversity offsets was prepared in the Western Cape in 2005, revised in 2007 and published as an Information Document in 2011. This guideline revises and updates the latter.

The rationale for biodiversity offsets in the Western Cape is two-fold: firstly, the province contains exceptional 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 are compensated by applicants in such a way that biodiversity targets are not undermined, ecological integrity is maintained and development is sustainable.

Numerous 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 should best take place. 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 National Biodiversity Strategy and Action Plan (NBSAP)[1] and the National Biodiversity Framework explicitly recognize 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.

Biodiversity offsets could provide a useful tool to help meet provincial and national biodiversity targets. Biodiversity offsets are considered as the 'last resort' option in a hierarchy of possible mitigation measures, after measures have first been addressed to avoid or prevent, and then minimize, potentially significant negative impacts. Offsets may be considered to compensate for those remaining or 'residual' biodiversity impacts by securing priority habitat for biodiversity conservation in perpetuity and ensuring its effective management for a defined timeframe.

[1] Department of Environmental Affairs and Tourism 2005

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 fully known once all feasible and reasonable alternatives and mitigation measures have been addressed and evaluated.

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

- The applicant (acting on behalf of private shareholders or the State).
- The competent environmental authority (CEA, acting on behalf of the greater public).
- CapeNature (acting on behalf of biodiversity conservation in the province) and potentially SANParks where national protected areas could be affected.
- Environmental Assessment Practitioner (acting on behalf of the broader environment).
- Local and other competent authorities with an interest in, or affected by the project and/ or offsets (e.g. Department of Water and Sanitation; acting within their specific mandates).
- Specialists contributing to the EIA process (acting on behalf of the broader environment as it pertains to 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 of development, either by the State or private applicant, on biodiversity:

- When residual impacts on biodiversity are of 'very high' significance, offsets could not fully compensate for the loss of biodiversity and it is likely that the proposed activities would lead to loss of irreplaceable biodiversity or priority ecosystem services. That is, unless the 'need and desirability' of proposed activities is not in dispute, the 'no go' alternative should be selected. Where the project is deemed to be of overriding public interest and there are no reasonable and feasible alternatives that could avoid or minimize impacts, compensation for these impacts would be required in the form of priority areas secured and managed for conservation;
- When residual impacts on biodiversity are of 'moderate' to 'high' significance, offsets for biodiversity loss would be needed; and
- When residual impacts on biodiversity are of 'low' significance, there would be 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, amongst others:

- A Critical Biodiversity Area or Freshwater Ecosystem Priority Area, identified in a biodiversity or bioregional plan;
- Priority areas and/or core areas identified in biodiversity networks;
- Legally protected areas;
- A threatened ecosystem, habitat containing threatened species or special habitats, or an ecological corridor;
- A Coastal Protection Zone or setback area from the High Water Mark;
- An estuarine functional zone or within the buffer of a wetland or river system; or
- A Ramsar site or buffer of a World Heritage Site.

This guideline applies to all CEAs making decisions on applications for environmental authorization in terms of the National Environmental Management Act that affect biodiversity in the Western Cape.

The proposed biodiversity offset system in the Western Cape is based on compensation in the form of 'like or better' habitat. In some instances, monetary compensation may, however, be appropriate. Monetary compensation may comprise contributions to an accredited biodiversity conservation trust for the sole 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. For the practical purpose of a workable biodiversity offset system in the Western Cape, offset requirements are linked to biodiversity targets to meet provincial and national biodiversity conservation obligations.

Both the *size* and the *location* of biodiversity offsets in the landscape are important. Where appropriate, offsets 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 the size of an appropriate offset. Offsets are calculated by multiplying this measure by a basic offset ratio linked principally to the conservation status of the affected ecosystem, but also taking into account composite considerations namely:

- A 30:1 ratio for areas considered to be irreplaceable in terms of achieving biodiversity targets (e.g. Critical Biodiversity Areas) and for Critically Endangered ecosystems;
- From10:1 to 30:1 ratio for Endangered' ecosystems;
- From 1:1 to 4:1 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 impacted 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 ecosystem services with socio-economic or heritage value.

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 WCPSDF'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 Critical Biodiversity Area or Freshwater Ecosystem Priority Area, or area identified by CapeNature as being targeted for the expansion of protected areas. 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 than that affected by development is targeted as an offset) or monetary compensation;
- Determining the size and optimum location of the offset required to compensate for residual negative impacts on biodiversity;
- Checking the feasibility of securing offset site(s) and deciding on the best way to secure the offset: e.g. through the Stewardship Programme, conservation servitude, or as a donation to a statutory conservation authority (i.e. CapeNature or SANParks) or an accredited Public Benefit Organization;
- Reaching in principle agreement with landowners on the offset.

Although offset are the 'last resort' form of mitigation, in some instances the need to start thinking about offsets would become clear early on in the EIA process. The competent environmental authority must alert the applicant to any issues that may prejudice the application for environmental authorization and advise on any decision support tools that would be required for that authority to take a

decision. Potentially unacceptable biodiversity impacts, the need to consider all feasible and reasonable alternatives, and – in some cases – to start investigating offsets, could be raised in this early stage.

The Competent Environmental Authority or CapeNature, as the provincial biodiversity agency (in addition to other interested and affected parties), could call for biodiversity offsets during public participation in a Basic Assessment, Scoping or EIA process. In addition, they could comment on the proposed scope of specialist studies and the Terms of Reference for these studies (including offsets), and/ or on the adequacy of considering alternatives and proposed mitigation (including offsets), during these public participation stages.

Where biodiversity offsets are needed, an Offset Report must be included in either the Basic Assessment Report or Environmental Impact Report. The Offset Report contains information on the proposed offset and its location, its adequacy in fully compensating for residual negative impacts, how it would be secured and managed, the implementation arrangements and financial provision. This Report would need to contain enough reliable information to give assurance that an offset could be secured and would be successfully implemented.

Importantly, and tied to the introduction of the 'one environmental system' for in-parallel applications and decision making on a number of environmental aspects, collaboration between different competent authorities and integration of the different biodiversity offset requirements (e.g. the competent authorities for water use, forestry, agriculture, land use and environmental authorizations) are essential.

Should the application for environmental authorization be accepted conditional on an offset, then a detailed Offset Report and Offset Agreement would need to be prepared, together with an Offset Management Plan, providing details of how the offset site would be secured, financial requirements and provision, and implementation arrangements. These documents would need to be reviewed and accepted by CapeNature and the Competent Environmental Authority before the proposed activities could commence.

Checks on the implementation of offsets are essential; the performance of offsets needs to be audited and reported to CapeNature and the Competent Environmental Authority and, where appropriate, steps would need to be taken to ensure compliance with the conditions of environmental authorization, the contents of the detailed Offset Report and the Offset Management Plan.

Although this guideline focuses on the consideration of offsets within the standard EIA process leading to an environmental authorization, offsets could also be considered during the evaluation process of applications for remediation terms of s24G of NEMA.

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 the EIA process, ensuring that the party/ies responsible for environmental degradation remedy that harm.

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 biodiversity 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

*Alternatives**	• property on which or location where the activity is proposed to be undertaken; • type of activity to be undertaken; • design or layout of the activity; • technology to be used in the activity; or • operational aspects of the activity; • the option of not implementing the activity.
ASGISA	Accelerated and Shared Growth Initiative of South Africa
BAR	Basic Assessment Report
BBOP	Business and Biodiversity Offsets Programme
Biodiversity pattern	Structure and composition of ecosystems
Biodiversity process	Ecological processes and functions that sustain biodiversity
Biodiversity network ('bionet')	Core areas and interlinking ecological corridors contributing to a biodiversity plan within an urban edge and/or in a municipal spatial development framework
Biodiversity Management Plan	Plan aimed at ensuring the survival of a species or ecosystem not listed in terms of the NEM Biodiversity Act but that warrants special conservation attention (s43 of that Act)
Biodiversity Plan	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 (to 1:10 000), and including plans for mega-biodiversity corridors or areas (Greater Cederberg, Gouritz, Agulhas Plain, Baviaanskloof)
Biodiversity specialist	There is no one 'biodiversity specialist'. Rather, the term is used to cover a range of specialists in the field of biodiversity, from broad areas of expertise (e.g. plant or terrestrial ecologist, marine ecologist or freshwater ecologist) to narrow areas of expertise (e.g. mammalogist, herpetologist, avian specialist, ichthyologist, wetland specialist, specialist in marine algae, fungi or bacteria, etc.). The term also covers specialists with expertise in the functional attributes of ecosystems (e.g. nutrient cycling, carbon cycling)
Bioregional Plan	Plan adopted in terms of the NEM Biodiversity Act, highlighting Critical Biodiversity Areas, Ecological Support Areas and other natural areas. They are the biodiversity sector's input into SDFs, EMFs, SEAs and EIAs. They are based on systematic biodiversity plans developed using best available science. They are intended to inform land-use planning, environmental assessment and natural resource management by a range of sectors whose policies and decisions impact on biodiversity, and to support and streamline environmental decision-making.
CAPE	Cape Action for People and the Environment
CBA	Critical Biodiversity Areas; sites selected to be the most efficient configuration in the landscape for meeting biodiversity targets of representivity and persistence. CBAs hat 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.
CBD	Convention on Biological Diversity
CEA	Competent Environmental Authority (DEA&DP, DMR, DEA)
CFR	Cape Floristic Region
Compensate	Make amends for, provide redress, make reparations, pay back and remedy.
Conservation servitude	Legally binding provision or obligation on property for conservation purposes
*Cumulative impact**	Past, current and reasonably foreseeable future impacts of an activity, considered together with the impact of the proposed activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities
DAFF	Department of Agriculture, Forestry and Fisheries

DEA&DP	Department of Environmental Affairs and Development Planning
DEA	Department of Environmental Affairs (erstwhile 'and Tourism, DEAT)
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
Ecological integrity	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
Ecological processes	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.
Ecosystem	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).
Ecosystem services	The benefits to society in general and communities in particular provided by ecosystems; or 'the components of nature, directly enjoyed, consumed or used to yield human wellbeing"[2]. *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*
Ecosystem status	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.
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
Environmental authorization	Decision taken by the competent environmental authority in terms of the NEMA EIA regulations (see below)
Environmental economy	An economy where ecosystem system goods and services are mainstreamed, building on the recognition that healthy ecosystems underpin healthy economies. Biodiversity is an important contributing factor to ecosystem functioning, and ultimately the provision of goods and services of socioeconomic value to society.
ESA	Ecological support area; sites not explicitly targeted for biodiversity pattern or process, but which underpin the delivery of key ecosystem services or goods (e.g., water) and whose basic structure and ecological function thus require protection.
Fatal flaw	A major defect or deficiency in a project proposal that should result in authorization being refused
FEPA	Freshwater ecosystem priority area
Fine-scale plans	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
Habitat	Natural area that forms part of a broader ecosystem
I&AP	Interested and affected party
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
Mitigation	A hierarchy of possible measures to ***avoid, minimize, rehabilitate*** and/or ***remedy*** negative impacts (e.g. NEMA s2 principles). Anticipation and prevention of negative impacts and risks, then minimization, rehabilitation or 'repair' (NEMA 2014 EIA Regulations)

[2] DH Landers and Nahlik AM. 2013.

NBA	National Biodiversity Assessment (Driver *et al* 2012)
NBSAP	National Biodiversity Strategy Action Plan
NEM	National Environmental Management
NEMA	National Environmental Management Act 107 of 1998
NEM Biodiversity Act	National Environmental Management Biodiversity Act 10 of 2004
NEMA EIA regulations	R982-R985 of 4 December 2014, in terms of Chapter 5 of the National Environmental Management Act 107 of 1998
NEM Protected Areas Act	National Environmental Management Protected Areas Act 57 of 2003
NFEPA	National Freshwater Ecosystem Priority Areas
NPO	Not for Profit Organization
NSBA	National Spatial Biodiversity Assessment 2004 (Driver *et al,* 2005)
Offsets	Measures to compensate for residual negative impacts, once the first three groups of measures in the mitigation hierarchy have been adequately and explicitly considered (i.e. avoid, minimize and rehabilitate/ restore impacts). Offets are seen as the 'last resort' form of mitigation.
'Out of kind' offsets	Offsets not targeting the same habitat as the one affected, but a different habitat. 'Trading up' is one of these offsets.
PBO	Public benefit organization in terms of the Income Tax Act 58 of 1962
PGDS	Provincial Growth and Development Strategy
Protected Area	Area declared as such in terms of Chapter 3 of the NEM Protected Areas Act
Protected Ecosystem	Ecosystem declared as such in terms of s52(2)(d) of the NEM Biodiversity Act
PSDIP	Provincial Sustainable Development Implementation Plan
Remedy	To solve, correct, counteract or improve.
Rehabilitation	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)
Repair	To restore to a sound or healthy state; to make good or compensate for.
Residual impacts	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), in order to avoid, minimize, and/or rehabilitate negative impacts on, amongst others, biodiversity. That is, after consideration has been given to the ***first three measures*** in the mitigation hierarchy.
Restoration (of an ecosystem or its habitat)	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.
S&EIR	Scoping and Environmental Impact Report
SANBI	South African National Biodiversity Institute, established in terms of the NEM Biodiversity Act
SANParks	South African National Parks
SDF	Spatial Development Framework
Securing (an offset)	Acquiring an appropriate offset and protecting it in perpetuity
*Significant impact**	An impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds or targets
SKEP	Succulent Karroo Ecosytem Plan
Spatial component of ecological process	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)

STEP	Subtropical Thicket Ecosystem Plan
Stewardship Programme	Programme co-ordinated by CapeNature to recognize and co-ordinate conservation outside state-owned protected areas by providing statutory protection, standards and management guidelines for private conservation initiatives
Sustainable	Use of biological resource in a way and at a rate that would not lead to its long-term decline, would not disrupt the ecological integrity of the ecosystem in which it occurs and would ensure its continuted use to meet the needs and aspirations fo present and future generations of people (NEM Biodiversity Act, s1)
Threatened ecosystem	Threatened ecosystems are listed in terms of the NEM Biodiversity Act 2004, using the following categories. Critically Endangered, Endangered, Vulnerable
ToR	Terms of Reference
'Trading up'	Offsets target an ecosystem of greater vaue or priority to biodiversity conservation from the one being impacted.
WCPDC	Western Cape Provincial Development Council
WCPSDF	Western Cape Provincial Spatial Development Framework (2014)

* *NEMA 2014 EIA Regulations definition*

1. BACKGROUND

Sustainable development is defined as 'development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs and aspirations'[3], or as 'improving the quality of human life while living within the carrying capacity of supporting ecosystems'[4]. Sustainable development thus places value on the integrity of the natural environment and social equity alongside economic development, future as well as current generations, and the poor as well as the rich. Internationally, the role and value of natural systems in enabling social and economic development and providing insurance for adaptation in the face of global climate change, has been highlighted in recent years (e.g. Millennium Ecosystem Assessment[5]).

It is increasingly realized that conservation of the natural environment or 'natural capital' is important if the Millennium Development Goals and sustainable development are to be achieved. This observation applies in South Africa as a whole and in the Western Cape in particular. The National Development Plan states that we are entering a period of 'ecological deficit' and identifies the need for 'significant investment in conserving, rehabilitating and restoring natural ecosystems', as well as to 'internalize externalities'[6]. The Western Cape's State of the Environment Report (SoER, 2013) notes that there is an 'overall declining outlook' for biodiversity and ecosystem health, because of the continuing loss of biodiversity and general decline in the quality of ecosystems and the goods and services they provide. This SoER states that while the natural systems can still sustain the current levels of social development and economic activity, the socio-economic gains being made currently are at the expense of our natural resources. It concludes that 'more needs to be done to protect critically sensitive or important environmental features, and the ability of the region to adapt to impacts from climate change is uncertain'. Biodiversity offsets provide one of the most important mechanisms to achieve this.

The value of biodiversity and ecosystem services in Southern Africa in general[7], and the Western Cape in particular, in the context of sustainable development

The Southern Africa component of the Millennium Ecosystem Assessment reported that:

- There is a high correlation between environmental sustainability and human wellbeing.
  - *Human health depends on clean water and air.*
  - *Water resources are unevenly distributed in southern Africa.*
  - *Poor water quality is linked to diseases.*
  - *Air pollution causes health problems.*
  - *The ability to fight infection is linked to nutrition and the environment.*
  - *Protein nutrition is particularly serious in the region.*
- Climate change projections for southern Africa point to a far drier region, with mean annual temperatures 2-5°C warmer in 2050 than in 1990. The changing conditions will have major impacts

[3] World Commission on Environment and Development, 1987

[4] Caring for the Earth: A Strategy for Sustainable Living" by the World Conservation Union (IUCN), the United Nations Environment Programme and the World Wide Fund for Nature, 1991

[5] e.g. Report of the IUCN Renowned Thinkers Meeting, 29-31 January 2006 on re-thinking environment and development in the twenty-first century; UNDP, UNEP, The World Bank and World Resources Institute 2005: The Wealth of the Poor: managing ecosystems to fight poverty.

[6] The NDP (vision for 2030), prepared by the National Planning Commission I 2011, recognizes a history of systemic market failures derived from the failure to internalise environmental and social costs of development. The internalization of external costs is a guideline principle in Chapter 5 of the NDP.

[7] Scholes and Biggs 2004

on natural vegetation, water, agriculture, fisheries and forestry.

- Forests and woodlands are being cleared at a rate exceeding re-growth.
- Overstocking and overfishing are major problems in the region.
- The greatest potential for limiting biodiversity loss is through preventing degradation of semi-natural ecosystems used outside of protected areas.
- At least 4 of the 8 Millennium Development Goals will not be met in the region unless attention is given to stabilizing ecosystem services. These Goals are: reducing hunger; reducing child mortality; combating diseases; and ensuring environmental sustainability.
- Livelihoods are often linked directly or indirectly to ecosystem services:
  - *Water is central to livelihood security;*
  - *Fisheries (both freshwater and marine) are a main source of income and protein;*
  - *Game meat and wild plants provide medicine and food;*
  - *Natural vegetation provides grazing for livestock;*
  - *Wood provides fuel and building materials;*
  - *Nature-based tourism generates income;*
  - *Soils underpin agriculture;*
  - *Seas, coastlines and coastal ecosystems provide food and protect the shoreline.*
- Biodiversity has direct economic and wellbeing value through the provision of medicines.
- Maintaining ecosystem services requires effective institutions and governance.
- Nature-based tourism, dependent on unspoiled landscapes, is growing three times faster than agriculture or forestry and forms a significant part of the regional economy.

The total annual value of ecosystem services in the Cape Floristic Region is estimated to be about R10 billion (2000 figures), equivalent to over 10% of South Africa's Gross Geographic Product[8].

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 minimized and remedied. In certain instances the need exists to explore mechanisms to offset or compensate for unavoidable, residual impacts on biodiversity.

Important to note: biodiversity offsets and sustainable development

Offsets are seen as a 'last resort' form of mitigation for significant negative impacts: the **'first prize' when considering development is to apply the mitigation in such a way that there are no significant negative impacts and thus no requirement for biodiversity offsets.**

This guideline focuses on the regulatory side of offsets to safeguard biodiversity and ecosystem goods and services for sustainable development and future generations. However, it must be noted that offsets are but one of a range of policies and planning strategies aimed at safeguarding biodiversity

[8] Turpie *et al* 2003

and natural ecosystems for conservation (Table 3, Section 4.3), in recognition of their value to society.

This guideline therefore stresses the importance for sustainable development of a ***positive planning process*** that focuses on avoiding/minimizing negative impacts on areas that are either priorities *for biodiversity conservation* and/or natural areas that deliver *ecosystem goods or services of socioeconomic or heritage value*. Where residual negative impacts on these areas are unavoidable, however, biodiversity offsets present a way to compensate society for these impacts.

The concept of 'biodiversity offsets' is relatively new. 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 competent environmental 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***:

- The legal system must explicitly provide for, and support, biodiversity offsets as a recognized means for applicants to compensate for residual negative impacts on what is a public asset[9];
- A stable and thus predictable policy and planning framework needs to be in place;
- Biodiversity offsets need to be integrated into the broader context of compensation in general, in order to streamline, enable co-operation between, and maximise the efficiency of the various offset systems in land use planning and development authorization;
- Receiving areas where offsets would achieve the maximum benefit for biodiversity conservation need to be clearly identified, and that information needs to be easily accessible and/or made known;
- The security and transferability of offsets need to be guaranteed;
- Development authorizations for residual biodiversity impacts of 'moderate' to 'high' significance need to become increasingly dependent on offsets being secured;

[9] The State, in fulfilling the rights contained in s24 of the Constitution, is the trustee of South Africa's biodiversity, and must manage, conserve and sustain that biodiversity for the public now and in future.

- Financial and other incentives for conservation and restoration need to be integrated into a system of offsets;
- Conservation of biodiversity and associated ecosystem services needs to be steadily integrated into the market-place;
- The institutional capacity of competent environmental authorities (CEAs) 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 Reports (BARs) or Scoping and Environmental Impact Reports (S&EIRs) proposing offsets to compensate for residual negative impacts on biodiversity, and to advise the CEA;
- A register of biodiversity offsets must be established and regularly updated as the benchmark for tracking the effectiveness of offsets as a form of mitigation in the Western Cape, and to ensure that there is no 'double dipping' (multiple claims on the same area as an offset site);
- A record, analysis and evaluation of cases in the Western Cape where biodiversity offsets have been required is important as a basis from which lessons can be learned and the offset system improved; 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 biodiversity targets, and the effectiveness of the offset system.

2. INTRODUCTION

This section addresses the following questions:

- What is meant by 'biodiversity' and 'ecosystem services'?
- What are biodiversity offsets?
- What are the main approaches to biodiversity offsets?
- Actions that are not offsets

In addition, it explains the structure of this Guideline.

There is growing interest in offsets in South Africa and the national Department of Environmental Affairs is currently drafting a policy framework for biodiversity offsets. A draft guideline on biodiversity offsets was prepared in the Western Cape in 2005, revised in 2007 and published as an Information Document in 2011. This guideline revises and updates the latter.

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)

To conserve biodiversity requires conservation of both the biodiversity pattern and process.

''**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) [10].

Conserving processes requires a significantly larger proportion of the landscape than is needed to represent biodiversity pattern.[11] 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 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)*
- *Minimum Requirements for Incorporating Biodiversity Considerations into Land-use Planning and Integrated Environmental Management (in prep. DEA 2015)*.

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). Biodiversity is not itself an ecosystem service. Rather, it underpins the supply of ecosystem goods and services. The value some people place on biodiversity for its own sake would be captured under 'cultural', 'non-consumptive use' value or non-use value services.

[10] Rouget *et al*., 2003.

[11] Pressey *et al.*, 2003.

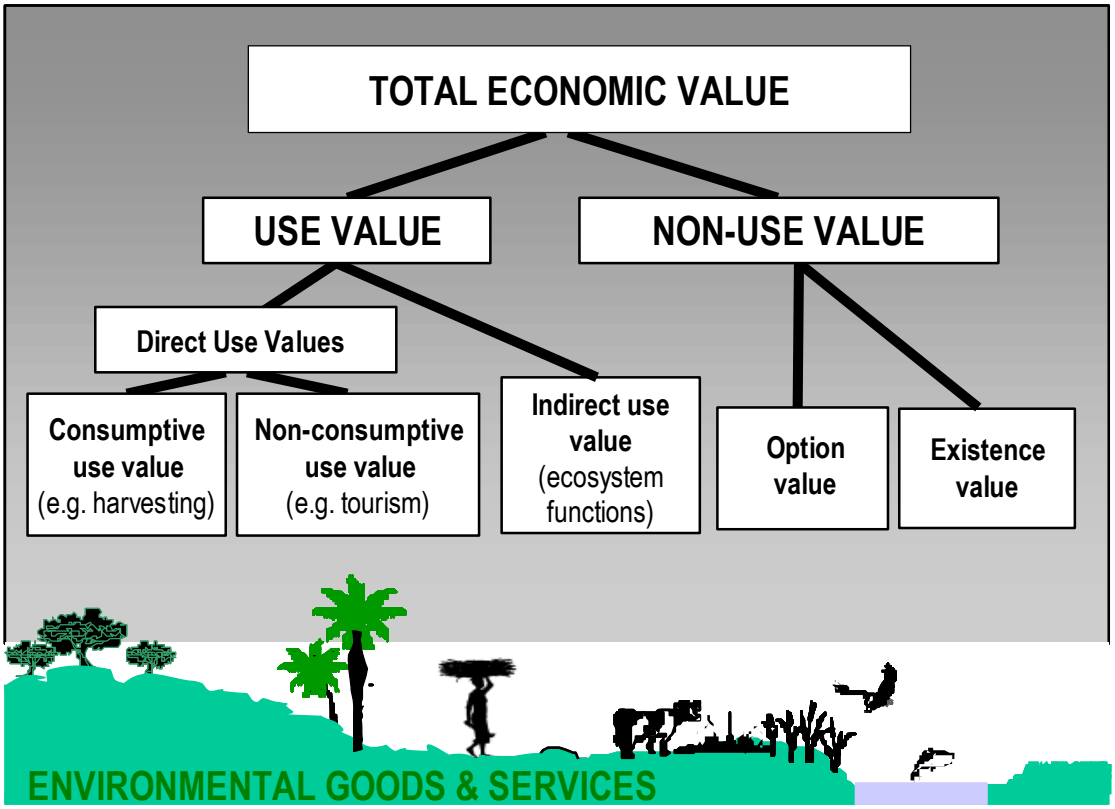


Figure 1 : Value categories making up total economic value (after Turpie *et al 2001)*

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, water purification, nutrient retention, fish nursery grounds, 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?

In simple, practical terms, providing a biodiversity offset to compensate for negative impacts on biodiversity that remain after mitigation measures have been taken into account could comprise one or more of the following:

- Securing habitat for conservation either on the development site or away from the development site;
- Providing a financial guarantee up-front for a specified period of time during which the proponent could pursue the securing of habitat for conservation; should the proponent fail to secure habitat during that period, the financial guarantee would be used by the State or designated organization to secure habitat; or
- Providing monetary compensation in exceptional cases.

These different offsets are described in Section 7.6 of the guideline.

2.2.1 Definitions

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

'the measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development[12] *after appropriate prevention and mitigation measures have been taken. The goal of biodiversity offsets is to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure, ecosystem function and people's use and cultural values associated with biodiversity*[13].

Biodiversity offsets provide a mechanism to compensate for residual negative impacts on biodiversity ***after*** an applicant 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 rehabilitate associated impacts. That is, offsets are seen as a last resort option in the mitigation hierarchy (see Figure 2).

[12] While biodiversity offsets are defined here in terms of specific development projects (such as a road or a mine), they could also be used to compensate for the broader effects of programmes and plans.

[13] The international Business and Biodiversity Offset Programme (BBOP)'s Standard for Biodiversity Offsets (2012).

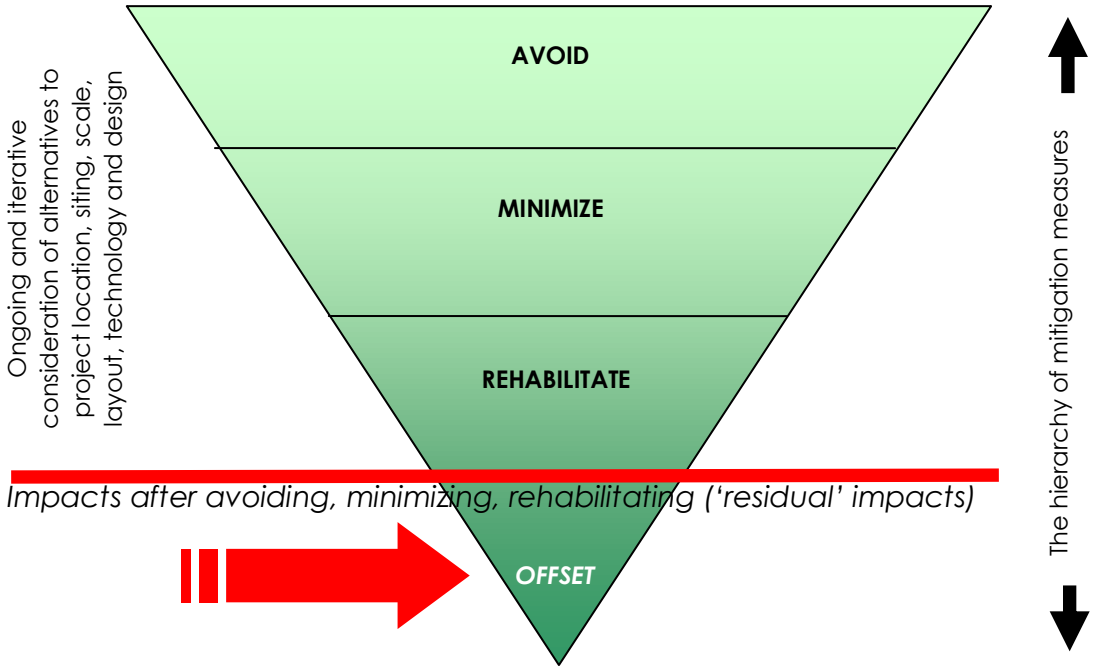


Figure 2 : Offsets to compensate for the residual negative impacts on biodiversity: the 'last resort' in the mitigation hierarchy

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

Internationally, and drawing on the Business and Biodiversity Offsets Program (BBOP) there are four main approaches to offsetting residual negative impacts:[14]

1. Re-creating or fully restoring lost habitat.
2. Improving the management of degraded areas e.g. by removing alien and invasive species, controlling predation, re-introducing native species, improving fire management, etc.
3. Averting risk of imminent or projected loss of biodiversity by securing areas for protection and effective management in perpetuity.
4. Averting risk of imminent or projected loss of biodiversity by reducing or removing the underlying causes of biodiversity loss in an area, e.g. through working with communities to support sustainable livelihoods, to achieve 'on the ground' gains for conservation.

The focus of biodiversity offsets is to provide an *'in kind', or* ***'like for like'*** area of the same habitat structure, species composition and ecological function to compensate fully for that lost or negatively affected by development, and/or result in an overall improvement in biodiversity conservation.

Offsets that do not involve securing and managing habitat but include funding research, education, staffing (etc), are generally believed not to compensate adequately for residual impacts on biodiversity

[14] Business and Biodiversity Offsets Programme (BBOP). 2012. Offset Design Handbook.

since they do not compensate for the loss of habitat, the biggest single cause of biodiversity loss in the province. Currently, there are two main approaches to determining biodiversity offsets, namely a ratio-based and adjusted approach[15], and the 'accounting' approach described in the Business and Biodiversity Offsets Programme (BBOP) which uses specific metrics and is used in a number of countries.

Important: 'In kind', 'out of kind', 'trading up' and 'trading down'

Offsets exchange loss of a particular type(s) of biodiversity with commensurate gains or benefits to that same type(s) of biodiversity; a 'like for like' and 'in kind' swap. In exceptional cases, targeting biodiversity with greater conservation significance (i.e. more threatened or a higher priority), may be justifiable, e.g. if it were to have greater conservation benefit from a strategic perspective.

For offsets to withstand legal scrutiny there must be a clear link between the impacts of the proposed activity and the offset activity. In cases where 'trading up' is being considered it would be important to provide strong motivation (e.g. no suitable area of the same or proxy habitat available) setting out the relationship between the offset and impacted habitat and to justify targeting that habitat rather than the same habitat as that affected by development.

*'**Trading down**' or providing a biodiversity offset that targets biodiversity of a different type from that residually impacted with lower biodiversity value or conservation significance is **strictly prohibited**.*

Where residual impacts on biodiversity could not be fully compensated by offsets (i.e. where there would be irreplaceable loss of biodiversity, e.g. through loss of Critically Endangered habitat or population of species, or erosion of Critical Biodiversity Areas) but projects are authorized for reasons of overriding public importance, then compensation should be made through securing and managing another type of priority biodiversity. This exchange would be 'out of kind'.

Monetary payment to an appropriate implementing agent *in lieu* of securing physical habitat may be considered in exceptional situations, for the sole and explicit purpose of securing suitable habitat.

2.2.3 What actions are not offsets

Voluntary protection and management of habitat for biodiversity conservation purposes might be proposed by an applicant as an integral part of the project proposal where that habitat could make a contribution to biodiversity conservation objectives in the province, and where the landowner is amenable to doing so. In instances where 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, it would ***not*** constitute an offset. However, where 'set asides' on the project site are clearly linked to the need for impact mitigation, would be secured and managed in the long term, and could have major benefits for biodiversity conservation, they could be proposed as a biodiversity offset.

'Search, rescue and relocation'-type actions in mitigation of negative impacts on biodiversity **do not** constitute offsets, since they do not compensate for net loss of habitat for threatened species or impacts on the affected population. However, they would form part of the mitigation hierarchy in terms of striving to 'minimise' residual negative impacts on threatened species.

[15] e.g. Government of South Australia (2005).

2.2.4 Scope of application of offsets

Biodiversity offsets would be required of any development in any sector where significant impacts on biodiversity and/ or ecosystem services were predicted, regardless of the proponent of that development. That is, the requirement for offsets would apply equally to State (i.e. government departments) or to private sector applicants.

The Department of Agriculture, Forestry and Fisheries may require biodiversity offsets in terms of their Policy Principles and Guidelines for Control of Development Affecting Forests, as may the Department of Water and Sanitation. In addition, it is conceivable that local planning authorities may require offsets. It is important that there is collaboration between these different competent authorities in calling for biodiversity offsets, to avoid duplication and/ or conflicting positions.

2.3 Structure of this guideline

The guidelines address the following key aspects of biodiversity offsets:

- Biodiversity offsets in the Western Cape are covered in **Section 3**.
- The legal, policy and planning framework wherein offsets operate is given in **Section 4**.
- **Section 5** introduces biodiversity-inclusive EIA, impact significance and the appropriateness of considering offsets.
- **Section 6** covers biodiversity offsets in NEMA EIA processes.
- Guidance on the design of a biodiversity offset is provided in **Section 7**.
- **Section 8** gives guidance on the contents of the Offset Report and Offset Management Plan.
- **Section 9** concludes this guideline and **Section 10** provides a bibliography on biodiversity offsets.

3. BIODIVERSITY OFFSETS IN THE WESTERN CAPE

This section addresses the following issues:

- Biodiversity in the Western Cape, the global and national context and challenges for conservation;
- Designing a biodiversity offset system for the province;
- Core principles for biodiversity offsets; and
- The objective and desired outcome for biodiversity offsets in the Western Cape.

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 is home to more than more than 13,000 plant species of the Cape Floristic Region (CFR) which is almost completely contained within the provincial borders. New plant and animal species continue to be described in the province and there is a growing recognition that there is more animal diversity represented in the province than previously thought[16].

[16] Turner, A. A. (ed.) 2012.

- It has 56% of South Africa's plant taxa in only 11% of the country's land area and 17% of Africa's plant taxa in 0.24% of Africa's land area[17].
- 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.
- The Western Cape has the highest number of threatened and endemic freshwater fish species in SA; they are the most threatened group of vertebrates in this province, with 70% considered threatened [18].
- Many of the plant species (6776) found in the province have small and restricted ranges and are local endemics. 1709 plants are 'threatened', with 296 being Critically Endangered and 575 being Endangered and 801 Vulnerable; 1695 of these threatened species are endemics[19]..
- Indications that the status of threatened species is declining and biodiversity and ecosystem health continues to decline as key drivers of change (land-use change, climate change and alien invasive species) show no sign of decreasing (South Africa's Fourth National Report to the Convention on Biological Diversity, 2009) [20]
- 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[21]. These highly threatened ecosystems are poorly protected. Of the seven Critically Endangered renosterveld types identified by the NSBA, five are 'hardly protected'[22].
- Of the 156 terrestrial ecosystems in the Western Cape, 54 (more than one third) are threatened. Of these, 19 are Critically Endangered, 16 are Endangered and the remaining 19 are Vulnerable[23]. There are 6 endangered and 9 vulnerable ecosystems that have no official conservation protection, and certain biodiversity targets that are now impossible to reach[24].'
- Rivers and wetlands are highly threatened; 45% and 71% of our river and wetland ecosystem types in the Western Cape are threatened. If only 17 % of FEPAs were protected, all Western Cape endangered (including critically endangered) fish species could be protected[25].
- According to the NBA, many of the coastal and inshore habitats of the Western Cape are threatened[26].
- Major threats are seen to be invasive alien plants and animals. The suite of these species is growing and posing significant problems. [27]

While there have been important gains for conservation in recent years, largely coinciding with CBAs and in poorly protected ecosystems, ongoing loss of existing CBAs is a concern: less than 91% of the Western Cape Province's CBA footprint is currently intact, with about 2.5% of all severely or irreversibly modified areas falling under agricultural land-use and approximately6.65% modified by other land-uses. Also, a number of ecosystems now have a higher threat status than reflected in the 2011 Listed Threatened Terrestrial Ecosystems, and 40 vegetation types do not meet their biodiversity targets[28].

The Province's biodiversity is one of the key enabling factors for socio-economic development in the Western Cape[29]. The 2014 provincial Spatial Development Framework recognizes that 'the Western

[17] Western Cape State of Biodiversity 2007
[18] Turner, A. A. (ed.) 2012.
[19] Western Cape State of Environment Report (2013), DEA&DP
[20] Turner, A. A. (ed.) 2012.
[21] Von Hase *et al* 2003
[22] Driver *et al* 2005
[23] Pence et al 2014.
[24] Western Cape State of Environment Report (2013), DEA&DP
[25] Western Cape State of Environment Report (2013), DEA&DP
[26] Driver et al 2012.
[27] Turner, A. A. (ed.) 2012.
[28] Pence et al 2014.
[29] See *Towards a Sustainable Development Implementation Plan for The Western Cape* (WCPDC/DEA&DP, 2005).

Cape's biological diversity underpins livelihoods, the Province's economy and the provision of ecosystem services (e.g. water purification, crop pollination)', and that spatial continuity and connectivity of the biodiversity network strengthens its resilience. A guiding principle in this SDF is that of sustainability and resilience: land development should be spatially compact, resource-frugal, compatible with cultural and scenic landscapes, and should not involve the conversion of high potential agricultural land or compromise ecosystems. 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. 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[30]. 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. Once ecosystems have become threatened, the opportunities for securing sensibly configured nodes and corridors of natural habitat are much reduced.

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 interdependence of economic growth, social equity and the conservation of that biodiversity and those ecosystem services (Section 4.3). 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.

The Western Cape's State of the Environment Report (SoER, 2013) notes the 'declining outlook' for biodiversity and ecosystem health; one of strategic goals of the of the Provincial Strategic Plan 2014-19 is 'enhanced management and maintenance of the ecological and agricultural resource-base'. According to the Western Cape's PSDF, key provincial resource management challenges include the consolidation of remaining critical biodiversity areas and securing of lowland – upland ecological corridors to mitigate against climate change risks.

[30] Provincial Urban Edge Guideline (DEA&DP 2005d)

Figure 3 ¨Draft Priority Climate Change Adaptation Corridors (Source: Western Cape Provincial Spatial Development Framework, Final Report, March 2014).

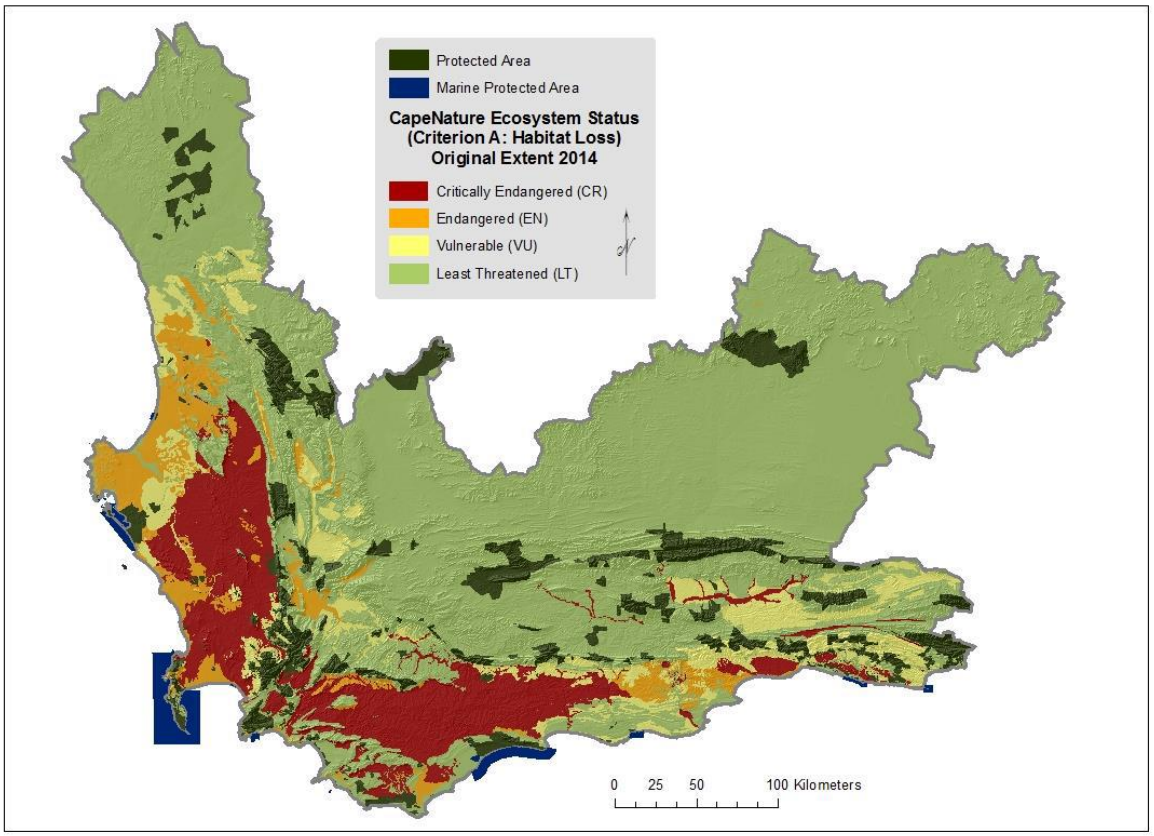


Figure 4 : Map of Ecosystem Threat Status for the Western Cape (Source: Pence *et al* 2014)

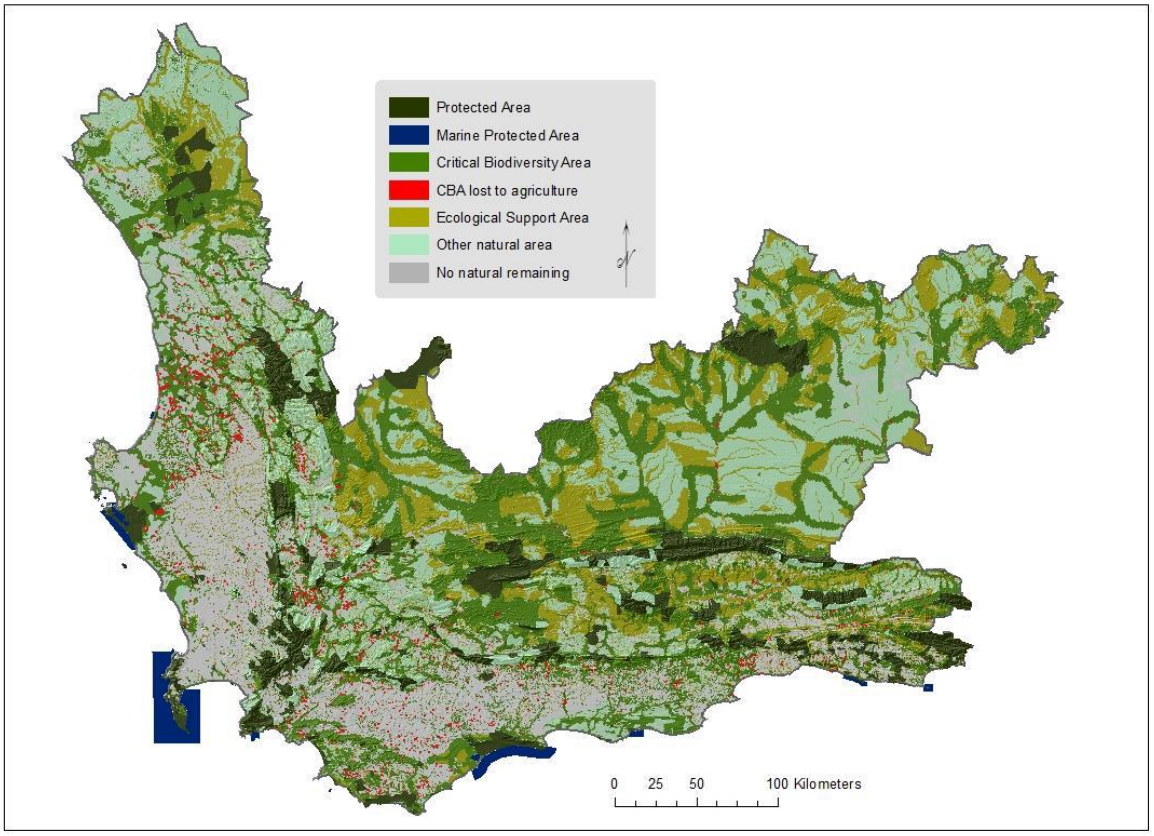


Figure 5 : Updated Critical Biodiversity Area (CBA) Map of the Western Cape Province (Source: Pence *et al* 2014)

3.2 Towards a system of biodiversity offsets in the Western Cape

The transformation of our natural environment has made it apparent that drastic measures need to be introduced in order to save the Province's unique biodiversity for future generations. A biodiversity offset system is one approach towards ensuring sustainable development in the Province, and can contribute to achieving the Provinces' vision of transforming into an "environment economy".[31]

Important to note: is the 'no net loss' objective realistic in the Western Cape?

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.

[31] 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 goods and services of socioeconomic value to society (see Eftec, 2005).

The amount of biodiversity in the Western Cape is finite and of global value. In some ecosystems of the world, restoration[32] 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, 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[33]. 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[34]. 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 curbing of the spread of alien invasive species – a key cause of degradation of habitat in the Western Cape – is a requirement of the NEM Biodiversity Act's alien and invasive species regulations (2014). That is, 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 focuses on actions that conserve existing intact biodiversity as the people's common heritage, as well as improving its management, is deemed optimum in this Province.

Figure 6 shows a broad approach to considering biodiversity offsets in the Western Cape.

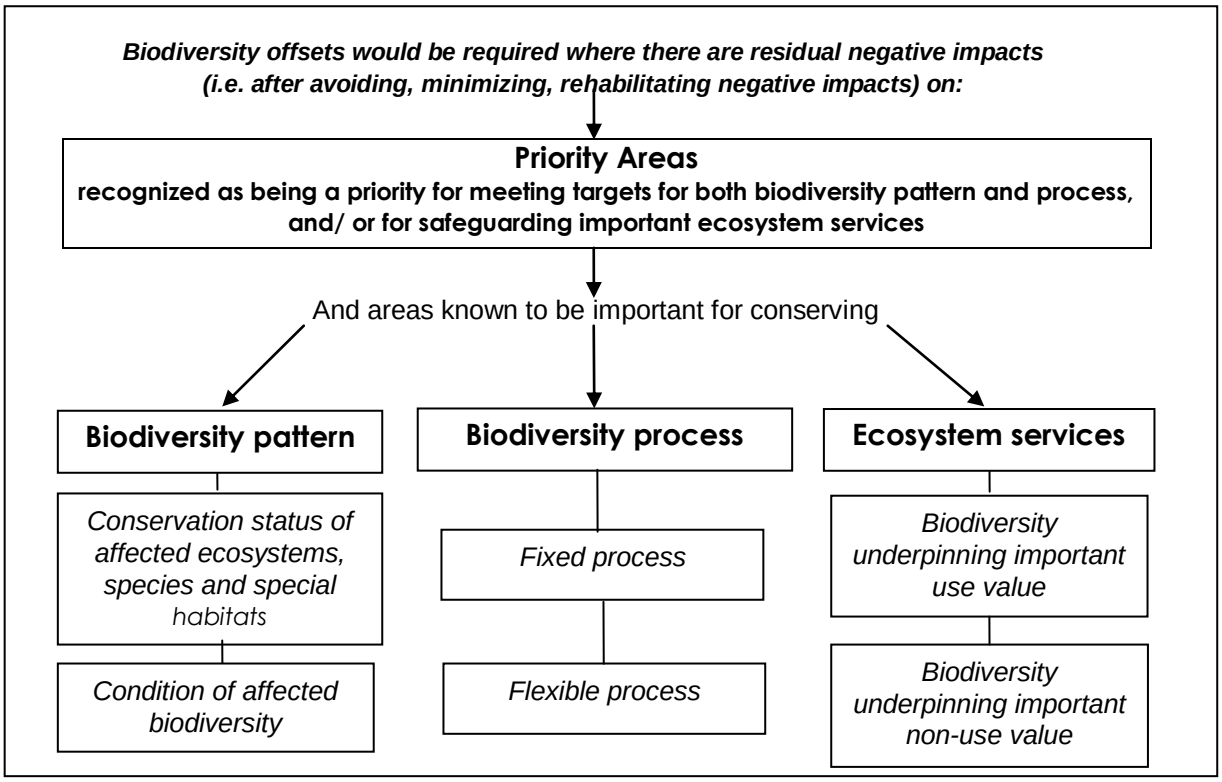


Figure 6 : Broad approach to considering biodiversity offsets in the Western Cape

[32] 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.

[33] 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).

[34] DeVilliers *et al* 2005

3.3 Principles for biodiversity offsets

The following principles underpin biodiversity offsets in the Western Cape; they are consistent with the principles in the draft national policy framework for biodiversity offsets in South Africa drafted in 2012[35]:

1. The Ecosystem Approach

Biodiversity offsets take an 'ecosystem approach' to biodiversity conservation which promotes the integrated management of land, water and natural capital to achieve conservation and sustainable use of biodiversity. This approach recognizes the interdependence between biodiversity, ecosystems and the benefits they provide for people through use and cultural values. It takes a landscape-scale, rather than a site-specific scale, view, to enable consideration of cumulative impacts.

2. Offsets - the last resort in the Mitigation Hierarchy

Biodiversity offsets should only be considered as a mitigation option once all feasible actions and alternatives first to avoid or prevent impacts on important biodiversity, then to minimize impacts, and then to repair or rehabilitate areas harmed by impacts, have been taken into account.

3. Limits to what can or should be offset

Biodiversity offsets are to be used in cases where the EIA process identifies negative residual impacts of 'medium' or 'high' significance on biodiversity. Activities resulting in impacts of 'low' significance may not require an offset.

Impacts on biodiversity of 'very high' significance may not be able to be fully offset because of the conservation status, irreplaceability, or level of threat to affected biodiversity, or the risk of preventing scientific targets for conserving that biodiversity from being met. In these cases, given that the proposed activity would lead to irreversible impacts and irreplaceable loss of biodiversity, alternatives to the proposal should be sought; i.e. the proposed activity should not be authorized in its current form.

4. Habitat contribution 'on the ground'

Biodiversity offsets should ensure the long-term protection of priority habitats on the ground and improve their condition and function, thereby resulting in measurable positive outcomes for biodiversity conservation 'on the ground'. These outcomes could contribute to improved ecosystem integrity and increased use and/ or cultural value of offset areas and the ecosystems of which they are part.

5. No Net Loss up to specified limits of acceptable change

Offsets should not be used to 'soften' a development proposal that would result in unacceptable loss of biodiversity. Biodiversity offsets should be designed in such a way that scientific targets for conserving ecosystems and other biodiversity features in the long term are attainable and not undermined as a consequence of the proposed activity. No biodiversity feature or ecosystem should be at risk of being pushed beyond an Endangered threat status by development.

7. Locating biodiversity offsets in the landscape

Biodiversity offsets should be located in the landscape in such a way that they help to secure priority areas for conservation, improve connectivity between these priority areas, and/ or consolidate or expand existing protected areas. Where priority ecosystem services are residually affected, biodiversity offsets should preferably be located in the landscape in such a way that they deliver equivalent services to affected parties; that failing, additional compensation measures would be needed for these parties.

7. Equivalence – 'like for like'

[35] The national principles reflect principles used internationally (e.g. BBOP Standard for Biodiversity Offsets Business and Biodiversity Offsets Programme (BBOP). 2012. Standard on Biodiversity Offsets. BBOP, Washington, D.C. http://bbop.forest-trends.org/guidelines/Standard.pdf

Biodiversity offsets should comprise - or benefit - the same biodiversity components as those components that would be negatively affected by development. *In exceptional cases* only, and only with support from the provincial conservation agency, could consideration be given to the biodiversity offset targeting a relatively more threatened ecosystem or habitat.

8. Additionality – new action required

Biodiversity offsets must result in conservation gains above and beyond measures that are already required by law or would have occurred had the offset not taken place.

9. Timing and duration of biodiversity offsets

The design of the biodiversity offset and plans for its implementation should be approved by the provincial biodiversity conservation agency and the CEA before the proposed development starts. Implementation of the biodiversity offset should preferably take place before the impacts of the activity occur, or as soon thereafter as reasonable and feasible.

The biodiversity offset site(s) should endure at least for the duration of the residual impact on biodiversity, but preferably in perpetuity, in order to make a long-term contribution to biodiversity conservation. It should be monitored and managed adaptively to sustain conservation outcomes.

10. Defensibility

The measure of residual negative impacts on biodiversity caused by a proposed development, as well as the design and implementation of biodiversity offsets, should be based on sound science and should incorporate local traditional or conventional knowledge as appropriate.

Offsets must consider all significant residual impacts on biodiversity: direct, indirect and/ or cumulative impacts. The scope of assessment must include due consideration of impacts on recognized priority areas for biodiversity conservation; impacts on biodiversity pattern (conservation status of ecosystem and species, importance to migratory species) and ecological and evolutionary processes (must look across scales and take into account connectivity, gradients and corridors); and impacts on ecosystems or species on which there is high dependence for health, livelihoods, and/ or wellbeing.

11. Precaution

The biodiversity offset must be designed in a risk-averse and cautious way to take into account uncertainties about the measure of residual negative impacts (including uncertainties about the effectiveness of planned measures to avoid/ prevent, minimize and rehabilitate impacts), and the successful outcome and/ or timing of the biodiversity offset.

11. Fairness and equity

The determination of residual negative impacts, and the design and implementation of biodiversity offsets, should be undertaken in an open and transparent manner, providing for stakeholder engagement, respecting recognised rights, and seeking positive outcomes for affected parties.

Biodiversity offsets should not displace negative impacts on biodiversity to other areas, and/ or cause significant negative effects that in turn would need to be compensated.

12. Non substitutable

A biodiversity offset cannot be exchanged for, or traded off against, compensation for social, cultural heritage or other residual impacts unrelated to biodiversity. Moreover, offsets for residual impacts on use or cultural values of biodiversity cannot be exchanged or substituted for offsets on intrinsic values of biodiversity.

13. Enforceable and auditable

Offsets must be able to be audited and enforced, through explicitly worded, legally binding conditions, covenants or contracts.

3.4 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. This compensation should make a material contribution to implementing national and provincial biodiversity plans and reaching biodiversity targets, and to safeguarding valued ecosystem services. An additional objective is to achieve development and conservation objectives more effectively by creating opportunities for conservation beyond the site of development, rather than focusing only on that site.

The desired outcome of biodiversity offsets is to ensure that:

1. The cumulative impact of development and land use change in the province does not:
   a) result in the loss of priority areas for biodiversity conservation (e.g. Critical Biodiversity Areas or viable Critically Endangered ecosystems);
   b) result in any ecosystem becoming more threatened than Endangered';
   c) lead to net loss in Ecological Support Areas or Freshwater Ecosystem Priority Areas;
   d) jeopardize the ability to meet targets for biodiversity conservation;
   e) cause the conservation status of species and the presence of 'special habitats'[36] to decline; or
   f) result in the loss of ecosystem services on which society as a whole or affected communities are highly dependent and for which there is no feasible or acceptable substitute.
2. 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. Particular emphasis is on consolidation of priority areas and securing links between priority areas; and
3. 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, and which give resilience in the face of climate change, are safeguarded, and preferably improved.

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

Important to note: biodiversity offsets' role in giving effect to the Constitution and NEMA principles

Offsets are seen as a key mechanism to give effect to the Constitution and a number of the National Environmental Management principles, including in particular:

- the remedying of impacts on ecosystems and biodiversity where they cannot altogether be avoided or minimized;
- protecting ecological integrity and the environment as 'the people's common heritage', and striving for development that is 'ecologically sustainable';
- giving practical effect to the 'polluter/ environmental degrader pays' principle: the costs of cumulative impacts on natural systems and ongoing erosion of natural capital are currently being borne by society as 'externalities', rather than by being paid by those parties responsible for these impacts.

[36] As 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 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.

4. CONVENTIONS, LAWS, POLICIES, PLANS, STRATEGIES AND GUIDELINES DIRECTING OR INFORMING BIODIVERSITY OFFSETS

This section provides information on the international, national and provincial legal and policy frameworks, and informants guiding or informing biodiversity offsets.

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

In addition, policies, plans and guidelines provide early and critical information to proponents, Environmental Assessment Practitioners and specialists involved in planning and impact assessment as to the likely acceptability of, significant issues associated with, and risk of 'fatal flaws' in, development proposals in particular geographic areas. That is, they enable a 'positive planning' approach to be followed, where the context of the development site can inform the scale, nature, siting and layout of development.

The approach to biodiversity offsets in the Western Cape must be consistent with the national policy framework for offsets, first drafted in 2012 and due to be finalized by DEA in March 2016.

It is important to note that there are a number of other relevant programmes, initiatives and strategies which will be relevant to the proposed system of biodiversity offsets in the Western Cape and that are in the process of being finalized or formulated, including:

- The Western Cape's Biodiversity Conservation Bill;
- The Western Cape's Biodiversity Strategy and Action Plan;
- The Western Cape's Protected Area Expansion Strategy;
- The Western Cape's Coastal Management Programme;
- The National Biodiversity and Economic Development Strategy;
- The National Biodiversity Strategy and Action Plan (revision and update);
- Minimum Requirements for Incorporating Biodiversity Considerations into Land-use Planning and Integrated Environmental Management;
- The Green Economy Strategic Framework; and
- Eco-Invest (Western Cape ecosystem goods and services valuation and investment portfolio).

These additional considerations will need to guide the finalization of the Biodiversity Offsets Guideline to ensure that it responds to, and maximizes potential benefits from, the priority themes and directions.

4.1 International conventions, studies, guidelines and/ or standards 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).

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 interdependencies of human-wellbeing and ecosystem services.

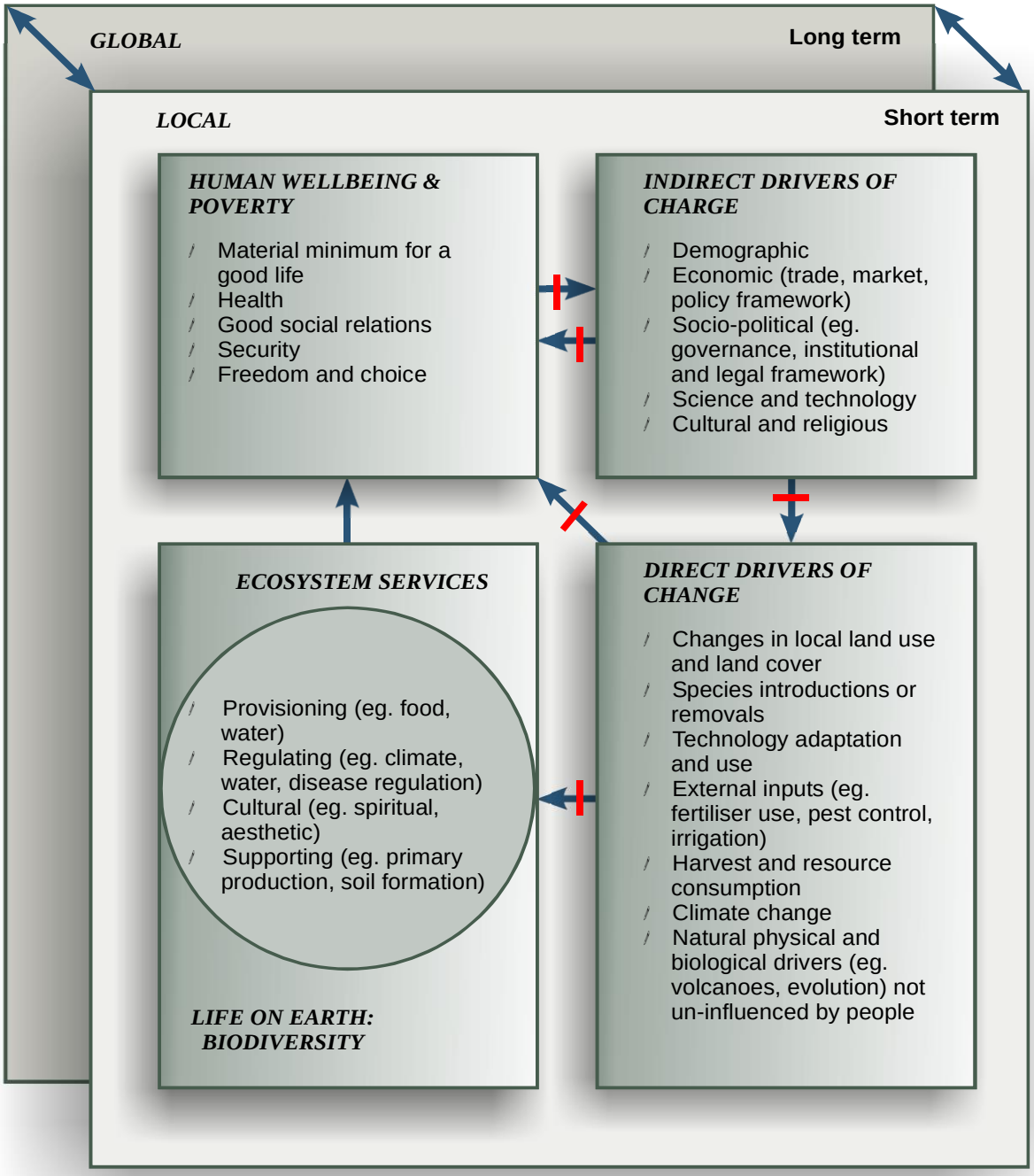


Figure 7 : Biodiversity-socioeconomic- human wellbeing links[37]

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.

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

[37] Source : The Millennium Ecosystem Assessment (2003) conceptual framework

Table 1 : International conventions, standards 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[38]) 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. *avoidance* (or prevention), *mitigation* (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 *compensation* (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)	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. 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: ▪ There is a high correlation between environmental sustainability and human wellbeing; ▪ Livelihoods are often linked directly or indirectly to ecosystem services; ▪ The greatest potential for limiting biodiversity loss is through preventing degradation of semi-natural ecosystems used outside of public protected areas.
Business and Biodiversity Offsets Programme guidance and handbooks	The Business and Biodiversity Offsets Programme (BBOP) is a partnership of some 40 leading organisations and individuals including companies, governments, conservation experts and financial institutions from around the world. Since 2004 it has produced a Biodiversity Offset Design Handbook (revised 2012), a Biodiversity Offset Implementation Handbook and a Biodiversity Offset Cost-Benefit Handbook (2009), a number of resource papers, a Standard on Biodiversity Offsets (2012), as well as case studies on offsets.
International Finance Corporation (World Bank Group) Performance Standards, adopted by Equator Banks	The revised IFC Performance Standards (PS, 2012) must be satisfied by corporate clients. PS6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources explicitly cover biodiversity offsets, requiring 'no net loss' of biodiversity for projects affecting Natural Habitats and 'net gain' of biodiversity for projects affecting Critical Habitat. PS 6 emphasizes the need to apply the mitigation hierarchy, and to seek 'like for like or better' exchanges in compensating for residual negative impacts on biodiversity. Ecosystem services are also covered in PS6 and are grouped according to levels of dependence on them by affected parties. Projects financed by these banks must maintain the value and functionality of priority ecosystem services.

4.2 Laws informing and directing biodiversity offsets

Environmental conservation is safeguarded primarily 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[39].

[38] UNEP 2006

[39] Paterson 2005.

Table 2 : Laws informing or directing offsets

Constitution of the Republic of South Africa (Act 108, 1996), article 24 (b) – (c)	*"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"*
National Environmental Management Act (NEMA) (Act 107 of 1998)	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. Section 2(4)(a) ('the NEMA principles') specifies that sustainable development requires the consideration of all relevant factors including the following: ▪ that the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied; ▪ 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; ▪ that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions ▪ 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; and ▪ 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 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.[40] According to s24(P), an applicant for an **environmental authorization relating to prospecting, exploration, mining or production** must, before the Minister responsible for mineral resources issues the environmental authorization, comply with the prescribed financial provision for the management of negative environmental impacts. 'Financial provision' is defined (s1) as the insurance, bank guarantee, trust fund or cash that applicants for an environmental authorization must provide in terms of this Act guaranteeing the availability of sufficient funds to undertake, amongst others, the '*remediation of any other negative environmental impacts*'.
National Environmental Management: Biodiversity Act 10 of 2004	The objectives of this Act are within the framework of the National Environmental Management Act, include: ▪ The management and conservation of biological diversity within the Republic of South Africa and the components of such biological diversity ▪ The use of indigenous biological resources in a sustainable[41] manner; and ▪ The fair and equitable sharing among stakeholders of benefits arising from bio

[40] According to the *polluter (or environmental degrader) 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).

[41] 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

	prospecting involving indigenous biological resources; and ▪ Giving effect to ratified international agreements relating to biodiversity which are binding on the Republic. 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. To date, no bioregional plans have been published in the Western Cape. Threatened and protected ecosystems (s52) have been listed (December 2011) and activities or processes within those ecosystems may be listed as 'threatening processes', thus triggering the need to comply with the NEMA EIA regulations. Lists of critically endangered, endangered, vulnerable and protected species have also been promulgated in terms of this Act (2007), covering species affected by 'restricted' activities; effectively those species hunted, bred or traded for economic gain. In addition, regulations addressing alien and invasive species and their management/ control were promulgated in 2014. The Act further provides (s43) for 'biodiversity management plans' approved by the Minister to manage ecosystems or species that warrant special conservation attention. The Act establishes the South African National Biodiversity Institute (SANBI), with a range of functions and powers (Chapter 2 Part 1).
National Environmental Management Protected Areas Act 57 of 2003	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: ▪ Protect areas with significant natural features or biodiversity ▪ Protect areas in need of long-term protection for the provision of environmental goods and services ▪ Provide for sustainable flow of natural products and services to meet the needs of a local communityInvolvement of private landowners. The Act provides for the involvement of parties other than organs of State in the declaration and management of protected areas.
National Environmental Management Integrated Coastal Management Act 24 of 2008	The Act aims to integrate coastal and estuarine management in South Africa, to promote the conservation of the coastal environment, and maintain the natural attributes of coastal landscapes and seascapes, and to ensure that development and the use of natural resources within the coastal zone is socially and economically justifiable and ecologically sustainable. The Act defines a coastal protection zone, coastal public property and coastal protected areas, as well as providing for development setback lines. A National Estuarine Management Protocol (2013) has been drafted.
Spatial Planning and Land Use Management Act 16 of 2013	Sustainability and resilience principles apply to all aspects of spatial development planning, land development and land use management, specifically with reference to ensuring sustainable livelihoods in communities most likely to suffer the impacts of environmental shocks.
National Forests Act 84/1998	Permits required for damage or destruction of protected tree species, natural forest. Offsets may be required where damage or loss is deemed significant
The Conservation of Agricultural Resources Act (CARA, Act No. 43 of 1983)	Addresses the need to protect soils, wetlands and water resources.
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'.]
Revenue Laws Amendment Act 60 of 2008: Insertion of section 37C into the Income Tax Act, 1962: "Deductions in respect of environmental conservation and maintenance"	Tax relief for expenditure incurred by the taxpayer in conserving or maintaining land that forms part of either (i) a biodiversity management agreement of at least 5 years duration in terms of s44 of the NEM Biodiversity Act, (ii) a declaration of at least 30 years duration in terms of s20, 23 or 28 of the NEM Protected Areas Act; or (iii) a national park or nature reserve in terms of an agreement under s20(3) or 23(3) of the NEMPAA and the declaration has been endorsed on the title deed for a period of 99 years.

4.3 Policies, plans, guidelines, strategies and reports 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.

National and provincial policies, plans, **strategies and reports** informing biodiversity offsets include:

- The National Strategy and Action Plan for Sustainable Development 2010, and the National Framework for Sustainable Development 2008.
- The **National** Biodiversity Strategy and Action Plan 2005.
- The National Biodiversity Framework 2009.
- 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.
- Western Cape's Biodiversity Framework 2014 Status Update, March 2014[42].
- CapeNature's 2014 Ecosystem Status Statistics.

[42] Updated landcover data were collected in 2014 and will inform revision of biodiversity plans in the Western Cape and the preparation of the 2015/6 CBA map.

- The National Climate Change Response White Paper 2011.
- The Western Cape Provincial Strategic Plan 2014-19
- The Western Cape Climate Change Response Strategy 2014.

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, superseded by the National Biodiversity Assessment 2012.
- Biodiversity plans in the Western Cape.
- **Bioregional plans** within the province, when published in terms of the NEM Biodiversity Act[43].
- National Protected Area Expansion Strategy 2009.
- Plans for **biodiversity networks** within the urban edges of **municipal** areas (e.g. City of Cape Town).
- **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.
- The **Provincial** Spatial Development Framework 2014.
- **Municipal** Spatial Development Frameworks that have taken into account systematic or biodiversity conservation plans.

Important to note: DEA&DP Circular EADP 0016/2014

To date (2014), the Western Cape has not adopted any systematic biodiversity or bioregional plans. The CBAs and ESAs information generated for the Western Cape Province represent the best available information in terms of systematic biodiversity planning and the need to secure ecological sustainability through the achievement of biodiversity targets to conserve biodiversity pattern and processes. As such the CBA and ESA information is relevant information that must be taken into account during EIA processes as well as during the formulation or amendment of Spatial Development Frameworks.'

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? And what to do when there is none?

The following spatial plans would probably be most useful:

- The Western Cape Biodiversity Framework, 2014. [This map is to be replaced in April 2016 by the province's first CBA Map.]
- Fine scale biodiversity plans or 'CBA maps' as a 'best bet' for identifying areas of the utmost significance for biodiversity at a relatively accurate scale of mappings.
- The WCPSDF, for finding demarcated corridors for climate change adaptation.

As a general rule, the most recent biodiversity plans at the finest scale should take precedence over coarser scale, older 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. Information from biodiversity plans at coarser scales must be ground-truthed by an appropriate biodiversity specialist.

[43] Bioregional plans may be established by the Minister or MEC for environmental affairs in the province in terms of the NEM Biodiversity Act 2004

Useful sources of information on biodiversity plans include:

- The SANBI Geographic Information System website (http://bgis.sanbi.org)
- DEA&DP's Cape Action for People and the Environment (CAPE)'s land use advisor
- CapeNature's Scientific Services (www.capenature.co.za)
- CapeNature's Land Use Advice Unit (landuse@cncjnk.wcape.gov.za)
- SANParks (www.sanparks.org)
- Fynbos Forum Ecosystem Guidelines (De Villliers *et al* 2005).

Where there are no relevant bioregional or biodiversity plans…

- Consult SANBI Biodiversity GIS portal (http://bgis.sanbi.org/) for relevant biodiversity information and priorities that may not yet be in the public domain in the form of biodiversity plans;
- Involve an appropriate biodiversity specialist to evaluate the biodiversity impacts, referring to the DEA&DP guidelines on involving biodiversity specialists in EIA processes (Brownlie 2005); and
- Contact CapeNature with regard to the priority areas for biodiversity conservation in that area.

Provincial DEA&DP guidelines: The possibility for biodiversity offsets is explicitly recognised for certain developments in specific provincial guidelines[44]:

- Guideline for involving biodiversity specialist in EIA processes (Brownlie 2005);
- Guidelines for golf course/estate, or polo field/estate developments (DEA&DP 2005b); and
- Guidelines for resort developments (DEA&DP 2005d).

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

The explicit and due consideration of alternatives is a critical success factor in EIA and in many cases, if carried out effectively, could minimize residual negative impacts on biodiversity and the need for biodiversity offsets. For this reason, the draft DEA&DP guideline on alternatives (2006b) is included in Table 3.

[44] 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, strategies, guidelines and reports directing biodiversity offsets

Policies, Plans and Strategies	Role in directing biodiversity offset options
National Framework for Sustainable Development (DEAT 2008)	The National Framework recognizes the inter-connection between ecosystems, natural resources and sustainable development and that South Africa's natural systems and biodiversity provide a basis for economic growth and development. It identifies five strategic priority areas for action and intervention, namely • Enhancing systems for integrated planning and implementation; • Sustaining ecosystems and using natural resources efficiently; • Economic development via investing in sustainable infrastructure; • Creating sustainable human settlements; and • Responding appropriately to emerging human development, economic and environmental challenges In the context of development priorities, the NFSD highlights **the value of ecosystems**, recognizing that ecosystem functioning is critical to achieve sustainable development, the need to improve aquatic ecosystems, and invest in protecting and enhancing ecosystem services.
National Strategy and Action Plan for Sustainable Development (DEAT 2010)	Strategic priorities include: • Responding effectively to climate change (adaptation framework); • Greening the Economy; • Building sustainable communities; • Sustaining ecosystems and using natural resources efficiently (rehabilitate/ restore degraded ecosystems, protect ecosystems and species and expand the conservation estate); and, • Enhancing systems for integrated planning and implementation.
National Spatial Biodiversity Assessment (NSBA) 2004 (Driver *et al* 2005)	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 was based on the percentage of the original area remaining untransformed in relation to the biodiversity target, and a threshold for ecosystem functioning.
National Biodiversity Assessment (NBA; SANBI and DEA 2011)[45]	The NBA's two main indicators are ecosystem threat status and protection levels. Wetlands are the most threatened of all SA's ecosystems; 48% of wetland types are Critically Endangered. Only 18% of the country's high water yield areas are protected. Coastal and inshore marine ecosystems are more threatened than offshore ecosystems, and the total area infested by invasive alien plants in South Africa doubled between the mid-1990s and 2007, and at least R6.5 billion of

[45] Driver A., Sink, K.J., Nel, J.N., Holness, S., Van Niekerk, L., Daniels, F., Jonas, Z., Majiedt, P.A., Harris, L. & Maze, K. 2012. *National Biodiversity Assessment 2011: An assessment of South Africa's biodiversity and ecosystems. Synthesis Report*. South African National Biodiversity Institute and Department of Environmental Affairs, Pretoria.

	ecosystem services are lost every year as a result. 40% of terrestrial ecosystems are threatened; fynbos and forest have the highest proportion of threatened ecosystem types. Priority actions include: reducing loss and degradation of natural habitat in priority areas, protecting critical ecosystems and biodiversity priority areas, and restoring and enhancing ecological infrastructure. The NBA notes that biodiversity stewardship programmes are making a significant contribution to meeting protected area targets at much lower cost to the state than land acquisition.
National Biodiversity Framework (DEAT 2009)	Identifies the development and implementation of a national policy framework on biodiversity offsets as a priority action by 2012.
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.
National Protected Area Expansion Strategy 2008	The goal of the NPAES is to achieve cost-effective protected area expansion for ecological sustainability and increased resilience to climate change. It sets targets for protected area expansion, provides maps of the most important areas for protected area expansion, and makes recommendations on mechanisms for protected area expansion.
National Climate Change Response White Paper (DEA 2011)	Points to the need to conserve, rehabilitate and restore natural systems to improve our resilience to climate change impacts and/ or to reduce impacts. It also advocates expanding the protected area network where it improves resilience to climate change, and to manage threatened ecosystems and species to minimize the risks of species extinction.
National Freshwater Ecosystem Priority Areas (NFEPA)[46] 2011	Identifies areas that have been prioritised for conserving freshwater ecosystems and supporting sustainable use of water resources. The NFEPA project has produced maps for priority, rivers, wetlands or estuaries, wetland clusters, fish sanctuaries and support areas, and free-flowing rivers.
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	▪ 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. ▪ 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. ▪ Four priority areas, including (Priority Area 3) promoting resource efficiency and sustainability, and (Priority Area 4) –

[46] Nel, J.L., Driver, A., Strydom, W.F., Maherry, A., Petersen, C., Hill, L., Roux, D.J., Nienaber, S., Van Deventer, H., Swartz, S. & Smith-Adao, L.B. 2011. *Atlas of Freshwater Ecosystem Priority Areas in South Africa.* WRC Report No. TT 500/11. Water Research Commission, Pretoria.

Development Implementation Plan (PSDIP) Final Draft for public comment (DEA&DP 2006a)	safeguarding ecosystem services. ▪ 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.
Western Cape Climate Change Response Strategy (DEA&DP 2014)	Emphasizes well-managed natural systems that reduce climate vulnerability and improve resilience to climate change effects. Biodiversity and ecosystem goods and services are a select focus area, with the goal of safeguarding the biodiversity network and functionality of ecosystem services (recognized as a prerequisite for a sustainable future). Priority areas include protection and restoration of ecological infrastructure, securing biodiversity corridors and identifying requirements for climate change adaptation corridors, promoting biodiversity stewardship and mainstreaming conservation planning into decision making. Protection and rehabilitation of dune fields as coastal buffers is also identified as being a priority.
The Western Cape Provincial Strategic Plan 2014-19	Strategic Goal 4 is to enable a 'resilient, sustainable, quality and inclusive living environment', including enhanced management and maintenance of the ecological and agricultural resource-base, and improved climate change response. Water management is a priority and seen as a 'game changer'; reference is made to the province's Sustainable Water Management Plan and River Improvement Plans.
Policy Principles and Guidelines for control of development affecting natural forests (DAFF, undated)	Offsets may be required to compensate for loss of biodiversity.
Spatial Plans	**Role in informing biodiversity offsets**
Provincial Growth and Development Strategy Green Paper (Department of the Premier 2006)	Economic growth is a prerequisite for boosting job creation, better quality human settlement and improved human well-being. The PGDS notes that: ▪ Environmental integrity is 1 of 4 key pillars of the 'shared growth and integrated development' path to 2014, with growth, equity and empowerment. ▪ 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. ▪ 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. 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).
Provincial Spatial Development Framework (WCPSDF) (DEA&DP March 2014)	The National Development Plan identifies the Western Cape's critical biodiversity areas as a resource-critical region. The WCPSDF's spatial agenda includes safeguarding the biodiversity network and functionality of ecosystem services. This includes connecting critical biodiversity areas, priority climate change ecological corridors. The 2009 WCPSDF primary objectives commit the Province to protecting biodiversity and agricultural resources, conserving the sense of place of important natural, cultural and productive landscapes, and proactive management of current and looming risks such as

	climate change. A key challenge is seen to be to consolidate remaining critical biodiversity areas and secure lowland – upland ecological corridors to mitigate climate change risks. The WCPSDF notes that conversion from natural to man-made landscapes is the primary cause of biodiversity loss and deteriorating ecosystems health, and that climate change is predicted to be a major long-term threat to biodiversity. Over abstraction and modification of natural watercourses is altering flow regimes, which impacts on species migration and breeding, aquatic habitats, food resources, and wetland ecosystems. If biodiversity threats are not reduced some ecosystems could collapse, requiring expensive intervention to maintain or replace them. The WCPSDF notes that continuity and connectivity of the biodiversity network strengthens its resilience and that, towards securing fragmented natural habitats, it is necessary to prevent further intrusion of agricultural activity or urban expansion into key Critical Biodiversity Areas and ecological support areas. **Policy R1** includes the need to use CBA mapping to inform planning and land use decisions in the province: the latest available CBA mapping is to be used as a primary informant, and regional, district and municipal SDFs need to delineate Spatial Planning Categories (SPCs) that reflect suitable nature, scale and form of land use activities in the different CBA classifications. Moreover, SDFs and municipal zoning schemes need to develop strategies and policies for securing priority areas outside the protected area network 'that are critical for the achievement of the Province's biodiversity targets', including 'incentivising private landowners to contribute' to the province's biodiversity network. Rehabilitation of degraded aquatic ecosystems, protection and rehabilitation of river systems and high yielding groundwater recharge areas is necessary, as is management of estuaries and offshore habitats supporting marine biodiversity. Development along the coast, lakes, rivers and dams must not compromise ecological integrity, tourism potential and landscape character. Development should be contained within a limited footprint, preferably within or adjacent to existing settlements, and the required ecological buffers and setbacks must be adhered to. **Policy E2** includes the need for land use incentives to be used to facilitate rural land use transitions that the State cannot afford to fund on its own, such as 'securing priority biodiversity areas or climate adaptation corridors'. **Policy S1** includes the need to prevent settlement encroachment into biodiversity priority areas.
Western Cape's Biodiversity Framework 2014 Status Update, March 2014. (Pence *et al* 2014)	The Biodiversity Framework is the province's de facto spatial biodiversity plan, recognized by DEA and SANBI. This report updates the status of ecosystem in the Western Cape and highlights the need for new Critical Biodiversity Areas to be identified to meet target shortfalls and better inform land-use decision-making in the Western Cape.
CapeNature's 2014 Ecosystem Status Statistics	An updated 'stocktake' of the terrestrial ecosystems of the Western Cape, the areas under protection, biodiversity targets, conservation or threat status. This report should be considered as 'best available science' for use in decision making, and a lead informant for evaluating the significance of impacts on biodiversity.
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	Identification of conservation corridors and conservation priority areas or Critical Biodiversity Areas at different scales (fine-

for People and the Environment (C.A.P.E.), Succulent Karoo Ecosystem Programme (SKEP), Subtropical Thicket Ecosystem Planning (STEP)), fine-scale biodiversity plans (see Von Hase *et al.* 2005))	scale plans with a high degree of confidence regarding the accuracy of mapping habitat at a 1:50 000 scale; others at larger scales). Identification of environmentally sensitive areas in which developments may be fatally flawed or may trigger the need for a biodiversity offset. ***Fine-scale plans*** 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.
Bioregional plans , Guideline regarding the Determination of Bioregions and the Preparation and Publication of Bioregional Plans 2008[47]	May be established in terms of the NEM Biodiversity Act 2004. A Guideline has been published which explains the purpose of bioregional plans and sets out its contents, and addresses the way in which systematic biodiversity planning informs bioregional plans, that in turn provide a key informant to SDFs, EMFs, SEAs and EIAs.
LandCare Area Wide Planning (Department of Agriculture 2003)	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): "*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*".
Spatial Planning and Land Use Act 16 of 2003	To provide a framework for spatial planning and land use management in South Africa and to provide for the inclusive, developmental, equitable and efficient spatial planning at the different spheres of government. The Spatial Development Frameworks (SDFs) must, among other things, guide planning and development decisions across all sectors of government, take cognisance of any environmental management instrument adopted by the relevant environmental management authority. Cognisance must be taken in preparing SDFs of the spatial location of environmental sensitivities.
Municipal Spatial Development Frameworks (SDFs) and Environmental Management Frameworks (EMFs)	▪ 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. ▪ The NEMA 2010 Regulations R547 address EMFs. EMFs take into account conservation status and provide applicants with an early indication of areas where development would be appropriate or inappropriate. Development in 'sensitive areas' identified in EMFs may trigger the need for an EIA process (Listing Notice 3 of the EIA Regulations).

[47] DEAT 2008

Guidelines	Role in informing biodiversity offset options
SANBI Best Practice Guideline for Wetland Offsets (MacFarlane *et al* 2014)[48]	The guideline emphasizes that wetland offsets are applied within a mitigation hierarchy and are only aimed at mitigating or compensate for residual impacts of project development on the environment after all appropriate steps have first been taken to avoid/prevent, minimize/reduce and remediate/rehabilitate impacts. The guideline details how to calculate the residual impact at a development site on water resources, ecosystems and species, and specifies the offset ratios required in order to determine an appropriate offset.
Mining and Biodiversity Guideline 2013 (DEA, DMR et al 2013)[49]	This guideline emphasizes integrating relevant biodiversity information into decision making at every stage of the mining life cycle about how best to avoid, minimise or remedy biodiversity impacts to support sustainable development. The Guideline offers six principles that should be applied towards good decision making when addressing biodiversity issues and impacts in a mining context: i) Apply the law ii) Use the best available biodiversity information iii) Engage stakeholders thoroughly iv) Use best practice environmental impact assessment (EIA) to identify, assess and evaluate impacts on biodiversity v) Apply the mitigation hierarchy (with offsets as a 'last resort') in planning any mining-related activities and to develop robust environmental management programmes (EMP) vi) Ensure effective implementation of the EMP, including adaptive management. The guideline categorizes biodiversity areas in terms of their relative importance for conservation.
Guideline for involving biodiversity specialist in EIA processes (Brownlie 2005)	▪ Compensation or offsets should only be considered after other biodiversity management actions (avoidance, mitigation, enhancement, rehabilitation and restoration) have been considered ▪ 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. ▪ Offsets should focus on areas of recognised value to biodiversity conservation, and on ensuring the persistence of landscape-scale processes.
Guidelines for Golf Courses, Golf Estates, Polo Fields and Polo Estates in the Western Cape (DEA&DP 2005b)	▪ 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 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.

[48] Macfarlane et al., 2014.

[49] DEA et al 2013

Provincial Urban Edge Guideline (DEA&DP 2005c)	▪ The urban edge effectively defines the limit of urban development in the province, is a significant structuring element in the WCPSDF, and is a key informant in determining biodiversity offsets (i.e. development within and beyond the urban edge is dealt with differently)
Guideline for Resort Development in the Western Cape (DEA&DP 2005d)	▪ Where relevant, it will be expected of a proposed resort development to provide satisfactory biodiversity offsets
Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape (De Villiers *et al* 2005)	▪ Assist and inform land use planning, environmental assessment and decision-making about biodiversity in the province. ▪ 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. ▪ Give a useful overview of the spatial components of ecological processes in the landscape: fixed and flexible components.
Draft Guideline on Alternatives (DEA&DP, 2006)	▪ This guideline provides useful information on the consideration of feasible and reasonable alternatives in the EIA process, as required in terms of the NEMA EIA regulations.
Guideline on Need and Desirability (DEA&DP 2011)	▪ Guides evaluation of whether or not 'this is the right time and is it the right place for locating the type of land-use activity being proposed.' It is equivalent to asking what would be the most sustainable or 'wise use of land' ▪ Emphasizes the need for ecologically sustainable development in terms of the Constitution; concerns such as climate change, the status of ecosystem services, must be taken into account.

5. BIODIVERSITY-INCLUSIVE EIA

This section answers the following questions:

- How is the significance of impacts on biodiversity and ecosystems evaluated, and how does that inform and influence consideration of biodiversity offsets?
- What are the key things that must be considered when evaluating significance, and what are significance thresholds?
- When would biodiversity offsets be required, and when not? And how does that relate to 'residual impacts'?

5.1 The significance of impacts on biodiversity and ecosystem services

The NEMA 2014 EIA Regulations require that ***the significance*** of potential impacts be evaluated, taking into account mitigation (Appendices 1-3 of R982). These Regulations define a 'significant impact' to be an impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with 'accepted environmental quality standards, thresholds or targets'.

To facilitate the integration of biodiversity offsets into the EIA system, therefore, it is useful to use the ***potential significance of residual impacts*** (i.e. impacts experienced after planned measures to avoid, minimize, and rehabilitate negative impacts have been taken into account) to determine the need for biodiversity offsets. In broad terms, biodiversity offsets would be considered to compensate for residual negative impacts on biodiversity of 'moderate' to 'high' significance.

5.1.1 Biodiversity specialists

Biodiversity specialist(s) plays a pivotal role in determining the significance of potential impacts on biodiversity. Readers are referred to the DEA&DP guideline on involving biodiversity specialists in EIA processes in this regard (Brownlie 2005).

Important to note: biodiversity specialist's role in determining significance

The choice of biodiversity specialist is of the utmost importance in EIAs. In addition, the role of that specialist is critical in knowing about, drawing on, and providing enough reliable and relevant information on biodiversity to inform the evaluation of significance or residual negative impacts on that biodiversity.

Biodiversity specialists should[50]:

- 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;
- 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);

[50] Brownlie 2005

- Have good knowledge relating to assessment techniques and to relevant legislation, policies, plans 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.

An ecologist is best involved in the pre-application planning and early stages of an EIA process, given their broad, holistic perspective on ecosystems and biodiversity. Where specific components of biodiversity need to be addressed in greater detail in the later stages of the process, and/or during the investigation of offsets, specialists in relatively narrow fields of biodiversity pattern (e.g. particular taxa of threatened species or special habitat) or process (e.g. width of ecological corridor required to enable persistence of particular ecological process) should be appointed.

The Terms of Reference for specialists should specifically require that all four components of biodiversity that inform the rating of significance, as described below, are explicitly addressed. They should also ensure that the specialist considers direct ('footprint'), indirect (experienced beyond the development site and/or at some future date), and cumulative (additive) impacts on biodiversity, as required by the NEMA EIA Regulations.

5.1.1 Significance thresholds

The significance of an impact relates to the amount of change to the environment perceived to be acceptable to affected communities. The values of biodiversity to society are reflected in the international conventions ratified by South Africa, and in national and provincial laws, policies, plans, strategies and guidelines. They provide invaluable information which reflects a hierarchy of 'thresholds' of acceptability, taking both people's values and scientific and/ or technical information into account. As a residual impact pushes the condition of the environment (and biodiversity) from a threshold of potential concern to a threshold of major potential concern to an exclusionary threshold, the significance rating of residual impacts will increase incrementally. Significance thresholds are illustrated in Box 6.

Table 4 : Significance thresholds for negative impacts on biodiversity

Threshold: the importance of biodiversity and/ or ecosystem services	**Impact Significance rating**
'Exclusionary'[51] threshold; impacts in this category could not be fully compensated by offsets because of the high threat status or irreplaceability of affected biodiversity or ecosystem services. Impacts in this category would generally be unacceptable and could lead to: *a) Irreversible and irreplaceable loss of ecosystem or species* ✓ *Impacts on critically endangered ecosystems or species, or leading to a change in the status of ecosystems or species from endangered to critically endangered*[52] ✓ *Impacts on Critical Biodiversity Areas (CBAs) and River and Wetland FEPAs (including free-flowing rivers*[53]*) from provincial biodiversity plans/ the Biodiversity Framework,* ***unless*** *there are spatial options to meet the specific biodiversity targets for which these CBAs were identified;*	**Very High**

[51] Lawrence Environmental, for Canadian Environmental Assessment Agency, 2000.
[52] Where communities of species are considered to be unique, or highly localized endemics, but have no formal conservation or threat status, their status must be reviewed and determined by relevant specialists.
[53] Free-flowing rivers in the Western Cape are the Doring and its tributaries, Rooiels and Groot

✓ *Impacts on Ramsar sites;* b) *Irreplaceable loss of key ecological corridors recognised as important for evolutionary processes and climate change adaptation where no spatial options to safeguard these processes exist;* c) *Irreversible impacts on legally protected areas in terms of the Protected Areas Act, including Special Nature Reserves, National Parks and Provincial Nature Reserves; World Heritage Sites; Marine Areas; Specially Protected Forest Areas; and Mountain Catchment Areas.* d) *Irreversible or irreplaceable loss of highly valued ecosystem services at national or provincial scale and/ or where there is a high level of dependence on these ecosystem goods and services by local communities for livelihoods and health, and no feasible substitutes*	
Threshold of major potential concern[54]. • *Irreversible impact, leading to change in ecosystem or species status within the Endangered category, or from Vulnerable to Endangered* • *Irreversible loss of areas constituting important corridors or process areas at provincial level* • *Impacts in buffer zones of protected areas (including buffers around National Parks, World Heritage Sites, and Nature Reserves)* • *Impacts in Trans-Frontier Conservation Areas (outside of protected areas)* • *Impacts on high water yield areas ('water factories', 'water towers')* • *Impacts in the Coastal Protection Zone.* • *Impacts on priority estuaries, in an estuarine functional zone where no setback line has been determined, and/ or on the estuary side of the development setback line* • *Impacts within a 1km buffer of river and wetland FEPAs* • *Impacts seawards of the development setback line or within 1km from the HWM where no development setback line has been determined* • *Impacts on the watercourse side of a development setback line or within 100m from the edge of a watercourse where no setback line has been determined* • *Impacts leading to loss or deterioration of valued ecosystem services at provincial level.*	**High**
Threshold of potential concern. • *Irreversible impact leading to change in ecosystem status from Least Threatened to Vulnerable* • *Impacts on Vulnerable species* • *Loss of areas constituting important corridors or ecological process areas at local levels* • *Impacts on Ecological Support Areas* • *Impacts on Vulnerable ecosystems in areas where CBAs have not yet been identified.* • *Impacts on focal areas for protected area expansion (land-based and marine).* • *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.* • *Impact leading to loss or deterioration of valued ecosystem services at local level.*	Moderate
Threshold of Low concern. e.g. *low impact on local biodiversity or valued ecosystem services* • *Impacts on Least Threatened ecosystems where they do not: support threatened species or special habitats; constitute important ecological process areas or corridors; and/ or provide priority ecosystem services.*	Low
Threshold of negligible concern. e.g. *no impact on local biodiversity or valued ecosystem services* • *Impacts on heavily modified or transformed natural environments.*	Very Low

[54] "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.

Impact significance relies in part on the nature of the proposed development and in part on the characteristics of the receiving environment. Given that the biodiversity of the Western Cape has exceptional national and international value, and that much of this biodiversity is recognized as being threatened, the significance of impacts will be heavily influenced by the receiving environment. Residual adverse impacts on that biodiversity would in many instances be ***permanent and irreversible***, and could lead to ***irreplaceable loss***.

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 or distort 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 at site level on endangered biodiversity in the Western Cape – often rated in a local context only, or at the scale of the site - could have global significance, given the uniqueness of the Cape Floristic Region. Conversely, impacts of very high significance to a small local community (e.g. by transforming an area of thatching grass on which that community relies for livelihoods) 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 and risks must be given in BARs and S&EIRs in terms of the NEMA 2014 EIA regulations.

For the purposes of using significance ratings to determine the need 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. The approach presented here is consistent with the Minimum Requirements for Incorporating Biodiversity Considerations into Land-use Planning and Integrated Environmental Management (in prep, DEA 2015[55]).

5.1.2 Key considerations when evaluating impact significance

There are **four key things that need to be considered when evaluating the significance of impacts on biodiversity**. These things are covered in separate sections below. It is essential that ***all four*** components be considered in an integrated way to obtain a holistic picture of residually affected biodiversity. Addressing these four components is also central to the process of designing biodiversity offsets.

1. **Composite considerations** (i.e. those encompassing biodiversity pattern, process and/ or ecosystem services) as reflected in bioregional, biodiversity plans or 'CBA maps', FEPAs, protected area expansion strategies, Ramsar and World Heritage Sites, or biodiversity networks. The priority areas identified in these plans represent the most efficient configuration of sites that meet biodiversity pattern and process thresholds in a way that strives to avoid conflict with other land use activities.

2. **Biodiversity pattern considerations**
   Biodiversity pattern comprises the structure and composition of natural systems – different ecosystems or habitats for different communities or species.

[55] de Villiers and Brownlie, March 2014.

An *ecosystem* embraces living and non-living components, which can be defined in terms of distinguishing characteristics (e.g. a wetland ecosystem, a freshwater ecosystem, a terrestrial ecosystem, a forest ecosystem, etc.). The boundaries between communities or ecosystems are often indistinct. A *species* comprises populations that inter-breed and produce fertile offspring. *Special habitats* are described in Box 7.

Box 6 : 'Special habitats'

'Special habitats' were referred to in the NBSAP and are defined in some fine-scale biodiversity plans (e.g. calcrete 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 or nationally under the NEM Biodiversity Act 2004 as Protected Ecosystems or in Biodiversity Management Plans.

The ecosystem status or threat status provides a useful measure of its importance and can be considered as a proxy or surrogate indicator for much of the biodiversity supported within that ecosystem. However, it must be remembered that ***ecosystem status alone is not a reliable measure of significance***: for example, a Least Threatened ecosystem may be crucial for specific biodiversity components to persist (e.g. habitat for highly threatened species or as an ecological corridor linking other ecosystems).

It is important when evaluating the significance of impacts on species to assess ***the proportion of overall habitat*** that would be affected by the project, and/ or ***the proportion of a species' area of occupancy or population, in relation to biodiversity targets.***

3. **Biodiversity process considerations**

Biodiversity processes (Box 1) are not spatially limited but connect and influence dynamics within and between different ecosystems. For this reason, impacts on processes often have consequences (indirect impacts) far beyond the development site. Process considerations reflect the value of maintaining biological diversity by ensuring that the processes that support biodiversity pattern persist. They may also reflect the socioeconomic value of biodiversity through safeguarding the delivery of a wide range of ecosystem services.

Biodiversity processes comprise fixed (i.e. tied to biophysical features such as watercourses, soil transitions or gradients) and flexible (i.e. upland-lowland corridors, corridors along mountain chains or the coast, links between protected areas) processes in the landscape.

Impacts on **Ecological Support Areas** identified in biodiversity plans require particular attention in evaluating their likely significance: these areas are important for supporting Critical Biodiversity Areas from an ecological function or process perspective.

4. **Ecosystem services considerations**

Ecosystem services have both use and non-use value to society, reflecting the value of biodiversity pattern or process underpinning those goods or services. Direct impacts on biodiversity often result in indirect or cumulative negative impacts on human wellbeing, given that local communities, or society as a whole, may be totally or partially dependent on the ecosystem services provided by that biodiversity for health or livelihoods.

Table 5 gives guidance on determining the significance of negative impacts on biodiversity. Box 7 gives some of the key issues involved in evaluating the significance of negative impacts on biodiversity.

Table 5 : Key considerations for evaluating the significance of negative impacts on biodiversity

Key considerations (refer to Table 4 on significance thresholds)		***Significance of residual negative impacts***
Composite considerations:	**Critical Biodiversity Areas** demarcated in bioregional or biodiversity plans, core areas in a biodiversity network, and/or an area of irreplaceable biodiversity value identified by biodiversity specialists and supported by CapeNature	All of these areas play a vital role in conserving the province's biodiversity; either conserving important biodiversity pattern and/or process and/or ecosystem services. Any residual negative impacts on these areas are likely to be of '**Very High**' significance in view of the fact that: • They would be of permanent duration. • In terms of their nature and extent: impacts could be irreversible and lead to loss of irreplaceable biodiversity at provincial and national scale, with global implications given the uniqueness of Western Cape's biodiversity. • Impacts would have a cumulative negative effect with regard to achieving biodiversity targets in the province, and may have indirect effects on ecological integrity in the long term. • Impacts on areas supporting the delivery of priority ecosystem services, especially water production, quality regulation and supply, could be irreversible and would have adverse socioeconomic and health effects. • Whilst the 'footprint' of residual impact may be relatively small, any erosion of these priority biodiversity areas must be seen in the broader context of the importance of these areas to provincial, national and international biodiversity conservation.

	Freshwater Ecosystem Priority Areas[56]	• River FEPA, Wetland or Estuary FEPA, Fish Sanctuary, (CR and EN),[57] • Wetland Cluster, Fish Support Area, Fish Sanctuary (other)Phase 2 FEPAs • Upstream management areas	Likely to be of **'Very High' to 'Moderate'** significance depending on the particular impacts and context. Impacts on areas supporting the delivery of priority ecosystem services, especially water production, quality regulation and supply, could be irreversible and would have adverse socioeconomic and health effects. **(**The recommended ecological condition for estuary FEPAs is set out in the NBA 2011).
	A Protected Area listed in terms of Chapter 3 of the NEM Protected Areas Act 2003 A Protected Ecosystem declared in terms of s52(2)(d) of the NEM Biodiversity Act 2004 An area for which a Biodiversity Management Plan has been approved by the Minister in terms of s43 of the NEM Biodiversity Act 2004		Impacts on legally protected areas (excluding infrastructure development by relevant conservation authority) in terms of the Protected Areas Act, including Special Nature Reserves, National Parks and Provincial Nature Reserves; World Heritage Sites; Marine Areas; Specially Protected Forest Areas; and Mountain Catchment Areas are likely to be of '**Very High**' to '**High**' significance. Broadly speaking, could be **'Low' to 'Very High**' significance, depending on the category of Protected Area, the characteristics of the Protected Ecosystem or area covered by a Biodiversity Management Plan, the characteristics of development, its location within the Protected Area, Ecosystem or area covered by a Biodiversity Management Plan, its consistency with the specific provisions of these Acts and/or the particular objectives or purpose of declaring that Protected Area, Protected Ecosystem and/or of approving a Biodiversity Management Plan.
	Ramsar or World Heritage Sites		Likely to be of '**Very High**' significance
	Areas targeted in Protected Area Expansion strategies		Likely to be of '**Moderate**' significance

[56] Driver *et al* 2011.
[57] It is anticipated that these critical FEPAs ('Very High' significance) would also be covered as aquatic CBAs.

	Buffer zones of Special/ Nature Reserves, National Parks, World Heritage Sites, Ramsar Sites, Specially Protected Forest Areas		'**High**' to **'Moderate'** significance.
Biodiversity pattern:	Ecosystem status** Ecosystem status is but one of a number of characteristics that would inform the significance rating for affected habitat. Where ***threatened species*** and/or ***special habitats*** were associated with that habitat, and/or its position in the landscape was important in relation to broader spatial components of ***ecological processes***, and/or the habitat was associated with provision or delivery of ***ecosystem services of value***, then the ***significance ratings for residual impacts in that habitat should be adjusted in accordance with the significance of those attributes***. E.g. impacts on a 'least threatened' ecosystem could be of 'very high' significance if it provided habitat for a 'critically endangered' species.	Critically Endangered	'**Very High'** significance. In some cases may be **'High'** where condition is 'degraded'.
		Endangered	**'High'** significance, in some cases may be '**Moderate'** where condition is 'degraded'[58].
		Vulnerable	**'Moderate'** significance, in some cases may be **'Low'** where condition is 'degraded'..
		Least threatened	**'Low'** significance, depending on the condition of the impacted habitat.
	Presence of threatened species	Critically endangered	**'Very High'** significance
		Endangered	**'Moderate'** to **'Very High'** significance, depending on size and viability of affected population, and the contribution of the affected population to the persistence of the species.
		Vulnerable	**'Low'** to **'High'** significance**,** depending on size and viability of affected population, and contribution of affected population to the persistence of the species.

[58] 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'

	Presence of special habitats		**'Moderate'** to **'Very High'**, depending on the particular special habitat, its rarity, the project context and the irreplaceability of that habitat
Biodiversity process	Role of affected area in the bigger landscape with regard to conserving ecological or evolutionary processes (including climate adaptation corridors) or ecosystem function	Fixed process area at provincial to local level, identified on WCPSDF, climate change adaptation plans, biodiversity or bioregional plans, and/or by biodiversity specialist (i.e. no spatial alternatives). E.g. sand or river corridors, mountain ranges, coastal corridors.	Likely to be of **'Moderate'** to **'Very High'** significance, depending on the type of process, its context, and the nature of the residual negative impact (i.e. would that particular impact prevent or inhibit the particular process/es served by that process area?).
		Flexible process area at provincial or local level (i.e. some alternatives or substitutes), identified on bioregional or biodiversity plans, and/or by biodiversity specialist. E.g. 'crest to coast' links, upland-lowland corridors.	Likely to be of '**Low' to 'High'** significance, depending on the number of options in the landscape, the type of process, its particular context and the nature of the residual negative impact (impact (i.e. would that particular impact prevent or inhibit the particular process /es served by that process area?).
	Ecological Support Areas		Likely to be of **'Moderate' to 'High'** significance
	Coastal Protection Zone, setback line from High Water Mark		Likely to be of **'High'** significance. Coastal protection zone also plays an ecosystem service role in protecting coastal settlements
Ecosystem services:	Role of affected area in providing or delivering ecosystem goods or services of socioeconomic or cultural heritage importance to local communities or society as a whole. These services include protection against flooding or storm surges in coastal areas or floodplains of rivers.		Likely to be of **'Low'** to **'Very High'** significance, depending on the type of ecosystem service and level of dependence on them for livelihoods, health, safety and wellbeing, as well as the ability to provide affordable, acceptable and accessible substitutes for those ecosystem services negatively impacted.
	High water yield/ production areas, Mountain Catchment Areas		Likely to be of **'Moderate' to 'High'** significance

** **Note**: the potential significance of impacts based on ecosystem status is given *without taking into account additional biodiversity considerations of threatened species, special habitats, process or ecosystem services considerations.* That is, the significance of impacts based on ecosystem status must be adjusted (increased) where there are additional important biodiversity components such as threatened species, special habitats, important ecological process areas and/ or that ecosystem underpins delivery of priority ecosystem services.

Box 7 : Some key issues in evaluating the significance of negative impacts on biodiversity

Some key issues in evaluating impact significance are outlined below.

1. Ecosystem status

An impacted ecosystem may be listed within a particular category of 'threatened' ecosystem in the 2011National List, but that status may have been revised and updated in the Western Cape Biodiversity Framework (2014). It is important that the most up to date information is used to determine the appropriate basic offset ratio.

It would be essential to consider the criteria that triggered categorisation of the affected ecosystem's conservation status (e.g. threatened plant association or irreversible loss of habitat), thereby enabling a focus on key issues.

In some cases, where an area is known/ found to be associated with a high concentration of threatened or highly localized endemic species, and this particular criterion (D1, D2) was not taken into account in determining its ecosystem status, then due consideration should be given to increasing the ecosystem status used to determine the basic offset ratio, in discussion with CapeNature.

2. Effect of the condition of the affected ecosystem on significance ratings

Determination of the ecosystem status of the affected area draws on a number of criteria[59], primarily related to biodiversity pattern considerations[60]. Whilst a 'Least Threatened' ecosystem may appear to be insignificant with regard to impacts on biodiversity, it may deliver important ecosystem services, play a key ecological role in the landscape and/ or provide invaluable habitat for one or more threatened species. That is, it is important to note that *impacts on a 'Least Threatened' ecosystem would not necessarily be of 'low' significance*.

Similarly, whilst a development site may comprise degraded habitat, it may - in spite of its condition –be important at a landscape scale with regard to ecological function or process (e.g. as a landscape link or buffer to Critical Biodiversity Areas), it may provide invaluable habitat for one or more threatened species, and/ or continue to deliver valued ecosystem services. So, as with 'Least Threatened' ecosystems, *a degraded site does not automatically imply that impacts would be of 'low' significance.* Investment in rehabilitating – and working towards restoring – these habitats may yield significant benefits for both biodiversity and society in the long term.

The fact that a **demarcated Critical Biodiversity Area (CBA) or Ecological Support Area (ESA)** is disturbed or degraded would not necessarily justify development on that site. The biodiversity specialist(s) must determine the underlying attributes of that site that qualified it as a CBA or ESA, and assess whether or not those specific attributes remain, or could be restored on the site; e.g. a site may constitute a crucial link between two areas albeit cultivated land.

Where the affected site **does not** lie within a CBA or ESA or other priority biodiversity, where other pattern considerations with regard to threatened species and special habitats, as well as process and ecosystem services considerations, do not raise significant impacts, then the condition of the affected natural habitat alone may influence the significance rating (Table7):

- The condition of the affected ecosystem can be described as 'good', 'moderate' or 'degraded', as shown below [this Table serves as a guide only, and is not a definitive formula].

[59] Ecosystem status in the NSBA (2004) was initially derived from the remaining extent of different vegetation types in relation to conservation targets. However, the revision of ecosystem status determination in the NBA 2011 uses a far broader range of considerations such as irreversible loss, ecosystem degradation and loss of ecological integrity, limited extent and imminent threat, threatened species associations and priority areas for meeting conservation targets as defined in a systematic conservation plan.

[60] Listing of threatened terrestrial ecosystems, December 2011.

% of expected species supported by the affected habitat, compared with undisturbed site in a comparable vegetation type or ecosystem	Condition
>75%	Good
>25% but <75%	Moderate
<25%	Degraded

- Where the condition of the affected ecosystem is either 'good' or 'moderate', the significance rating should effectively be dictated by the ecosystem status (e.g. Critically Endangered, Endangered, Vulnerable or Least Threatened). That is, the condition of that ecosystem should not influence that rating. Only where the habitat is degraded could the significance rating be reduced (e.g. from 'high' to 'medium', or 'medium' to 'low').

It is of the utmost importance when evaluating the condition of the affected ecosystem to take into account the following:

a) Depending on such things as the time of the year, the history of fire on the site (etc.), the visible biodiversity on a particular site may fluctuate. In evaluating the condition of a proposed development site, it is essential to take into account possible seed banks on the property: if land has never been ploughed and sown, and if less than three fire cycles have occurred since alien/crop/plantation canopy closure, then seed banks are probably still intact, even if no plants are visible on site (Holmes 2001).

b) The EIA / offset system must not reward, or provide incentive for, deliberate neglect, negligence or mis-management on the part of the landowner towards his/her legal responsibilities to, for example, clear alien invasive plants, abide by the 'duty of care' requirement of the NEMA[61], etc. For this reason, when evaluating the condition of the affected habitat, the biodiversity specialist must consider the recent history of land use on the proposed development site and interpret the causes of the habitat condition.

2. Effect of isolation of threatened habitat on significance ratings

Threatened ecosystems may have become isolated in the landscape as a result of ongoing development. These 'islands' of habitat are unlikely to persist in the long term given their isolation, and are sometimes not recognized (except where they support threatened species) as making a contribution to biodiversity conservation.

Where these habitat 'islands' are in good or moderate condition, they are currently making a contribution to the total amount of extant habitat of that ecosystem and hence to its status. So, whilst it could be appropriate in the longer term to transform that habitat, an offset should be provided commensurate with its ecosystem status and basic offset ratio.

That is, residual impacts on 'Critically Endangered' or 'Endangered' habitat in moderate or good condition should ***not*** be 'discounted' to 'low' significance.

3. Effect of the size (extent) of the residual impact on significance ratings

Although the size of residual negative impacts on biodiversity (i.e. the direct 'footprint' of development plus any indirect impacts on associated ecosystems) may vary from one proposed development to the next, the nature of the affected biodiversity and the proportional reduction of the whole, largely

[61] S28 of NEMA

dictates the significance of those impacts.

4. Disputed information in biodiversity plans as the basis for challenging significance ratings of residual impacts on biodiversity

If an EAP or biodiversity specialist *either* identifies an ecosystem, CBA, core site in a biodiversity network, irreplaceable or other priority biodiversity area that is different from that reflected in a bioregional or biodiversity plan, *and/or* disputes the information contained in those plans, then that disputed information must be explicitly defended and justified by that biodiversity specialist, and reviewed and accepted/ rejected by CapeNature.

Important to note: Threatened and Protected species listing versus Red Data Books or Lists?

The listing of species threatened by restricted activities in terms of s 56 of the NEM Biodiversity Act 2004 does not include species threatened by transformation of habitat through development or by alien invasive organisms. That is, the species listed are not comparable with Red Data Book or Red List status. For this reason, both the TOPS listing and ***Red Data Books and/or Red Lists should be used to identify threatened species*** for the purposes both of evaluating impact significance and determining biodiversity offsets.

5.2 Biodiversity offsets as a 'last resort' form of mitigation

Biodiversity offsets should ***only be considered after alternatives and successive mitigation options have been adequately addressed*** by the EAP and relevant biodiversity specialists during the EIA process (Figure 2) That is, it is of the utmost importance with regard to 'arriving' at biodiversity offsets as a possible 'last resort' mitigation measure, to demonstrate that earlier mitigation options have been exhausted:

- Show that a positive, 'planning with nature' approach has been adopted;
- Give clear evidence that all reasonable and feasible alternatives to avoid/ prevent or minimize negative impacts on biodiversity and valued ecosystem services have been duly considered;
- Give clear evidence that the mitigation hierarchy has been followed. Demonstrate how areas that are important for biodiversity or priority ecosystem services have been avoided, and how potentially significant impacts on these areas have been minimized through consideration of all reasonable and feasible alternatives, and how rehabilitation/ repair of temporarily affected areas is to be achieved;
- Give clear evidence that the risks associated with either non-implementation, or ineffective implementation, of proposed mitigation measures have been assessed by the biodiversity specialist (e.g. risk of fire management not being implemented, and associated implications).

Important to note: considering alternatives

The NEMA 2014 EIA Regulations define "**alternatives**", in relation to a proposed activity, to be 'different means of meeting the general purpose and requirements of the activity, which may include alternatives to the:

(a) property on which or location where the activity is proposed to be undertaken;
(b) type of activity to be undertaken;
(c) design or layout of the activity;

(d technology to be used in the activity; or
(e) operational aspects of the activity;
and includes the option of not implementing the activity.

5.2.1 Significance of residual negative impacts as a trigger for biodiversity offsets

'Residual impacts' are those impacts that remain after all reasonable and feasible changes to the location, siting, scale, layout, technology and design of the proposed development have been made, in consultation with the EAP and specialists (including a biodiversity specialist), to avoid and minimize potentially significant negative impacts on biodiversity and ecosystem services. A simple example is shown in Figure 7.

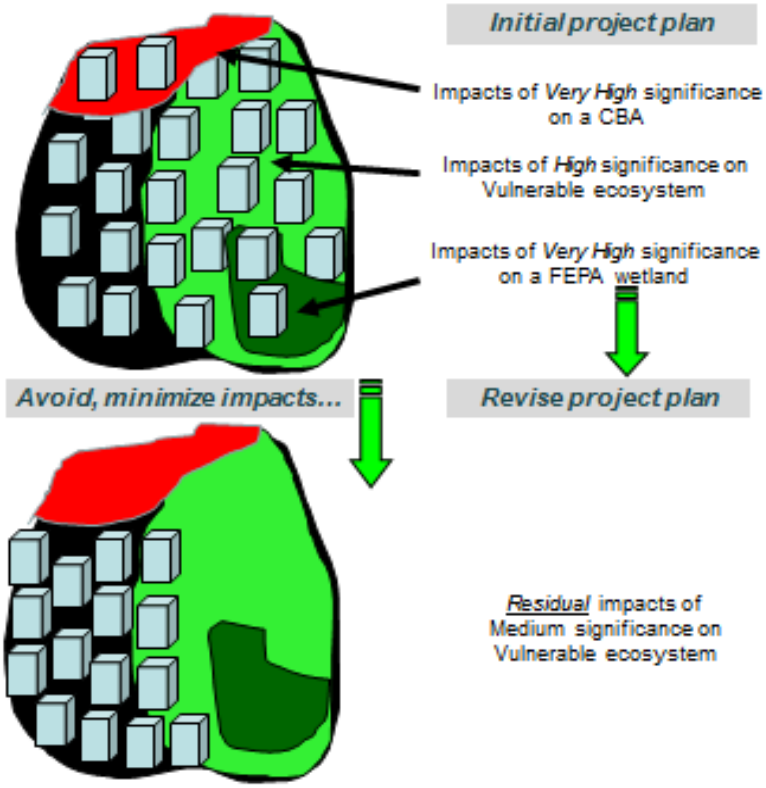


Figure 8 : Illustrating the concept of 'residual impacts'

The trigger for considering a biodiversity offset is the ***significance of residual negative impacts on biodiversity***. The significance of residual impacts on biodiversity must be evaluated by appropriate biodiversity specialist(s), and in collaboration with social and other specialists where biodiversity underpinning priority ecosystem services would be affected.

It is important in evaluating the significance of residual impacts that the biodiversity specialist(s) and EAP are satisfied that the proposed measures to avoid and minimize impacts could and would be *(i.e. that both capacity and resources would be committed to mitigation)* implemented successfully. Only in this way would the measure of residual negative impacts be reliable (i.e. not underestimated). In many instances, proposed measures – particularly with regard to claims of being able to 'restore' impacted areas perfectly - are aspirational rather than accurate, and/or there is little guarantee that they would be implemented (the so-called 'mitigation myth'). In these cases, residual impacts – and the need for biodiversity offsets - would be underestimated.

It is also important, where an applicant proposes to set aside a part of the development site 'for conservation', that this action is not used to reduce the significance ratings of residual negative impacts of the proposed activities: the residual negative impacts of these activities should be evaluated independently of such actions and, where they indicate the need for biodiversity offsets, the area proposed as a 'set aside' could be evaluated in terms of its adequacy as that offset.

5.2.2 When would biodiversity impacts result in irreplaceable loss and what are the implications with regard to the proposed development and offsets?

The significance thresholds in Box 6, Section 5.1.1 refer. Residual impacts of '**Very High**' **significance would pose an unacceptably high risk of irreplaceable loss of biodiversity** in the Western Cape; of irreversible degradation or loss of priority ecosystem services; and an overall loss of ecological integrity. That is, they would be in conflict with the Constitutional requirement for 'ecologically sustainable development' and a number of the NEMA principles that relate to biodiversity, renewable resources and ecological integrity.

Box 8 : 'Irreplaceable loss', 'irreversible impacts', 'extent to which impacts can be mitigated'

The NEMA 2014 EIA Regulations explicitly require the following information (amongst others) in both the BAR or EIR for due consideration by the CEA in decision making:

- the degree to which the impact and risk ***can be reversed***;
- the degree to which the impact and risk ***may cause irreplaceable loss of resources***; and
- the ***degree to which the impact and risk can be mitigated***.

Biodiversity is finite and, in the Western Cape, of global importance. Where negative impacts on biodiversity are of 'very high' significance, the risks of irreversible effects and irreplaceable loss are extremely high. As recognized internationally as a fundamental principle of offsetting, there are limits to what can be offset: biodiversity offsets would in all likelihood not be able to compensate in kind[62] for the negative impacts in these situations.

Impacts of 'very high' significance on biodiversity point to the selection of the 'no project' or 'no go' option in order to satisfy the NEMA principles and the Constitutional requirement for 'ecologically sustainable development'. Project alternatives that would have a better outcome for biodiversity should be sought.

Only in cases where it can be demonstrated **beyond reasonable doubt** that no reasonable and feasible alternative sites/ areas exist for the proposed activity, **and** that the activity is indisputably **in the overriding public interest**, should these impacts be permitted by the CEA.

In these exceptional cases, *compensation* for ***residual negative impacts on biodiversity must be required as a condition of environmental authorization***. Compensation should comprise ***securing area(s) of priority biodiversity (typically, areas currently unprotected within CBAs) identified in provincial biodiversity plans and making adequate financial provision for their management; a basic offset ratio for these 'out of kind' exchanges of biodiversity would be as for Critically Endangered and other irreplaceable biodiversity, at 30:1.***

[62] 'in kind' means of the same biodiversity as that impacted.

Box 9 : Need and Desirability of proposed activities

The NEMA 2014 EIA Regulations require that the 'need and desirability' of proposed alternatives, and a motivation for the 'need and desirability for the proposed development', including that of 'the activity in the context of the preferred location', be provided for all EIA-related reports (i.e. BAR, Scoping Report and EIR). The 'need and desirability' of the development must be taken into consideration by the applicant, EAP, specialists, interested and affected parties and the CEA and other competent authorities.

The Western Cape Department of Environmental Affairs and Development Planning issued a Guideline on Need and Desirability in 2011 as part of their EIA Guideline and Information Document Series. Understanding 'need and desirability' helps to improve environmental decision making by striving for development that is ecologically sustainable and socially and economically justifiable. Consistency with the strategic planning context and priorities with regard both to the spatial location/ siting of development and its timing is a crucial consideration in this regard. In addition, the potential of the proposed development/ activities to cause 'unacceptable cumulative impacts' is important.

In line with the provincial guidelines, from a biodiversity and ecosystem services perspective, it is essential that the applicant, EAP and specialists address, in particular, the issues of **appropriate location of development in relation to important or significant biodiversity** identified in biodiversity/ bioregional plans, and the **potential for cumulative negative impacts on biodiversity and ecosystem services** (i.e. irreversible loss of irreplaceable biodiversity). If the need for the development in that particular location and timeframe cannot be demonstrated and justified, and/ or where development is likely to have significant negative implications, it cannot be seen as 'desirable'; the project should not be supported and/ or the emphasis must be on finding alternative locations (and/ or designs).

5.2.3 When must biodiversity offsets be required?

The significance thresholds in Section 5.1.1 refer. Residual impacts of '**Moderate**' to '**High**' significance indicate that **biodiversity offsets must be required** by the CEA to remedy residual negative impacts on biodiversity.

In exceptional case- and context-specific situations only, where impacts of '**Very High**' significance on biodiversity and/ or ecosystem services are predicted but considered to be both unavoidable and 'in the overriding public interest', and the 'need and desirability' of the proposed development has been established (i.e. the intention is to authorize the proposed activities), then **compensation for these impacts must also be required of the applicant in line with the NEMA principles**. Compensation by way of securing and managing priority areas for conservation (albeit 'out of kind' compensation) would be essential.

5.2.4 When would biodiversity offsets <u>not</u> be required?

The significance thresholds in Section 5.1.1 refer. Biodiversity offsets would not be required by the CEA when residual negative impacts on biodiversity and ecosystem services would be of ***low*** or ***very low*** significance.

6. BIODIVERSITY OFFSETS IN THE NEMA EIA PROCESS

This section answers the following questions:

- What are the generic requirements for addressing biodiversity offsets in EIA processes?
- When would biodiversity offsets be considered during the different stages of the NEMA EIA process – pre application, Basic Assessment, Scoping and EIA?
- On what basis would decisions on biodiversity offsets be taken?
- How should biodiversity offsets be monitored and managed over time?
- What are the different roles and responsibilities in considering biodiversity offsets?

As noted in the NEMA 2014 EIA Regulations (R982), key tasks of the EIA process include the **identification and comparative evaluation of alternatives** to arrive at an optimum activity and site, and to 'identify the most ideal location for the activity within the preferred site ***based on the lowest level of environmental sensitivity*** identified during the assessment'.

The proponent and his/her consultants should follow a positive *'planning with nature'*[63] approach, to avoid significant residual negative impacts on biodiversity. Planning should use both the specific context of the development site and the particular characteristics of the natural environment on the site to inform the scale, nature, siting and layout of development through identifying potential 'fatal flaws', 'no go' areas and constraints to, development, and seeking to exploit opportunities (e.g. for rehabilitation of degraded areas). The nature and scale of the proposed development will also influence the potential significance of impacts on biodiversity and ecosystem services.

Important to note: scope for requiring consideration of offsets

Although this guideline focuses on the consideration of offsets during the EIA process as prescribed by the NEMA 2014 EIA regulations, biodiversity offsets could also be considered during the evaluation process of applications for remediation terms of s24G of NEMA. In that case, an applicant might be directed to consider offsets and commission a separate specialist study to this end, to be included as part of the BAR or EIR.

[63] 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.

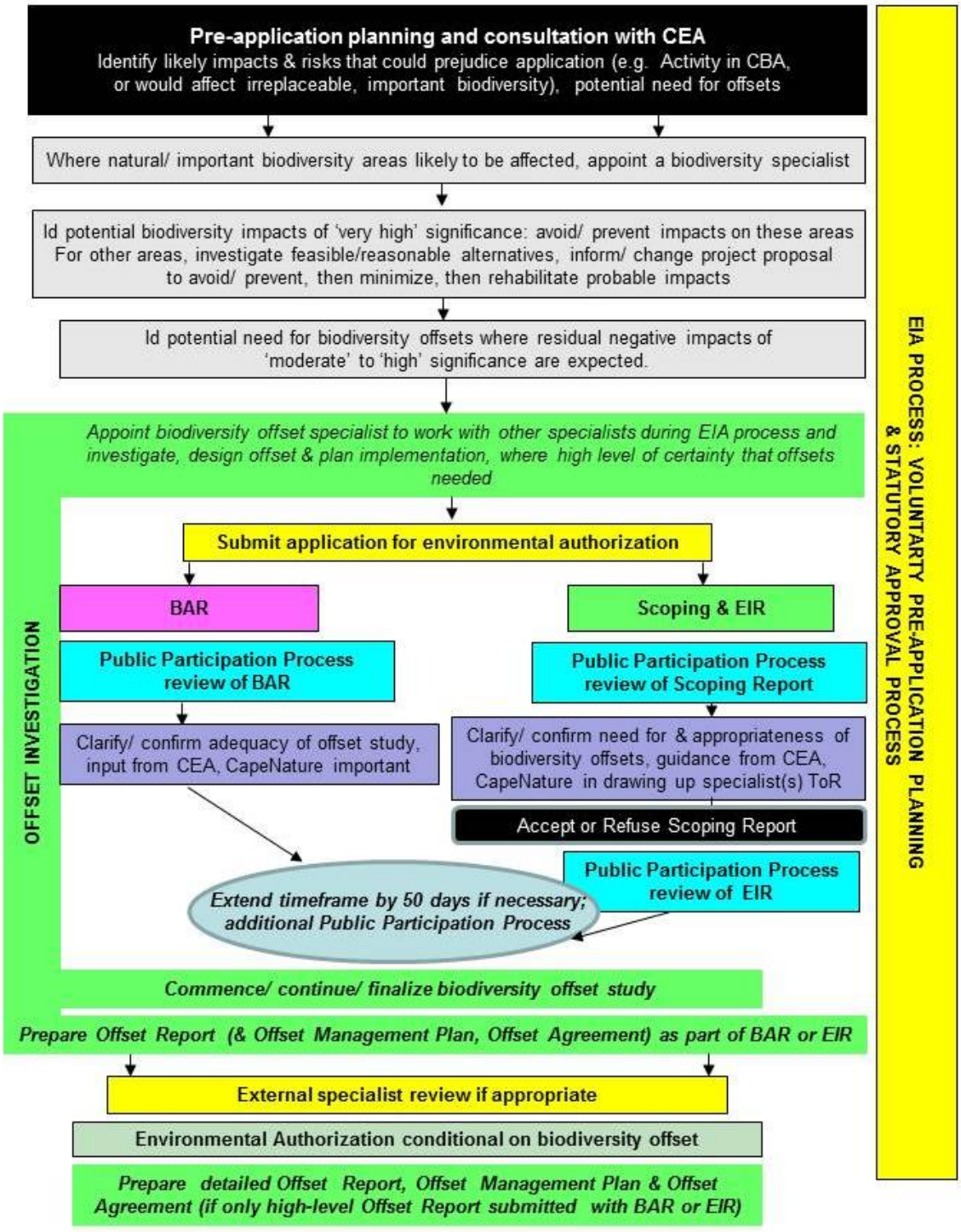


Figure 9 : The broad approach to addressing biodiversity offsets in EIA processes

6.1 Generic requirements for addressing biodiversity offsets in EIA processes

Good practice in designing biodiversity offsets and planning their successful implementation during an EIA process relies on that process delivering assurance that offsets are appropriate, and that they ***could and would be implemented***. The investigation and evaluation of potential offsets, as well as ways to secure, protect and manage those offsets in perpetuity, would thus need to be addressed during the EIA (BAR, S&EIR) process. This process may require the involvement of additional specialists and stakeholders.

Typically, an EAP would appoint an ecologist to give the applicant an early indication of the importance of the affected area and determine the likelihood of significant negative impacts on biodiversity and ecosystem services. In addition, the CEA or CapeNature could specifically request that biodiversity offsets be investigated in the pre-application, BAR and Scoping phases of an EIA process, and/ or key stakeholders and other competent authorities may call for offsets (Sections 6.2-6.4). Where significant negative impacts are probable, the EAP should appoint a biodiversity offset specialist, or a biodiversity specialist with prior experience in offsetting, to address the need for an offset and to design that offset where required.

The biodiversity offset specialist would need to work closely with other specialists involved in the EIA process, to ensure that interdependencies between different specialist fields (e.g. water and biodiversity, different taxa such as birds, fish, reptiles (etc), biodiversity and livelihoods or health) would be addressed. This interaction could be between a number of specialists (e.g., social specialist, surface water or groundwater specialists, health or heritage specialists, resource economist, etc.). The offset specialists would need to address ways to secure, protect and manage offset site(s) in perpetuity, ways to fund management, as well as the potential impacts of securing an offset site for conservation (e.g. changes in rights or access to, and/or use of natural resources on the offset site). 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 study would either be a high-level Offset Report (BAR and in some S&EIR processes) or a detailed Offset Report, Offset Management Plan and associated Offset Agreement for decision-making purposes, as in many S&EIR processes (Section 8). Should the CEA authorize the proposed development conditional on a biodiversity offset without the required detailed Offset Report, Offset Agreement and Offset Management Plan, then these documents would need to be prepared post-authorization but before the commencement of any activities for which authorization was applied (Figure 14).

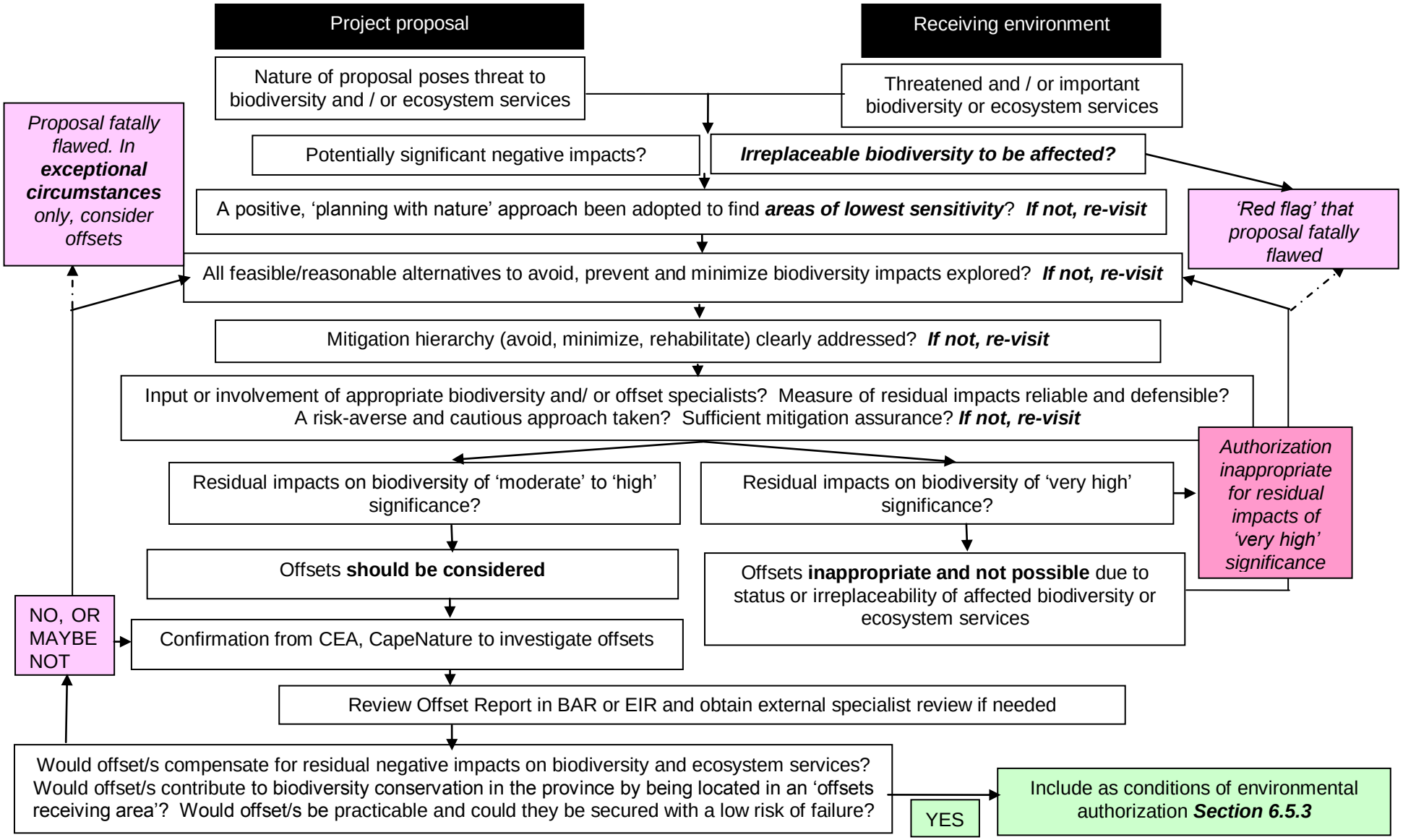


Figure 10 : Generic steps in the EIA and decision-making system

Important to note: biodiversity offsets, environmental authorization and the 'one environmental system'

Biodiversity offsets may not be used as a negotiation tool to attempt to leverage environmental authorization.

The proponent needs to address the full spectrum of mitigation measures to remedy the negative impacts of the proposed project that would harm resources held in public trust ('externalities') and ensure that the polluter or environmental degrader pays[64]. As with all other mitigation-related studies and proposals, the biodiversity offset study ***in no way means that the proposed development would be authorized***.

As with other mitigation measures, addressing the biodiversity offset requirements as an integral form of mitigation within the EIA process is 'good practice' that gives the applicant and project funders a reliable indication of the likely costs of offsets that should be taken into account in overall project budgets.

With the 'one environmental system', where decisions on other licences and authorizations must be made within the same timeframes as the environmental authorization, it is crucial that collaboration takes place between authorities with an interest in offsets. In particular, there must be collaboration and cooperation between the CEA and the DWS with regard to offsets for impacts on freshwater (wetlands, rivers) and estuarine ecosystems where Water Use Licences as well as Environmental Authorizations are needed for a particular project. It would also be appropriate to engage the Department of Agriculture, Forestry and Fisheries where affected ecosystems would have consequences for these aspects of environmental management or could trigger offset requirements, and Land Use Planning authorities that may also require offsets.

6.2 Pre-application planning

Where natural habitat would clearly be affected by the proposed project, it is strongly advised that the proponent and/ or appointed EAP should engage an ecologist to identify potential biodiversity- and ecosystem services-related issues. This phase must include the collection of enough reliable baseline information by the EAP and biodiversity specialist (where appointed) to identify key biodiversity issues and risks, as well as priority areas for biodiversity conservation: (Figure 5).

- identified in bioregional or biodiversity plans, as CBAs, ESAs, protected areas or FEPAs (Table 3)
- identified as 'sensitive' in applicable Environmental Management Frameworks (EMFs), or
- Identified as coastal public property or within the coastal protection zone.

The ecologist/ biodiversity specialist should be able to identify priority areas for biodiversity where negative impacts should be avoided or prevented, and make firm recommendations for alternatives that would achieve that end. This specialist's evaluation of the likely significance of residual impacts on biodiversity, in collaboration with a social/socioeconomic specialist where important ecosystem services are likely to be involved, would help to determine when biodiversity offsets might need to be investigated to satisfy the NEMA principles. It may be prudent for an applicant to seek clarity at this point whether or not a CEA might require an offset report to be undertaken.

[64] 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, Also, the cost of remedying pollution or environmental degradation must be paid by those responsible for that harm. [NEMA s2 principles]

Attention must be paid to the specialist's recommendations for considering alternatives that would avoid or minimize negative impacts and risks; prevention is always better (and mainly cheaper) than cure:

- When the proposed project would affect areas of irreplaceable biodiversity and residual impacts are likely to be of 'very high' significance, the biodiversity specialist should recommend that alternatives must be sought to avoid or reduce these impacts since 'in kind' offsets would not be feasible. Should the proponent pursue this development option at risk, in spite of the specialist's advice, authorization for the development should preferably be refused after the BAR or S&EIR (Section 5.2.2, Section 6.5 and Box 8 refer).
- When the proposed project would affect areas of high biodiversity importance/ priority areas for biodiversity, or areas where biodiversity issues are considered to pose a potential risk to the project, the residual impacts on biodiversity are likely to be assessed by the specialist to be of 'moderate' to 'high' significance. The emphasis in these cases must be on finding project alternatives to avoid these areas and prevent impacts on them, as well as minimizing unavoidable impacts and ensuring swift rehabilitation. Only when these options have been exhausted would offsets for biodiversity loss 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 would need to be taken into account in the EIA process.
- When impacts would be on biodiversity of low importance, and assessed likely to be of 'low' significance, there would not be a need for an offset to compensate for biodiversity impacts on condition that the recommendations for managing biodiversity impacts are fully implemented by the proponent.

Box 10 : Offsets in the EIA process: the NEMA 2014 EIA Regulations and the challenge of timeframes

The NEMA 2014 EIA Regulations impose tight timeframes on BAR and S&EIR processes as part of the introduction of the 'One Environmental System' where a number of different application and authorization processes are run concurrently. Since biodiversity offsets are seen as the 'last resort' in the mitigation hierarchy, these timeframes present a significant challenge to 'good practice' design of offsets and planning for their reliable implementation within the EIA process. However, to avoid incremental decision making and enable the likely costs of offsets to be incorporated in overall project budgeting, it is crucial for offsets to be addressed during this process.

R3(7) of R982 empowers the CEA at its discretion to agree to an extended timeframe for BAR or S&EIR where the scope of work must be expanded because the assessment uncovered something that was not, or could not have been, anticipated prior to undertaking the assessment, or where exceptional circumstances can be demonstrated, and to agree with the applicant on the length of that extension. However, relying on applying this option would present a major risk in that the timeframes of all the other authorization processes being run as part of the One Environmental System would need to be changed to accord with the legislated timeframes.

The best way to minimize risks of an application being refused or rejected on grounds either of an inadequate assessment process and/ or of mitigation that would fail to satisfy the NEMA principles, would be to identify any potentially significant impacts as early as possible in the project planning and EIA process. By so doing, the proponent and EAP could apply key steps in the mitigation hierarchy to avoid the need for biodiversity offsets. With the range of spatial biodiversity information available in the Western Cape, this phase is best suited to identifying constraints and risks associated with biodiversity and ecosystem services and tailoring proposals to maximize their acceptability and minimize risks of refusal. Focused interaction with CapeNature regarding likely risks would be advantageous early on.

For some projects (e.g. mining) where the project location is largely predetermined but coincides with priority areas for biodiversity or ecosystem services, or other projects of overriding national importance

(e.g. and large public infrastructure developments) where there are no feasible or reasonable alternatives that could be pursued to avoid impacts on priority biodiversity areas, the need for biodiversity offsets must be seen as 'a given' and known from project inception. In these cases, a biodiversity offset specialist should be appointed prior to formal submission of the application for environmental authorization. In this way, the biodiversity offset can be addressed as an integral part of the EIA process and the biodiversity offset specialist can engage with other biodiversity (and other[65]) specialists to design an appropriate offset.

For projects where, after diligently and sequentially (Figure 2) seeking and documenting measures to avoid and minimize likely negative impacts on biodiversity through relevant alternatives, residual negative impacts of moderate to high significance would remain, then it should be anticipated that biodiversity offsets would need to be investigated; a biodiversity offset specialist could be appointed in the pre-application stage. However, where impacts are likely to be highly significant but where alternatives to avoid/ prevent and minimize impacts have not yet been addressed, it would be not be appropriate to start investigating offsets as an acceptable form of mitigation.

Provision is made in the NEMA 2014 EIA Regulations (R982 of 4 December 2014, R8) for the CEA to guide the proponent in the processes to be followed, decision support tools that must be used to comply with the law, and any matters that may prejudice the application. To this end, DEA&DP have issued a 'Notice of Intent to submit an application' form in terms of the NEMA 2014 EIA Regulations (December 2014), with an optional pre-application meeting, to allow for the Department to provide informed (written) guidance to a proponent and Environmental Assessment Practitioner (EAP) on the process to be followed. It is understood that public participation and authority engagement may be undertaken, and specialist(s) could be appointed to undertake work on the EIA, ***prior to submission of the application*** for environmental authorization.

The CEA at this point:

a) would need to indicate clearly in the pre-application engagement with the proponent or EAP those situations where the ***negative impacts on biodiversity or ecosystem services could prejudice the application***.
b) could indicate the likely need to address biodiversity offsets in EIA processes as a decision support tool where significant residual negative impacts on biodiversity are anticipated, the need and desirability of the proposed activities can be fully demonstrated, and the applicant is likely to be unsuccessful in avoiding or preventing these impacts.

This 'early warning' would help to ensure that due and timely consideration would be given to offsets during the EIA process. Furthermore, it could underline the need first to avoid or prevent impacts on biodiversity given the potential cost and time implications of having to find suitable biodiversity offsets.

6.3 Basic Assessment process and reporting, including an EMPr and Closure Plan if relevant

The objective of the Basic Assessment process is to document how the proposed activity complies with and responds to the policy and legislative context; evaluate the need and desirability of the activity in the context of the preferred location; identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts, and the optimum location on that site taking environmental sensitivities (i.e. *significant or important areas that are easily harmed*) into account.

[65] 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.

Biodiversity offsets would be required for residual negative impacts on biodiversity of 'moderate' to 'high' significance; impacts of 'very high' significance should be avoided or prevented through rigorous investigation of alternatives, as they would lead to irreplaceable loss, indicating that the 'no go' development option should be selected.

Where a biodiversity offset is required, a reliable measure of residual biodiversity impacts must be used as the point of departure for determining the required offset, and a transparent methodology must be used to arrive at the proposed offset (Sections 7.1-7.2). A specialist study describing the proposed offset in an Offset Report (Section 6.3) should be incorporated within the BAR.

The BAR and EMPr must be subject to at least 30 days of 'public participation' during which comments on these documents may be submitted; the submitted EIR and EMPr must reflect the incorporation of these comments, including from the CEA and other relevant authorities, particularly CapeNature and the DWS. Stakeholder engagement in planning the biodiversity offset(s) is essential.

Important to note: public participation during the BAR process

It is crucial that the CEA and/or CapeNature, during the public participation process, give a clear indication to the proponent or appointed EAP of the need to investigate potential offset options and whether or not offsets would be appropriate in the particular case and context.

It is important that CapeNature, as the agency responsible for biodiversity conservation in the province, SANParks (where national parks may be affected), other conservation NGOs with an interest in the affected area, and DWS as the competent authority for issuing water use licences and deciding on the need for wetland (and other freshwater) offsets be engaged in the process.

Stakeholders may identify the need for reasonable alternatives to be assessed that would obviate the need for offsets, impacts that would be unacceptable or cause irreplaceable loss, or impacts for which offsets would be acceptable. They may make recommendations on the nature and location of such offsets.

Where significant new information is added to the BAR (e.g. where the possible need for biodiversity offsets is not identified during the pre-application period and only becomes apparent during this public participation stage), then the CEA must be notified of a 50 day extension to the timeframe, including another 30-day public participation period.

The BAR must contain an explicit statement with regard to the appropriateness of a biodiversity offset, and the adequacy of any proposed offset (i.e. whether or not it would fully compensate for the residual negative impacts on biodiversity and/or valued ecosystem services).

Figure 11 shows steps in the BAR process for including consideration of biodiversity offsets.

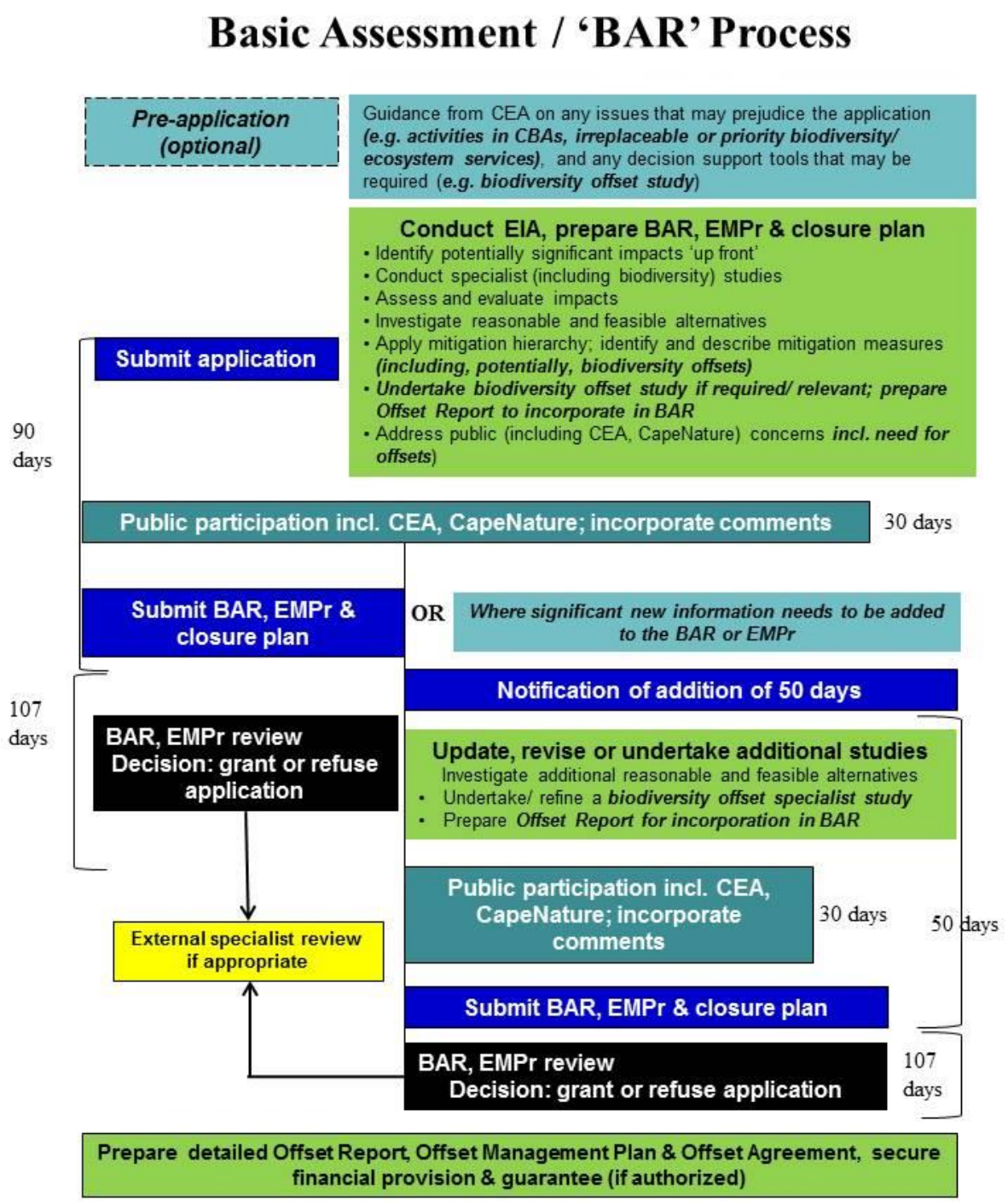


Figure 11 : Steps in the BAR process for including consideration of biodiversity offsets.

6.4 Scoping and Environmental Impact Assessment process and reporting

Figure 12 shows steps in the S&EIR process for including consideration of biodiversity offsets.

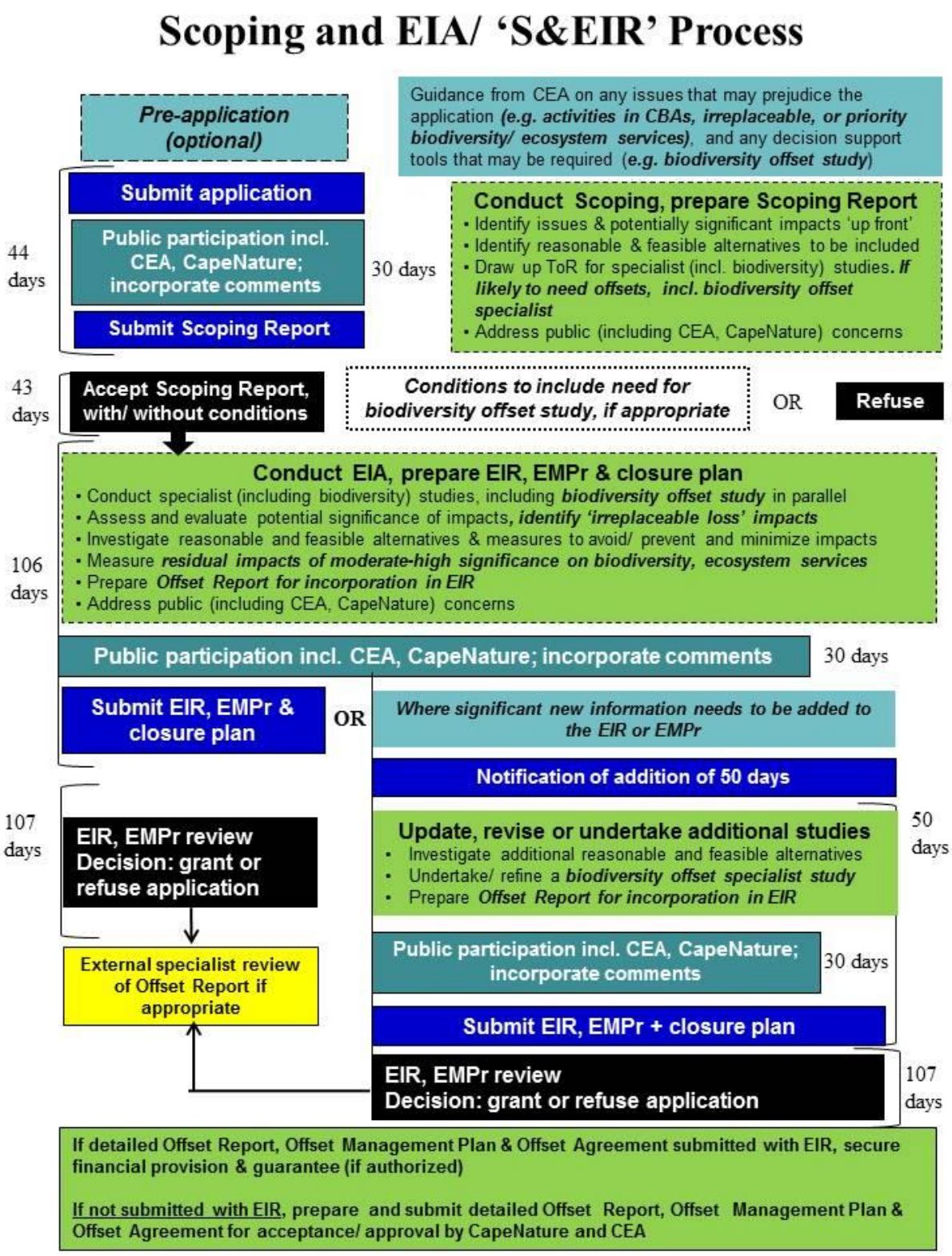


Figure 12 : Steps in the S&EIR process for including consideration of biodiversity offsets.

6.4.1 Scoping

The objective of Scoping (part of the S&EIR process, R982 of the 2014 EIA Regulations) is to 'identify and confirm' the 'preferred' activity, technology and site alternative; the latter through a 'detailed site selection process' including ranking of alternatives focusing on, amongst others, the biological aspects of the environment. It must identify the key issues to be addressed in the EIA phase, agree on the level of assessment to inform the location of the proposed development within the preferred site. Scoping must also identify suitable mitigation measures and determine the extent of residual risks that need to be managed and monitored.

The scoping process should thus identify biodiversity issues and concerns, and alternatives to that activity that would be feasible, reasonable, and would avoid or minimize negative impacts on biodiversity and valued ecosystem services. Biodiversity offsets would be required for unavoidable residual negative impacts on biodiversity of 'moderate' to 'high' significance after feasible and reasonable efforts have been made to avoid and minimize impacts. **Residual negative impacts of 'very high' significance would not be able to be compensated 'in kind' and would lead to irreplaceable loss of biodiversity and/ or ecosystem services, indicating that the 'no go' option should be selected. Moreover, there would be a high risk of environmental authorization being refused should activities with impacts of 'very high' residual significance be pursued**.

Should it only become clear during Scoping (i.e. and not during pre-application) that residual negative impacts on biodiversity and/ or ecosystem services are likely to be significant, it would be necessary to appoint a biodiversity offset specialist to design an appropriate offset during the EIA process, working closely with other specialists on the team. In the case of 'like for like' or 'trading up' habitat on the development site or for which offset agreements to purchase or lease land are proposed, an Offset Management Plan would need to be prepared and submitted with the EIR. (The contents of an Offset Report and Offset Management Plan, to provide that information that would be required by the CEA to evaluate a proposed offset, are given in Section 8.) 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 the need for offsets (Sections 5.1-5.2), and to identify appropriate offset options for further consideration and development during the EIA where that need has not already been identified (e.g. in pre-application phase). Where a biodiversity offset is required, a reliable measure of residual biodiversity impacts (e.g. area and condition as a minimum) must be used by the specialist as the point of departure for determining the required offset, and a transparent methodology must be used to arrive at the proposed biodiversity offset. The manner in which the offset would be secured and managed, and associated financial provision made for its management, would need to be included in the scope of specialist study.

The Scoping Report must be subject to at least 30 days of 'public participation' during which comments on these documents (including from the CEA and other relevant authorities) may be submitted.

Important to note: public participation during Scoping

It is crucial that the CEA and CapeNature, during the public participation process, give a clear indication to the proponent or appointed EAP of the appropriateness of biodiversity offsets in this case and context, and the need to investigate potential offset options.

It is important that CapeNature, as the agency responsible for biodiversity conservation in the province, SANParks (where national parks may be affected), other conservation NGOs with an interest in the affected area, and DWS as the competent authority for issuing water use licences and deciding on the need for wetland (and other freshwater) offsets be engaged in the process.

Stakeholders may identify the need for reasonable alternatives to be assessed that would obviate the need for offsets, impacts that would be unacceptable or cause irreplaceable loss, or impacts for which offsets would be acceptable. They may make recommendations on the nature and location of such offsets. All such recommendations and inputs should be incorporated in the Terms of Reference for specialists – including an offset specialist as appropriate – for the subsequent EIA.

The Scoping process should inform the Terms of Reference (ToR) for biodiversity specialists to address key issues, to be included in the Plan of Study for EIA. Specific and explicit conditions regarding the need for biodiversity offsets to be investigated, and the scope of this investigation, must be included if the Scoping Report were accepted by the CEA.

As noted earlier, to avoid the risks of being unable to address biodiversity offsets adequately within the legal timeframes of the 'One Environmental System', it would be preferable to invest time and effort in the pre-application phase in striving to avoid or prevent impacts on important biodiversity and, where they cannot be avoided, to appoint a biodiversity offset specialist at that time.

6.4.2 Environmental Impact assessment

The objective of the EIA process (part of the S&EIR process, R982 of the 2014 EIA Regulations) is to document how the proposed activity complies with and responds to the policy and legislative context; evaluate the need and desirability of the activity in the context of the preferred location; identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives, and the optimum location on that site '***based on the lowest level of environmental sensitivity identified during the assessment***'. The EIA must determine the nature, significance and probability of impacts to inform comparison of alternatives, and must describe the degree to which impacts can be reversed/ may cause irreplaceable loss/ could be avoided, mitigated or managed.

Biodiversity offset requirements will only be known accurately and with full confidence once the residual impacts on biodiversity and/or ecosystem services have been assessed in detail. However, provided that the probable risks and impacts of all reasonable and feasible project alternatives have been reliably and rigorously evaluated during scoping (or pre-application) and it is clear that residual negative impacts are likely to be of moderate to high significance, the design and planning for implementation of offsets could be initiated as early as possible and be refined prior to submitting the EIR where appropriate.

The EIR must be subject to at least 30 days of 'public participation' during which comments on these documents may be submitted; the submitted EIR must reflect the incorporation of these comments, including from the CEA and other relevant authorities.

Important to note: public participation during the EIA (S&EIR) process

It is crucial that the CEA and CapeNature are involved during the public participation process, to give a clear indication to the proponent or appointed EAP of the adequacy of the offset study, drawing on the principal information that will be required for the CEA to take a decision on the proposed project. Shortcomings and areas of insufficient information to give assurance that an offset could and would be implemented successfully must be explicitly pointed out and asked to be rectified.

SANParks should be involved in the process where national parks may be affected, as should other conservation NGOs with an interest in the affected area, and DWS as the competent authority for

issuing water use licences and deciding on the need for wetland (and other freshwater) offsets are engaged in the process.

Where significant changes need to be made and/ or new information added to the EIR (e.g. where the biodiversity offsets study is deemed to be inadequate by stakeholders and/ or additional work needs to be done to plan offset design or implementation), then the CEA must be notified of a 50 day extension to the timeframe, including another 30-day public participation period.

Where a biodiversity offset is required and/ or appropriate in order to ensure that the NEMA principles would be satisfied, a specialist study setting out the proposed offset in an Offset Report should be incorporated within the EIR and should contain the elements set out in Section 7.

Important to note: refusal and resubmission of EIR

It is important to note (R982 21(2)) that, where an EIR is refused due to insufficient information but the Scoping Report was accepted and remains valid (i.e. the environmental context and the applicant have not changed), an updated/ revised EIR may be submitted within a 2 year period after the date of acceptance of that Scoping Report provided that they have been subjected to a public participation process. That is, if the EIR is refused in part/ wholly because biodiversity offsets have not been adequately addressed, a biodiversity offset study would need to be commissioned within this time period to avoid having to start an entirely new S&EIR application process.

6.5 Decision by Authority

Figure 13 sets out a simple decision tree for use by the CEA (and as a frame of reference by biodiversity offset specialists and the EAP. In essence, the CEA's information needs in order to reach an informed decision are reflected in the contents of the Offset Report (Sections 8.1-8.2).

The decision-making process for projects involving biodiversity offsets comprises:

1. Determining whether or not a biodiversity offset would be appropriate and acceptable;
2. Decision making, environmental authorization and setting of explicit conditions for the biodiversity offset, based on a high-level Offset Report;
3. Reviewing and accepting (or requiring revision of before accepting): a detailed Offset Report, including financial and implementation arrangements, and any offset agreements prepared between the applicant, the offset implementing agent(s) and any other relevant parties detailing the specifics of offset implementation.

Importantly, the proposed activity could only commence once the last step in the process has been finalised to the satisfaction of the CEA.

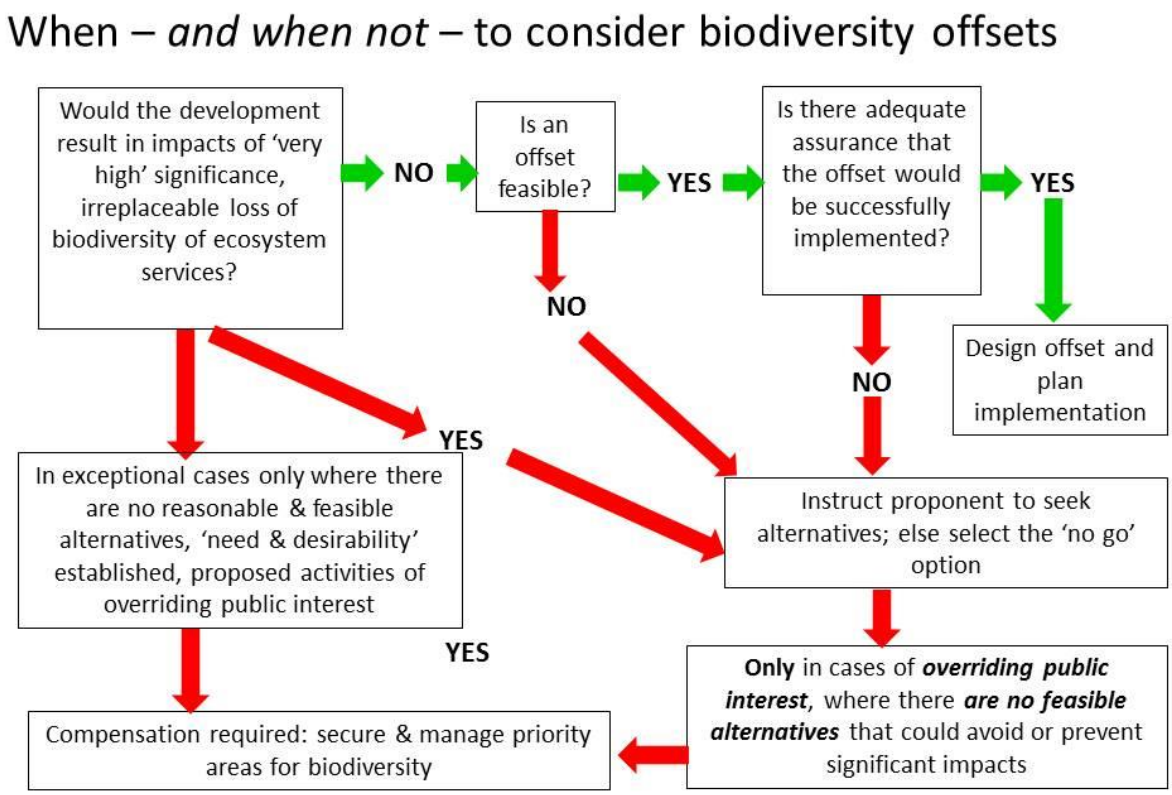


Figure 13 : Simple decision tree

On the basis of the BAR or S&EIR the CEA would need to make a final decision on the project. According to NEMA, the criteria to be taken into account by the CEA (s24O) include:

- any pollution, environmental impacts or environmental degradation likely to be caused if the application is approved or refused;
- measures that may be taken to protect the environment from harm as a result of the activity; prevent, control, abate or mitigate any pollution, substantially detrimental environmental impacts or environmental degradation;
- the ability of the applicant to implement mitigation measures and to comply with any conditions subject to which the application may be granted;
- the ability of the applicant to comply with the prescribed financial provision; and
- where appropriate, any feasible and reasonable alternatives to the activity which is the subject of the application and any feasible and reasonable modifications or changes to the activity that may minimize harm to the environment.

These criteria are of direct relevance to biodiversity offsets in that CEA officials, on receiving a BAR or S&EIR, must satisfy themselves that:

a) the mitigation hierarchy has been diligently and rigorously applied to mitigate negative impacts, before considering the 'last resort' use of biodiversity offsets where significant impacts remain;
b) feasible and reasonable alternatives or changes to the proposed activity that may minimize or prevent harm (***and thus may remove the need for offsets***) have been adequately addressed;
c) the applicant has the ability and capacity to implement offsets; and
d) the applicant can provide adequate finances to secure and manage the offset.

Important to note: quality assurance in biodiversity offset work

Where the CEA lacks the necessary technical knowledge to review a biodiversity offset proposal, to determine whether this aspect of the assessment has been carried out correctly and if the information is sufficient and of adequate quality in order to make a decision, **it is legally empowered to appoint an external specialist to review this aspect of the assessment (NEMA s24I**).

It may also be beneficial to establish a **Biodiversity Offsets Committee** comprising provincial and local authorities to evaluate and reach agreement on biodiversity offsets, both to ensure that the outcomes of biodiversity offsets have the support of both local and provincial government and to build capacity on biodiversity offsets in the province as a whole.

6.5.1 Determining whether or not a biodiversity offset would be appropriate and acceptable

The decision support system and decision tree (**Figures 10 and 13**) should be used to guide decision making. Reference should be made **Box 11** for key considerations in deciding on the acceptability and adequacy of a proposed offset. The latter will depend on the adequacy of the Offset Report as the basis for authorization.

The CEA must be in possession of all the required and relevant information pertaining to a proposed development and associated mitigation (including biodiversity offset) proposals before being in a position to take an informed decision on that development.

Importantly:

1. **Biodiversity offsets would not be able to remedy residual impacts of 'very high' significance**, where there would be a risk of irreversible impacts and/or loss of irreplaceable biodiversity, where residual negative impacts could jeopardise ecosystem integrity, and/ or would lead to deterioration in or loss of critical ecosystem services (thus negatively impacting on human health and wellbeing). ***The proposed development should thus be refused by the CEA since it would not* satisfy the NEMA principles and the Constitutional requirement for 'ecologically sustainable development.** ***The proponent should be instructed to 'go back to the drawing board' and formulate an alternative proposal***.

   Only in cases where it can be demonstrated beyond reasonable doubt that no alternative sites/ areas exist for the proposed activity, and that the activity is of undisputed and overriding national public interest, should these impacts be permitted by the CEA. ***In these exceptional cases, it is essential that compensation for these residual negative impacts is required as a condition of environmental authorization. This compensation should secure area(s) of priority biodiversity identified in provincial biodiversity plans and make adequate financial provision for their management; a basic offset ratio for these 'out of kind' exchanges of biodiversity would be 30:1.***
2. Where biodiversity offset activities would have a *high risk of failure*, and/ or the vehicle for *in lieu* monetary payment is deemed high risk in terms of committing those funds for the sole purpose of securing an appropriate biodiversity offset, then the proposed offset would be unacceptable. In this case, the proposed development should be refused by the authority: it is of fundamental importance that there are acceptable offset plans, and commitment to appropriate implementation arrangements and sufficient financial provision.
3. Loss of irreplaceable biodiversity and/ or of biodiversity underpinning important ecosystem services should not be permitted unless it can be shown that *no alternative sites/ areas exist for the proposed activity and that the activity is of undisputed and overriding public interest*. That is,

proponents should be requested to seek project alternatives where there would be a high risk of irreplaceable loss of biodiversity or associated ecosystem services.

4. Where any loss of irreplaceable biodiversity and/ or of biodiversity underpinning important ecosystem services is permitted, the authorization must demonstrate clearly how, and on what basis, biodiversity offsets have been required and would satisfy the interests of sustainable development in light of the Constitution and the NEMA principles and international obligations to conserve biodiversity and ecological integrity.
5. Where offsets are needed for freshwater ecosystems as part of the environmental authorization process, and may also be required in terms of a Water Use Licence, close collaboration between CEA and CapeNature, and DWS, is essential to ensure alignment of authorization/ licence.

Where the BAR or EIR provides the competent authority with enough information and assurance that a biodiversity offset, providing 'like' biodiversity as that residually impacted, would be appropriate, feasible (e.g. a number of potentially suitable offset sites were available in the landscape), and could and would be implemented successfully, then the biodiversity offset would be included as a deciding factor in the authorization of the development and would be specified as a **condition of authorization** (i.e. not a recommendation).

6.5.2 Taking a decision

The competent authority must evaluate the adequacy of information provided in the BAR or EIR and make a decision on the proposed project, taking into account any biodiversity offset proposals.

In its authorization, the competent authority must indicate clearly that the proponent has satisfied the hierarchy of pre-conditions for considering offsets given in Box 10 and Figure 10. The authorization must include a legally defensible motivation to include biodiversity offsets as conditions, linked explicitly to the requirement to remedy residual negative impacts on biodiversity. The rationale must clearly link the need for offsets to s24 of the Constitution[66] and the State's obligation to, amongst others take heed of the NEMA principles in its decisions. The following principles, in particular, have direct relevance to offsets in view of intrinsic biodiversity considerations, as well as the ecosystem services value of biodiversity in supporting human health and wellbeing, as well as sustainable development:

- s4(a) of NEMA: Avoid or, where not possible to altogether avoid, minimise and remedy, disturbance of ecosystems and loss of biological diversity.
- s4(o) of NEMA: 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
- s4(a)(vi) 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.
- s4(a)(vii) A risk-averse and cautious approach is applied, taking into account the limits of current knowledge about the consequences of decisions and actions.
- s4(p) 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.

Should the Offset Report submitted as part of the BAR or EIR fail to demonstrate beyond reasonable doubt that biodiversity offsets could and would be successfully secured and managed, then ***the project should not authorized*** as there would be a material risk that it could result in loss of irreplaceable

[66] Everyone has the right to an environment that is not harmful to health or wellbeing, and 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 while promoting justifiable economic and social development.

biodiversity. That is, the BAR or EIR should be refused, crucial gaps in information pointed out, and the proponent / EAP should be instructed to address these gaps through additional offset-related studies.

For the purposes of evaluating and making decisions on biodiversity offsets, and including explicit and enforceable conditions of environmental authorization, specialist reports incorporated in the BAR or EIR must provide enough relevant and reliable information to answer the key questions in Box 11. In addition, reference should be made to Figure 9.

Box 11 : Key considerations in deciding on the acceptability and adequacy of a proposed offset during the BAR or S&EIR process

The CEA must be satisfied that the following requirements have been met before biodiversity offsets can be considered:

- All reasonable and feasible measures and alternatives to avoid/ prevent and minimize potentially significant negative impacts on biodiversity have been considered.
- There would not be any negative impacts on biodiversity that would result in irreplaceable loss of biodiversity and/ or be of 'very high' significance.

  OR

  Where residual negative impacts on biodiversity and/ or ecosystem services would be of 'very high' significance and are likely to lead to loss of irreplaceable biodiversity, the need and desirability of the proposed activity has been clearly established and the proposed project is of overriding public importance.
- Biodiversity offsets have been considered as a 'last resort' form of mitigation.

Where biodiversity offsets would be acceptable and are needed:

- A reliable measure of residual negative impacts on biodiversity and, where appropriate, ecosystem services, has been determined.
- The size of biodiversity offset that would adequately compensate for residual biodiversity impacts has been reliably calculated.

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

- There must be good assurance that adequate and appropriate offset/s can 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.
- A mechanism for securing offset site(s) in the long-term, preferably in perpetuity, must be provided.
- Offset site(s) must preferably be located in identified 'offset receiving areas'.
- Offsets or compensation for residual negative impacts on valued ecosystem service must be acceptable to the main affected parties.
- Where biodiversity offsets could impact on local communities, compensation for these impacts must be planned or incorporated within the offset implementation plan.
- The costs of securing, establishing, rehabilitating and managing offset site(s) must be reliably determined.
- There must be sufficient guarantees that the offset/s would be secured, managed, monitored and audited.
- Any risks and uncertainties associated with the offset must be clearly stated.

In all cases where an offset has been included as a condition of authorization, the CEA must give reasons for that offset, taking explicit account of the NEMA principles and indicating clearly that the proponent has satisfied the hierarchy of pre-conditions for considering offsets given in Box 11 and Figure 9. Where compensation has been considered and is required in 'exceptional circumstances' (Section 5.2.2), the CEA must provide robust and defensible reasons why the particular circumstances associated with the proposed development qualified as 'exceptional circumstances' (i.e. why residual impacts of very high significance, leading to irreversible and/or irreplaceable negative impacts on biodiversity, and potentially jeopardizing ecological integrity, were authorized).

Where the CEA has not included requirements for biodiversity offsets, explicit and defensible reasons must be provided with full justification, in particular, for:

- Not applying the NEMA principles as set out above; and
- Permitting development that would not qualify as ecologically sustainable.

Where any 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.

6.5.3 Conditions of environmental authorization

The competent authority must be in possession of all the information it needs to evaluate the biodiversity offset; this information should be provided by the Offset Reports (Section 8).

Important to note: conditions of authorization

Of direct relevance to biodiversity offsets, an environmental authorization may (R982 of 4 December 2014, R26) specify:

- requirements for the avoidance, management, ***mitigation***, monitoring and reporting of the impacts of the activity on the environment throughout the life of the activity additional to those contained in the approved EMPr. ***'Mitigation' could include biodiversity offsets***.
- any relevant conditions which the competent authority deems appropriate. ***Biodiversity offsets could constitute such conditions.***
- the frequency of independent auditing of ***compliance with the conditions of the environmental authorization*** and of compliance with the EMPr; the frequency of compliance audits may not exceed 5-year intervals. ***This condition could apply to the auditing of biodiversity offsets***.
- the frequency of submission of an independent environmental audit report to the competent authority.

Conditions of environmental authorization must be **explicit and provide measurable outcomes that could be monitored, audited and enforced**. They should specify:

1. The required size of the offset (ha) in relation to specific, impacted biodiversity components (e.g. vegetation or ecosystem type, species habitat) and the condition of the targeted area;
2. Where and how the offset should be located in the landscape (e.g. maximum distance from impact site, consistent with priority areas for biodiversity conservation in biodiversity plans, creating ecological corridor or buffering protected areas, etc.);
3. The need to secure the offset site(s) in perpetuity (e.g. declaration as a Protected Area or Nature Reserve, or conservation servitude);

4. The need to provide sufficient funds (to be determined in the detailed Offset Report) for securing and managing the proposed offset site(s) in such a way that degraded areas are rehabilitated and biodiversity is conserved;
5. The duration of the applicant's responsibility for the offset, namely for at minimum the duration of residual negative impacts of the proposed activities[67];
6. *For in lieu monetary payment in exceptional circumstances only*, where defensible reasons for this option are essential, what financial provision must be made and the specified recipient of funds. Guarantees that this payment would be used solely for the conservation of specific would also be crucial;
7. Explicit timeframes within which to
   a) prepare and submit a detailed Offset Report (Section 8.2), to be accepted by CapeNature and the CEA;
   b) finalize implementation arrangements and responsibilities;
   c) prepare a detailed budget and identify the mechanisms for financial provision to meet offset requirements; and
   d) secure the target offset properties for biodiversity conservation.

   The detailed Offset Report, implementation arrangements and financial provision and, if applicable, signed offers to purchase or otherwise secure properties identified for the offset (e.g. agreements between the applicant and landowner indicating that landowner's willingness to declare a protected area on his/ her property), must be submitted as soon as practicable after (if) an environmental authorization conditional on an offset is issued, but not more than 6 months after it was issued.

8. That the proposed activity/ies for which environmental authorization has been applied **may not commence** until key components have been completed, reviewed and accepted by CapeNature, and subsequently by the CEA (Figures 9-12 refer), including:
   a) The **Detailed Offset Report**;
   b) **Offset Management Plan(s)** prepared for the land parcel(s) constituting the offset; and
   c) The **financial requirements** for securing, establishing, rehabilitating and managing the offset site(s);
   d) **Guarantees of adequate financial resources** to comply with the offset conditions. These guarantees must be held in the name of the implementing agent (e.g. CapeNature, SANParks, conservation NGO or PBO), or held in an escrow account of a reputable financial institution or auditing firm; and
   e) **Binding agreements** with landowners to purchase or otherwise secure suitable offset sites, for biodiversity conservation (e.g. documented purchase agreements, agreements of sale, stewardship agreements or other legal agreements related to the securing of offset site(s)).

[67] Some projects do not have a clearly defined 'operational phase'; they effectively last forever in changed or upgraded forms (e.g. housing developments, public infrastructure). In these cases, the duration of residual impacts is taken to be the design life of the particular activity.

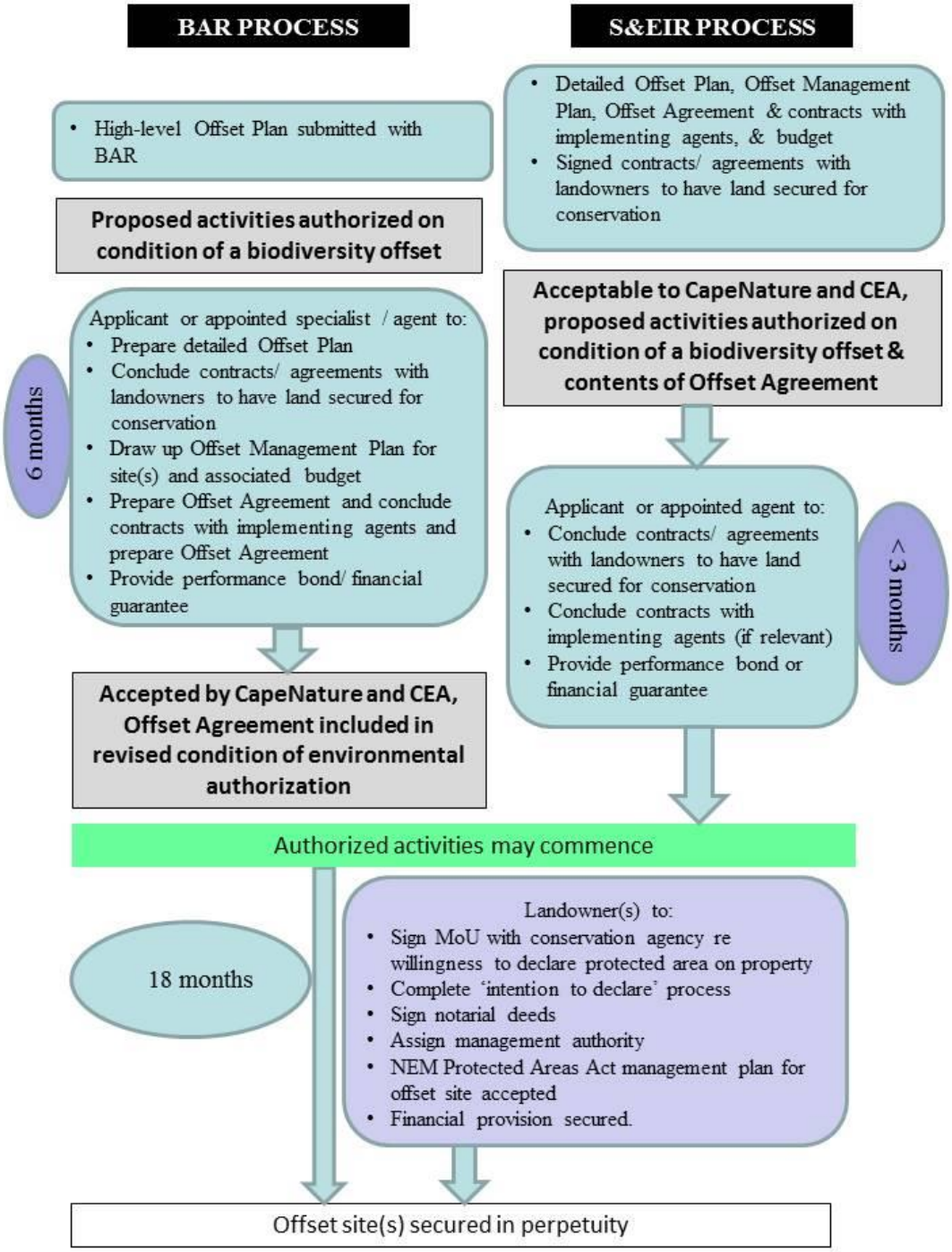


Figure 14: Steps to be taken after conditional authorization requiring a biodiversity offset

6.5.4 From conditions to implementation assurance: the applicant's role

The applicant may choose either to meet the conditions of environmental authorization him/ herself, or appoint one or more parties as implementing agents to: secure and/ or acquire suitable offset site(s); manage and monitor performance of offset site(s); audit offset performance; and/ or manage and/ or audit offset finances. If implementing agents are appointed by the applicant, s/he would need to draw up Contract(s) with these parties. From an auditing and compliance monitoring and enforcement

perspective, it would be best to limit the number of implementing agents and Contracts; e.g. if there were an existing and suitable offset implementer contracted to work in the affected area, it would be optimum to use that party.

While the CEA should not be party to any such Contract, CapeNature or SANParks could play a role in offset implementation, management and/ or auditing provided that adequate funds were provided by the applicant to fulfil these functions. If **CapeNature or SANParks were to act as an implementing agent they could not also act as an auditor**.

These Contracts would need to set out (as appropriate):

- roles and responsibilities of the parties to the Contract;
- timeframe for acquiring/ securing the offset site(s);
- actions required to secure the offset for conservation purposes e.g., in terms of the NEM Protected Areas Act[68];
- scope of required management actions in terms of the Offset Management Plan for the site(s);
- financial provision for acquiring/ securing the offset site(s), to cover initial establishment costs and ongoing management costs for a specified time period, taking into account escalation/ inflation[69];
- funding mechanism;
- independent performance audits of the offset(s) implementation and management;
- monitoring, reporting, auditing of finances associated with the offset(s);
- dispute resolution; and
- breach, rectification and penalty provisions.

Should the detailed Offset Report and supporting documentation (including the Offset Management Plan and financial provision) fail to demonstrate beyond reasonable doubt that biodiversity offsets could and would be successfully secured and managed, then the project ***should not be allowed to proceed*** as there would be a material risk that it could cause loss of irreplaceable biodiversity.

A template for determining appropriate financial provision to secure, establish and manage the offset site(s) is provided as Appendix 1.

6.6 Monitoring, auditing, verification and enforcement

The successful implementation of offsets needs to be verified and audited by the holder of the environmental authorization. Independent auditing of compliance with conditions of environmental authorization and the Offset Agreement for the period during which that authorization remain valid is specified in the NEMA 2014 EIA Regulations (R982). The implementation of the Offset Management Plan, which would need to be prepared to satisfy the requirements of the NEM Protected Areas Act, needs to be monitored and audited by the proponent (or appointed responsible party).

Monitoring and evaluation of the performance of biodiversity offset sites should be undertaken annually or more frequently in the early stages of implementing an offset, and at regular intervals for the duration of the offset. A biodiversity consultant appointed by the proponent should carry out this monitoring, to inform any changes to the Offset Management Plan. Where the findings of the environmental report indicate insufficient levels of compliance with the environmental authorization the holder must make

[68] Acquisition or securing of suitable offset site(s) may be done by the applicant or his/ her implementing agent.
[69] Systematic breakdown of projected costs required.

recommendations to the CEA to rectify the shortcomings. These recommendations must be subject to a public participation process involving interested and affected parties and relevant competent authorities.

Audits of offsets should be carried out every 1 to 2 years or as advised by biodiversity specialists, CapeNature and the CEA. Audits should be done by biodiversity specialists ((i.e. a different person from the consultant undertaking monitoring and evaluation) with appropriate qualifications and experience at the proponent's expense, and submitted to CapeNature and the CEA. It is advisable for CapeNature to undertake its own audit of the applicant's audit reports, at minimum every 5 years or as deemed appropriate based on these reports.

Implementation and compliance must be enforced by the CEA, as laid out in Part 2 of NEMA (as amended). Environmental management inspectors may issue compliance notices/ orders if there are reasonable grounds for believing that a person has not complied with a condition of environmental authorization. The CEA would need to:

a) Verify that the offset site has been secured within the timeframes stipulated and as described in the Offset Report.
b) Check that the suite of commitments made in the Offset Agreement with the implementing agent has been honoured.
c) Check that the offset site is being managed according to the specifications of the Offset Management Plan.
d) Check that independent audits have been submitted by the proponent or appointed responsible party on an annual basis (or as agreed by the authority) for the time period during which the proponent is responsible for managing the biodiversity offset site.
e) Review these audits and check that:
    - management on the biodiversity offset site is achieving performance targets specified in the Offset Management Plan;
    - any emerging threats / risks to the integrity of the biodiversity offset site have been identified, and that measures to avoid or prevent these threats/ risks have been incorporated in the Offset Management Plan.
f) Carry out periodic spot checks to confirm the reliability of these audits, particularly where there seem to be grounds for concern, and specify any additional management requirements to be taken up in managing the biodiversity offset site.

The success of offsets has been high when monitoring and enforcement provisions are implemented[70]. 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 applicant[71]. 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.

Drawing on international experience in implementing offsets, there is merit in forging formal partnerships with conservation NGOs and/ or local CBOs in implementing, managing and monitoring offset sites. The scope for such partnerships should be investigated. In addition, land owners or land occupiers may benefit directly from biodiversity offsets through being paid or compensated in kind for lost land use opportunities as a consequence of, and/ or for managing the offset site for conservation (rather than other land uses).

[70] Dept of Environment and Conservation, NSW, Australia 2006
[71] 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, 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 or non-use value to affected human communities or society.

6.7 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. There are eight main parties who should or would want to play a role in identifying the need for, and evaluating the adequacy of, a biodiversity offset, namely:

1. The Competent Environmental Authority or CEA (decision-making authority) acting on behalf of the public;
2. The applicant (acting on behalf of private shareholders or the State);
3. The biodiversity conservation agency, CapeNature (acting on behalf of biodiversity conservation);
4. Other key authorities with an interest in the offset (acting in accordance with their particular mandates);
5. Local authorities (acting on behalf of local conservation and other interests);
6. The EAP (acting on behalf of the environment, appointed by the applicant);
7. Appropriate specialists (including biodiversity specialist and, where appropriate, a biodiversity offset specialist appointed by the EAP and acting on behalf of the affected environment); and
8. The affected public (NGOs, CBOs and/ or individuals acting on behalf of particular communities or sectors of the public).

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

1. **The CEA,** either DEA, DEA&DP or DMR, is responsible for considering and either granting or refusing applications for environmental authorization, ensuring that decisions are consistent with the national environmental management principles and the Constitution, and ensuring that these guidelines for biodiversity offsets are 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.

   When DEA or DMR is the CEA for mining-related applications, DEA&DP would be a commenting authority on applications for environmental authorization.###

2. **The applicant** may be asked to address biodiversity offsets as an appropriate form of impact mitigation during the BAR/ EIR process. S/he may receive authorization for the development from the authority on certain conditions, such as the need for a biodiversity offset. The applicant 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 applicant appoints an independent EAP and biodiversity specialists (amongst others) to exercise this responsibility. All costs related to the investigation and implementation of biodiversity offsets would be to the applicant's account. The applicant is entirely responsible for meeting conditions of environmental authorization, but may appoint third parties or implementing agents by way of Contracts to act on his/ her behalf.

3. The **provincial biodiversity conservation agency**, CapeNature, promotes and ensures nature conservation (conservation of naturally occurring ecosystems, sustainable use of biodiversity and the promotion and maintenance of biodiversity in those systems)[72] in the province. Although not a decision-making body, CapeNature is mandated to conserve the province's biodiversity. As the principal authority on biodiversity in the province##, it should play a leading role in advising

[72] Western Cape Nature Conservation Board Act 15 of 1998.

and/or giving formal comment to the CEA on issues affecting biodiversity, including the need for, and acceptability and adequacy of, proposed biodiversity offsets: essentially the CEA needs to obtain specific recommendations from CapeNature on all applications involving offsets. Biodiversity specialists and EAPs should involve CapeNature in proposed developments that could adversely affect biodiversity and engage regional ecologists and other appropriate staff with regard to designing and implementing optimum offsets.

4. **Other key national or provincial authorities** with an interest in the offset (acting in accordance with their particular mandates), typically the Department of Water and Sanitation (DWS) where significant residual impacts on water resources are predicted, the Department of Agriculture, Forestry and Fisheries where ecosystems important for sustaining agriculture or aquaculture would be affected, and/ or offsets for impacts on indigenous forests could be required.

   In terms of the 'one environmental system' of co-ordinating authorizations, DWS must take decisions on Water Use Licences in terms of s21C of the National Water Act 36 of 1998 within the same timeframes set for consideration of environmental authorizations. **Close collaboration and co-operation between the CEA and DWS is thus crucial** in determining the need for, and type and adequacy of, offsets.

5. **Local authorities (metropolitan or municipal)** within whose areas the impacts of development and/ or the biodiversity offsets will be located. These areas have their own priorities for biodiversity and ecosystem services conservation set out in bioregional and other spatial development plans that inform both the significance of residual impacts and appropriate offset receiving areas. Their input is thus crucial if the biodiversity targets (both in terms of biodiversity and ecosystem services) of not only provincial but local municipal areas are to be achieved.

6. **The EAP**, although employed by the applicant, 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 either as specialist advice or as a specialist study. Where biodiversity supports ecosystem services with socio-economic value, it may be appropriate for the EAP to appoint a social/ livelihood specialist). All specialists should, with the involvement of affected parties and CapeNature, advise on appropriate biodiversity offsets.

7. **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.

8. **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.

7. BIODIVERSITY OFFSET DESIGN PROCESS

This section focuses on the following steps to be taken by the relevant specialist(s) in designing an appropriate biodiversity offset. Where the CEA has confirmed that it would be appropriate to undertake a biodiversity offset investigation (pre-application phase or during BAR), or explicitly requested such a study (Scoping, Terms of Reference for EIA), the specialist(s) must:

- Obtain a reliable measure of the residual loss of biodiversity as a consequence of the project;
- Determine the required size and condition of the offset, based on the measure of residual impacts;
- Determine the best type of offset – physical habitat (biodiversity offset site/s) or, in exceptional cases only, *in lieu* monetary payment;
- Investigate location options for the offset site(s), taking into account priority areas for biodiversity conservation (so-called 'biodiversity offset receiving areas') and the views of stakeholders, especially CapeNature;
- Consider the impacts of potential biodiversity offset sites, and potential impacts of surrounding land uses, land use trends and spatial development plans on these sites, with stakeholder engagement;
- Decide on the best way to secure the biodiversity offset, involving stakeholders;
- Negotiate and conclude with landowners 'in-principle' agreements on the proposed offset site(s) or offers of purchase, as relevant;
- Prepare a draft Offsets Report with enough information for the decision maker to confirm that a biodiversity offset would be appropriate and acceptable, and assurance that it could and would be secured and implemented by the proponent; and
- Submit the Offsets Report to the EAP for inclusion in the BAR or EIR to be submitted to the CEA.

If biodiversity offsets were required as conditions of environmental authorization, the specifics of the offset site(s) and their management, including financial provision, would need to be detailed in a Contract between the competent authority, applicant and other relevant parties. As part of this step, a detailed Offset Management Plan(s) would need to be prepared (for physical biodiversity offsets), and the financial requirements to manage offset site(s) for a specified time period would need to be systematically addressed, taking into account escalation.

There are currently a wide range of approaches used to determine offsets for biodiversity loss in South Africa. There is no single 'best approach' to deciding what would constitute an appropriate offset and/or to incorporating consideration of offsets in the planning, EIA or decision-making process.

The choice of offset, and the securing and management of offset site(s) are vital if the intended benefits to biodiversity are to be realised and the sustainability of the project is to be supported. For this reason, a careful design process is needed.

7.1 Confirming that there are no residual impacts that would lead to irreplaceable loss

Biodiversity offsets are not appropriate for residual negative impacts of very high significance and/ or where these impacts will result in irreplaceable loss of biodiversity of important ecosystem services. It is thus important to confirm that residual negative impacts do not fall into either of these categories.

Where such impacts are likely, the burden of proof of the 'overriding public interest' of the proposed activities, and that all reasonable and feasible alternatives have been adequately investigated preferably to avoid or minimize these impacts, rests with the applicant and appointed EAP (and any specialists).

7.2 Obtaining a measure of the residual loss of biodiversity

Once the CEA and CapeNature have confirmed that it would be appropriate to undertake a biodiversity offset investigation (pre-application phase or during BAR), or explicitly requested such a study (Scoping, Terms of Reference for EIA), the requirements of an offset that would adequately compensate for the residual negative impacts on biodiversity need to be determined. To this end, a measure of the loss of biodiversity and/or loss or deterioration of ecosystem services that must be compensated needs to be obtained.

The use of area-based policy and associated biodiversity targets[73] is the preferred approach to the valuation or measurement of biodiversity loss in the Western Cape. This approach translates into the use of a basic offset ratio, adjusted according to a number of biodiversity and ecosystem services considerations (Section 7.4.1.2).

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 13). 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, those services could be translated into the biodiversity pattern and process underpinning those services, and proceed as above, or equivalent measures of these services would need to be provided to affected parties.

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, the irreversibility of the residual impacts and/ or irreplaceability of impacted biodiversity.

Box 12 : 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[74] 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). It is thus often necessary to cater for risk and uncertainties in offset design and apply a small multiplier to the quantified area or residual negative impacts.

[73] 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.

[74] Exclusion of fire from that system would effectively lead to a decline in biodiversity over time.

7.3 Determining the best type of biodiversity offset

There are four main types of offset, namely:

a) ***'Like for like' or 'in kind' habitats*** comprise the same biodiversity as that affected. These offsets are seen to be the most appropriate in the Western Cape;

- Offsets to remedy residual negative impacts on threatened ecosystems or species, or on special habitats, predominantly comprise securing and managing priority areas for conservation in perpetuity. These areas should preferably be in good condition, thus giving assurance that they support most/ all species associated with that particular habitat[75].
- Offsets to remedy residual negative impacts on ecological processes could include securing and rehabilitating degraded or disturbed areas, preferably in 'offset receiving areas' as described in Section 7.4.2.
- Remedy for residual negative impacts on priority ecosystem services could include rehabilitation (and restoration, where feasible) of degraded habitats to restore their ecological function and thus improve delivery of these services, and/or ways to provide alternative or substitute services that would be acceptable both to affected parties and society as a whole.

b) ***'Trading up'*** habitat involves securing and managing an appropriate area of different habitat from that affected by development, of a more threatened status or higher conservation priority. 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.

c) ***'Out of kind'*** offsets involve securing and managing an appropriate area of different habitat from that affected by development, located in a priority area for biodiversity conservation (e.g. CBA). These offsets may be considered in situations where suitable 'like for like' offset sites cannot be found but where there are options to secure and manage an ecosystem of similar type that is poorly protected. Any proposal to offset a substitute but similar ecosystem (e.g. a different vegetation type but within the same broader vegetation group) must have the support of CapeNature; they would generally not be appropriate in cases where the impacted ecosystem is poorly protected.

Other 'out of kind' activities are seen largely as supporting mechanisms rather than the primary focus of offsets in the province. They could involve activities targeting the underlying causes of biodiversity loss, such as planting of woodlots to remove pressure on particular tree species or vegetation types for fuelwood, establishing nurseries to propagate medicinal plants to prevent their depletion in the wild. These activities would have to be tied to formal agreements with the affected communities to ensure their commitment. ['Trading down' or providing a biodiversity offset of lower biodiversity value is not permitted.]

[75] Degraded habitat may be difficult if not impossible to restore, and thus may never support the full range of species associated with this type of habitat. In relation to meeting biodiversity targets, therefore, a 'first prize' would be to secure habitat in as near a pristine condition as practicable. Where rehabilitation/ restoration is feasible and achievable within a relatively short time frame, then the condition of the targeted offset site could be marginally worse than that of the impact site; the risk of failure increases proportionate to the difference in condition between impact and offset site.

Important to note: 'trading up'

The size of a 'trading up' offset should be the same as that required for the residually affected ecosystem. Trading up' options must make a positive contribution to achieving biodiversity targets and securing priority areas for biodiversity identified in biodiversity plans or by the provincial conservation agency.

When considering the 'trading up' option:

- The proposal to 'trade up' must be explicitly and defensibly motivated both in relation to the residual negative impacts on biodiversity of the proposed activity and the biodiversity targeted in the offset.
- It is important to assess and compare the levels of threat of transformation to both the affected habitat and the potential offset habitat having a more threatened status: in some cases the habitat with a more threatened ecosystem status may be less vulnerable to pressures of transformation than the affected habitat, in which case a 'like for like' habitat offset would be preferable.
- 'Trading up' should not be allowed where impacted ecosystems, special habitats or species are Endangered; it should only be permitted for consideration where Least Threatened or Vulnerable biodiversity components are harmed.
- 'Trading up' should be considered as an option only where the non-replacement of impacted biodiversity would have no significant negative implications for delivery of valued ecosystem services (e.g. loss of wetland habitat would affect water quality and flow, so conserving a different ecosystem as an offset would be likely to have unacceptable long term negative implications for ecosystem services).

d) ***Monetary compensation***. Monetary payment may be required or agreed to be an appropriate form of offset in exceptional cases, where there are no suitably sized land parcels available or able to be acquired in an offset receiving area to remedy residual negative impacts. *In lieu* financial contributions from a number of individual projects with relatively small offsets could allow for their aggregation and thus enable larger or more significant land parcels to be secured for biodiversity conservation purposes than could otherwise be achieved on a project-by-project basis.

This type of offset may include financial contributions to a dedicated, accredited biodiversity offsets fund[76], or revolving land trust ***for the clearly defined, sole and express purpose of acquiring and/ or managing additional priority habitat, or expanding, consolidating and managing public protected areas to incorporate critical biodiversity***.

This type of offset appears attractive and relatively simple for the applicant, as it effectively reduces responsibility for having to identify and secure appropriate offsets in the landscape. In addition, it enables the transfer of responsibility for implementing and managing the offset area to a 'conservation' body; a feature supported by many applicants who feel that they are not 'in the business of conservation', and that conservation bodies would be best placed to implement offsets.

[76]Money in these trusts or funds must be ring-fenced for the sole purpose of biodiversity offsets. They should preferably be administered by a Public Benefit Organization. Where provincial or local government wishes to receive and/ or administer funds for biodiversity offsets, a dedicated mechanism will need to be set up in order to ring fence these funds, preferably in the form of a Trust.

However:

- making arrangements for financial offsets may be time-consuming as it necessitates a reliable determination of an appropriate quantum of funds to be provided by the applicant, commensurate with the residual negative impacts, and requires careful legal scrutiny (particularly where there are implications in terms of public finance management);
- unless the financial contribution makes adequate provision for land acquisition, legal and survey costs, initial site establishment and rehabilitation costs, ongoing land and biodiversity management costs (e.g. clearing of invasive alien species, fire management) and associated administrative costs, auditing costs, the costs of any specialist advice (amongst others), it would transfer the burden of the offset on to those institutions and organisations responsible for biodiversity conservation in the Western Cape, contrary to the intention of the NEMA s2 'polluter pays' principle; and
- unless the financial contribution could be securely ring-fenced for financing the acquisition and management of priority areas for biodiversity conservation, the biodiversity offset mechanism would be a failure.

Where monetary compensation is used, therefore, it is essential to ensure that the financial contribution covers all reasonable and foreseeable costs. Annual financial audits would be necessary to track and ensure the correct use of funds for the explicit purpose of biodiversity offsets.

A fourth type of compensation that may be proposed, namely funding of biodiversity research[77], education or capacity building in government agencies, has been used in some countries. Although valuable as a tool to support securing of tangible, 'on the ground' biodiversity offsets, this type of compensation on its own is viewed as unacceptable[78]. It is not considered appropriate as an offset in the Western Cape, other than as a complementary mechanism.

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.

7.4 Determining the appropriate size, condition and location of the biodiversity offset

Important to note: size, condition and location of offset'

The ***size*** of the offset site (i.e. its physical area, minus land occupied by infrastructure), its condition, and its ***location*** in the landscape relative to other areas of natural habitat to ensure continued ecological processes and function, are of critical importance when determining an appropriate 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 15 and 16 illustrate the conceptual approach:

[77] In some cases it may not be feasible to provide an offset by designating new protected areas or demarcating land for conservation purposes. In such cases, other types of investments (e.g. research) may present another option for offsetting residual biodiversity impacts.
[78] e.g. Department of Environment and Conservation, NSW, Australia. 2005. This form of offset does not secure habitat for biodiversity conservation and thus is seen as an inappropriate compensation for biodiversity loss.

- Figure 15 illustrates how to design offsets to contribute to meeting desired outcomes for biodiversity and sustainable development in the Western Cape; and
- Figure 16 shows how the basic offset ratio is adjusted to arrive at an adequate offset.

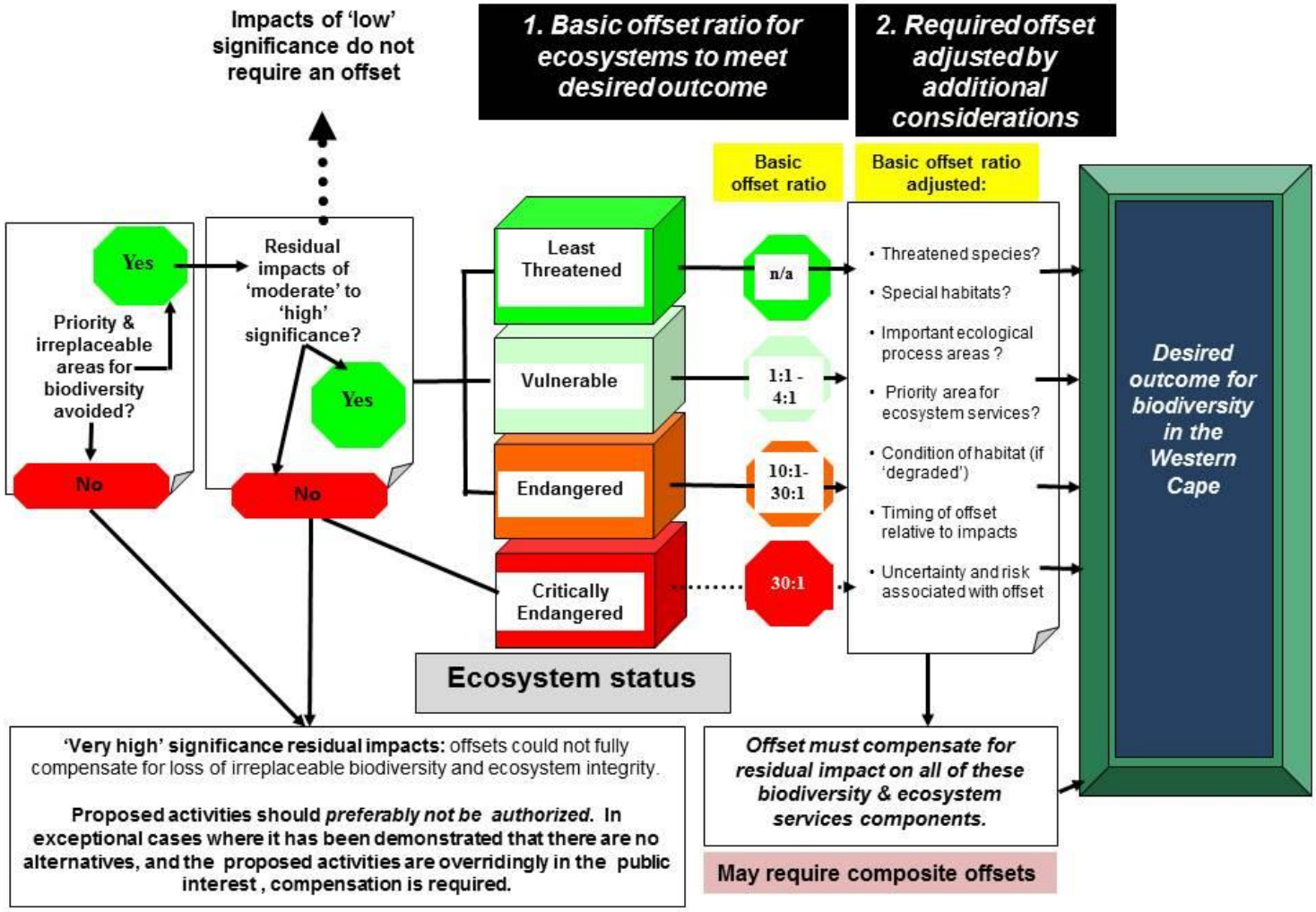


Figure 15 : Designing offsets to contribute to meeting desired outcome for biodiversity

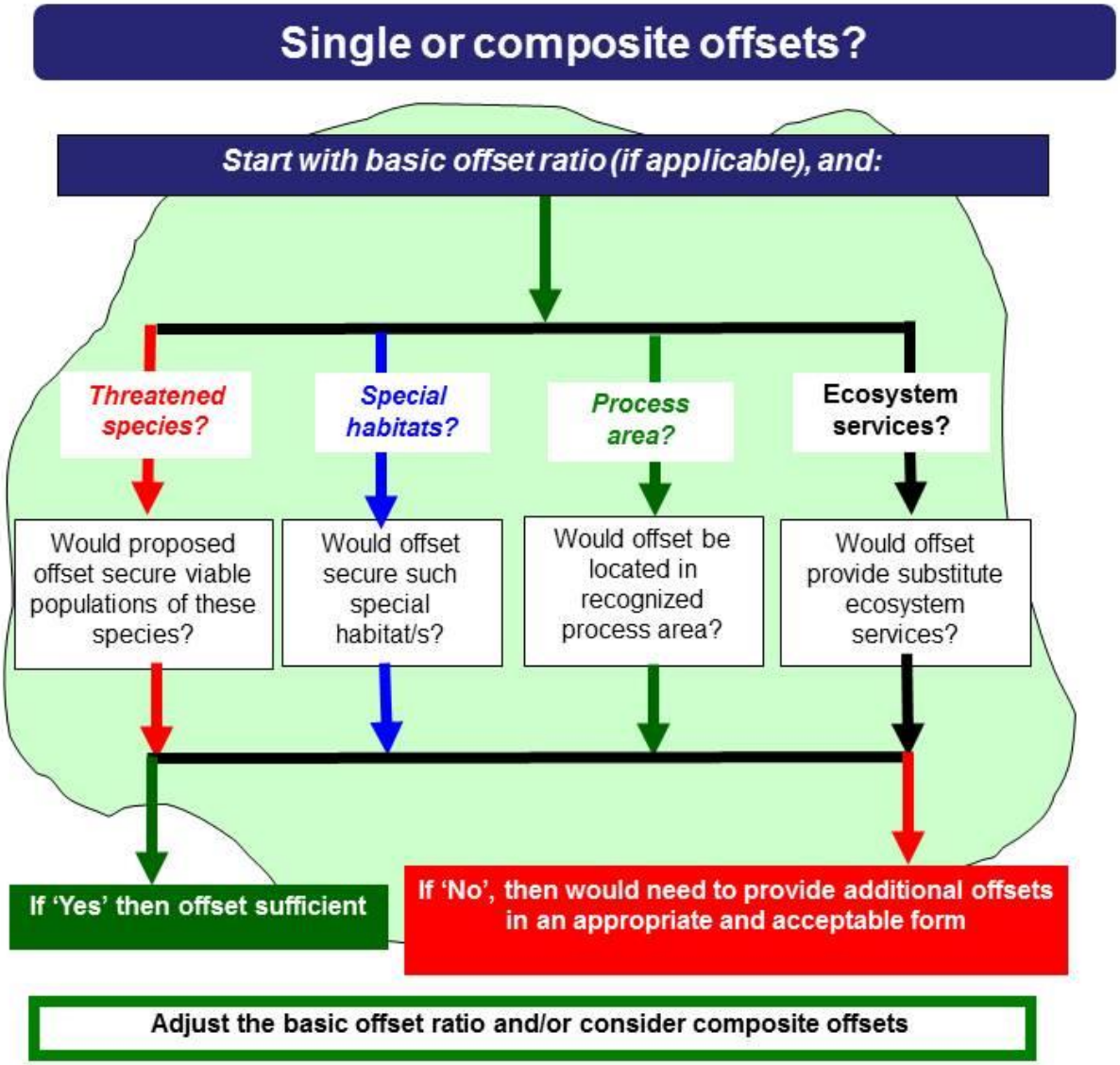


Figure 16 : Adjusting the basic offset ratio to arrive at an adequate offset

7.4.1 Size and condition 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.

An appropriate ***physical size of the offset*** involves consideration of **all of the following aspects**, and is decided in two main steps, namely:

1. Using a basic offset ratio in all ecosystems (also known as a 'conservation outcome multiplier') linked to the conservation significance and status of the affected ecosystem(s).

2. Adjusting the size, number and nature of the offset/s and associated activities according to a range of additional considerations that take into account the specifics of the impact and offset sites, and their landscape contexts.

Box 13 highlights the advantages of using an adjusted, ratio-based approach to determine biodiversity offsets.

Box 13 : 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 and/or threatened biodiversity areas;
- Should significantly reduce further loss of threatened ecosystems and species;
- Enables consistency and predictability in decision-making;
- 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, the relatively 'area hungry' needs of ecological processes underpinning pattern, and inherent uncertainties regarding response of ecosystems to climate change.

7.4.1.1 The basic offset ratio

The basic offset ratio[79] is directly linked to the conservation significance of the area(s) to be affected by development.

The basic offset ratio is informed by the following considerations:

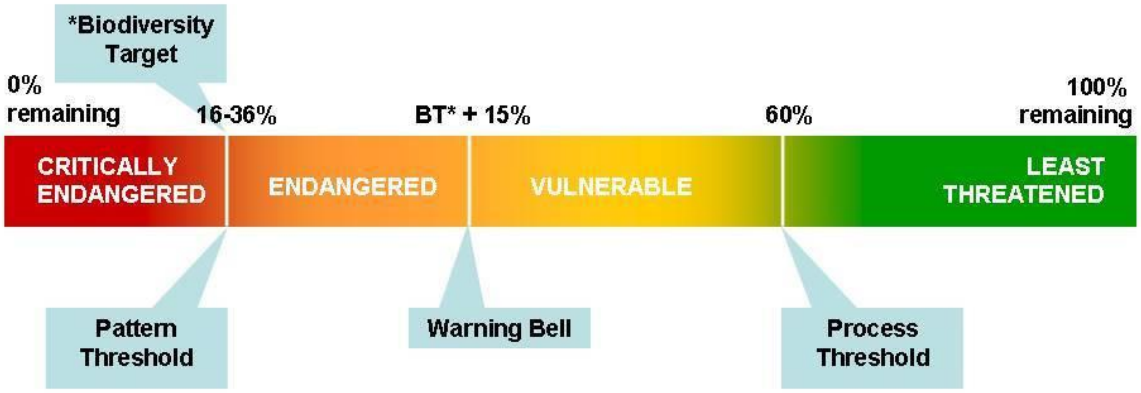
a) the ecosystem status of the residually impacted ecosystem, as gazetted in terms of the NEM: Biodiversity Act (2011);
b) the ecosystem status of the residually impacted ecosystem according to the most up to date information obtained from CapeNature;
c) the particular criteria used to determine ecosystem status, and their sufficiency/ adequacy. There are five criteria currently being used for terrestrial ecosystems, but 2 of them have been applied only to forests. The remaining three criteria are A1 (irreversible loss of natural habitat); D1 (threatened plant species associations); and F (priority areas for meeting biodiversity targets in a systematic biodiversity plan). In some instances only one criterion (e.g. A1) has been used, and consideration of additional criteria (e.g. D1) would change the threatened status of that ecosystem;
d) the ecosystem (conservation/ threat) / FEPA status of wetlands (wetland vegetation/ wetland type), rivers and/ or estuaries in the impacted area; and
e) the area of remaining affected ecosystem outside existing protected areas that is needed to meet biodiversity targets and ensure that no specific ecosystem is allowed to become more threatened than Endangered[80].

[79] The use of a 'multiplier', takes into account (amongst others) the need to increase the size of the offset in order to meet targets for biodiversity conservation. The use of multipliers is recognized as an important tool in offset design, as reflected in work being carried out by BBOP.

[80] A required outcome of biodiversity target plus 7.5% was used here to take account of data gaps in land cover information as well as incidence of unauthorized transformation of natural habitat.

Where residual negative impacts are of 'very high' significance and the area(s) is considered to be irreplaceable, the proposed activities should preferably not be authorized; instead, the applicant should be asked to seek alternatives that would avoid/ prevent and minimize impacts on important biodiversity. Should the activities be overriding in the public interest and it can be demonstrated that no reasonable and feasible alternatives exist, then compensation must be required as if the affected area were 'critically endangered' (i.e. applying the offset ratio for these ecosystems).

Where residual negative impacts are of 'high' or 'moderate' significance, the basic offset ratio is applied and adjusted in terms of the additional considerations detailed in Section 7.4.1.2.



Ecosystem status categories and thresholds, based on the amount of natural habitat remaining intact relative to an ecosystem's original area. BT= biodiversity target. *Source: Pence 2008.*

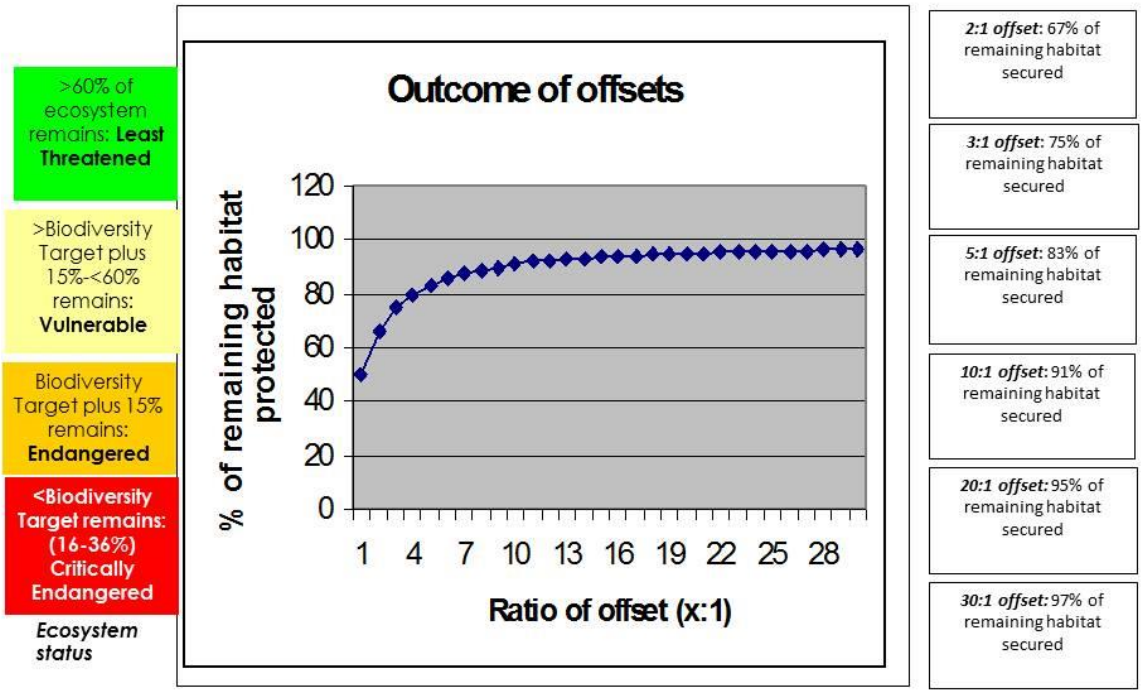


Figure 17 : Basic ratio of offset linked to ecosystem status

Figure 17 shows the effect of different offset ratios on the percentage of habitat in a given ecosystem persisting over time.

For the above reasons, ***basic offset ratios*** to compensate for residual negative impacts on biodiversity outside or beyond an urban edge recognized by the CEA have been set as follows[81]:

- Offset/ compensation ratio of **30:1** for residual impacts in **all Critically Endangered ecosystems** and/ or areas considered to be irreplaceable (e.g. CBAs) only where there are exceptional circumstances that would make consideration of offsets appropriate;
- Offset of predominantly **between 10:1 and -20:1,** with one exception where the ecosystem is at the EN/ CR threshold (30:1) **for residual impacts in Endangered ecosystems**, depending on their proximity to biodiversity targets;
- Offset of from **1:1** to a maximum of **4:1 for residual impacts in Vulnerable ecosystems**;
- No offset in least threatened ecosystems.

It is important to note that updated landcover data were collected in 2014 and will inform revision of biodiversity plans in the Western Cape and the preparation of the 2015/6 CBA map. That is, these basic offset ratios may need to be revised in future.

Important to note: what do the offset ratios mean in practice?

With reference to the above basic offset ratios, an offset ratio of 15:1 means that *for every 1 ha of habitat lost, an offset of 15 ha of like or equivalent habitat would have to be secured for conservation* to compensate for that loss. So, if the residual impact on endangered habitat of a proposed development were to affect 5ha, an offset of 75 ha of like habitat would be needed.

Offset ratios within or inside a recognized urban edge are substantially lower, namely 1:1 for endangered ecosystems and, in exceptional circumstances, 2:1 for critically endangered ecosystems. Residual impacts on vulnerable and least threatened ecosystems within the urban edge do not require an offset. This approach supports one of the main objectives of the WCPSDF, namely to contain development within urban edges.

Table 6 sets out the basic offset ratios for Endangered and Vulnerable terrestrial ecosystems in the Western Cape.

Table 6 : Basic Offset Ratios for Endangered and Vulnerable terrestrial ecosystems

Vegetation / Ecosystem Type	**Basic Offset Ratio to meet biodiversity targets *[= Area x:]***	**Note** (Criterion A1 used unless otherwise noted)
ENDANGERED ECOSYSTEMS		
Cape Flats Dune Strandveld Hangklip Sand Fynbos Peninsula Granite Fynbos	5:1	
Mossel Bay Shale Renosterveld Groot Brak Dune Strandveld Citrusdal Shale Renosterveld Saldanha Flats Strandveld	10:1	

[81] The basic ratio takes a risk-averse approach. Biodiversity targets are aimed only at species conservation, and ecological processes are not considered. 'True' biodiversity targets that consider both species and processes would in effect be significantly higher.

Leipoldtville Sand Fynbos*		Criterion D1 [and A1] used
Agulhas Sand Fynbos Cape Vernal Pools Greyton Shale Fynbos Potberg Ferricrete Fynbos Saldanha Granite Strandveld Atlantis Sand Fynbos* Breede Alluvium Fynbos	20:1	Criterion D1 used
Kouebokkeveld Alluvium Fynbos	30:1	Close to the 'Critically Endangered' threshold
VULNERABLE ECOSYSTEMS		
Cape Winelands Shale Fynbos Namaqualand Riviere Southern Cape Dune Fynbos Southern Cape Valley Thicket Kouebokkeveld Shale Fynbos Eastern Little Karoo Nardouw Sandstone Fynbos Olifants Alluvium Fynbos Lambert's Bay Strandveld South Outeniqua Sandstone Fynbos Boland Granite Fynbos Eastern Coastal Shale Band Vegetation	1:1	
Klawer Sandy Shrubland Albertinia Sand Fynbos Uniondale Shale Renosterveld Hopefield Sand Fynbos Swartland Alluvium Renosterveld	2:1	
Breede Alluvium Renosterveld Breede Sand Fynbos Ceres Shale Renosterveld Garden Route Shale Fynbos	3:1	
Swellendam Silcrete Fynbos	4:1	

Important to note: basic offset ratios for CBAs or FEPAs

CBAs and FEPAs often constitute the last remaining options for conserving ecosystems and associated biodiversity, fulfilling national goals and meeting international obligations.

Where there are no other reasonable and feasible options to meet pattern and process targets in the landscape, CBAs/ FEPAs would be treated as Critically Endangered ecosystems and the related basic offset ratio would apply to the whole area within the CBA/ FEPA affected, regardless of ecosystem status of component parts; any residual impacts on them would constitute irreplaceable loss.

Where a proposed development would transform or result in loss of CBAs, then the onus would be on the applicant (or EAP and/ or specialist(s)) to demonstrate that it is feasible to meet all the particular biodiversity targets for which the affected CBA has been selected elsewhere in the landscape or water management areas affected. Only in these instances, and with concurrence of CapeNature, would residual impacts ***not*** be taken to result in loss of irreplaceable biodiversity.

In these situations, the biodiversity offset would need to apply the basic offset ratio to the affected ecosystems within the CBA/ FEPA and adjust that ratio in accordance with each and every affected biodiversity component represented in the affected CBA in order to ensure that the respective targets would be met.

7.4.1.2 Adjusting the basic offset ratio

Important to note: adjusting the basic offset ratio

Only once potential offset sites have been identified in 'offset receiving areas' that could provide 'like for like' habitat can the basic offset ratio be adjusted and the biodiversity offset(s) be refined. That is, offset site options with potential to meet offset requirements must be evaluated *in relation to specific residual impacts, their particular biodiversity characteristics, and their landscape contexts*.

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

a) The condition of the affected habitat and potential offset site(s);
b) The presence of any threatened species;
c) The presence of any special habitats;
d) The role of the affected area in the bigger landscape with regard to ecological processes;
e) The role of the affected area in delivering ecosystem goods and/or services of socioeconomic value to local human communities and/or society as a whole;
f) The timing of implementing the offset; and
g) The level of risk or uncertainty associated with the offset.

Each of these considerations is addressed separately below.

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. Table 7 applies to terrestrial ecosystems.

Table 7 : Considering habitat condition in offsets

Condition of terrestrial habitat on impact site	*Required condition of habitat on biodiversity offset site(s)*	*Basic offset ratio*	*Notes*
'Good'	Preferably 'good' 'Moderate' if rehabilitation of that particular ecosystem is feasible and would be successfully undertaken	Basic offset ratio would apply	'Restoration' of degraded ecosystems is seldom achievable in the short to medium term (as opposed to rehabilitation aimed at
'Moderate'	'Good', or 'Moderate', or 'Degraded' if rehabilitation of that particular ecosystem is feasible and would be	Basic offset ratio would apply	

Condition of terrestrial habitat on impact site	*Required condition of habitat on biodiversity offset site(s)*	*Basic offset ratio*	*Notes*
	successfully undertaken		restoration in the long term), thus a risk-averse approach must be taken.
'Degraded' but not completely transformed (Box 8)	'Good', or 'Moderate', or 'Degraded' if rehabilitation of that particular ecosystem is feasible and would be successfully undertaken	Ratio could be reduced by as much as 50% by biodiversity specialist in collaboration with CapeNature, *provided that* the habitat serves no other significant function (refer b) – e) below)	

- The size and condition of habitat required to remedy residual impacts on **threatened species** in terrestrial (including coastal) or freshwater (including wetland) ecosystems would depend on the particular characteristics of the affected species and the proportion of that species, population(s) or its habitat that would be impacted (thus needing commensurate compensation).
- For **wetland ecosystems and offsets**, where ecological functioning[82] underpins the delivery of priority ecosystem services (i.e. water supply, water quality regulation) a combined 'area and habitat condition or intactness' score at functionality lost at the impact site must essentially be counterbalanced by gains in that score at the offset site(s).

  To satisfy biodiversity conservation considerations (rather than regulating or supporting services considerations), the condition of the offset wetland site must *not be more than one category of ecological condition lower than that of the impacted wetland*.

  Reference must be made to the SANBI and DEA Best Practice Guideline for Wetland Offsets[83] and any relevant guideline published for the purpose by DWS, for details on designing and implementing wetland offsets.
- Improvement in the condition of 'equivalent' stretches of ***river ecosystems*** in the same subcatchment would include reducing the drivers of riverine degradation (e.g. runoff from agricultural fields, destruction of riparian buffers, etc.) and helping to reinstate riparian vegetation, amongst others. As with wetland offsets, the condition of the targeted river system should not be more than one category of ecological state lower than the impacted river system.
- Where an offset is being sought to remedy only the loss of **ecological process areas** and/ or linkages in the landscape, then offset areas from '*degraded*' to '*good'* condition may *be* appropriate on the advice of a biodiversity specialist, provided that they would fulfil the particular process/ linkage needs.
- Where an offset is being sought to remedy residual impacts on habitats that provide valued **ecosystem services** through either their particular species composition ('goods') or their function ('services'), then offset areas of '*degraded*' to '*good'* may *be* appropriate on the advice of social (livelihoods) and/ or biodiversity specialist, depending on the specific ecosystem service affected. That is, the offset must fulfil the particular ecosystem service delivery needs. In some cases, e.g. indigenous habitat for pollinators, '*good'* condition habitat would be best.

[82] 'functional equivalence' as used in the SANBI/ DEA wetlands offset guideline focuses on regulating and supporting services. It should take into account the current role of the affected area in determining water quality (role in sedimentation, erosion control, removal of phosphates, nitrates, pollutants or toxicants), water flow regulation, flood attenuation,

[83] Macfarlane, D., Holness, S.D., von Hase, A., Brownlie, S. & Dini, J., 2014. *Wetland offsets: a best-practice guideline for South Africa.* South African National Biodiversity Institute and the Department of Water Affairs. Pretoria.

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:

- The size and viability of the affected population (i.e. is it sufficiently large to be viable in the long term?);
- Its conservation/ threatened status (i.e. significance would increase from Vulnerable to Endangered and to Critically Endangered);
- The existing levels of transformation, loss or degradation of habitat throughout the range of the species (informed by threat status, Red Data Books/ Red Lists);
- The proportion of that population that would be lost; and
- The contribution of the affected population to the persistence of the species (e.g. relatively high if it constitutes a high percentage of national population at the affected site, relatively low if it were one of numerous populations of the same species in the region).

It is important that a reliable measure of the residual impact is obtained, to define the biodiversity offset requirement. Various approaches may be used to measure the residual impacts on the habitat of these species[84] (where the habitat characteristics can be used as a surrogate measure of the species occurrence) or on the species itself; the exact approach must be selected by the relevant specialist.

In order to facilitate comparison with proposed offset actions, the anticipated impacts to a species in a particular threat category must be quantified as far as possible. Measures typically include:

- The area and condition of the affected species' habitat likely to be impacted by the proposed development (bearing in mind that there may be different adjoining or linked ecosystems on which that species depends for different resources such as food, reproductive cover, etc.); or
- The number of individuals of a population, or populations, likely to be impacted by development.

In some instances, it would be impossible to remedy for these impacts (e.g. Critically Endangered, or a viable population that represented a significant proportion of the global population), or scarcity of replacement habitat, and the project would be fatally flawed.

In cases where remedy through offsets were possible, the offset area must contain – or contribute through rehabilitation of degraded habitat or consolidation of land fragments - sufficient habitat to support viable populations of the affected species within its/ their natural range. It should preferably already accommodate populations of the species. If the area being considered as an offset does not contain suitable habitat, then it may be necessary to seek an additional offset. The size of offset will depend on the particular characteristics of the affected species, but must be commensurate with the residual impacts on that species and take into account related biodiversity targets and threats, and ensure that the status of the species would remain unchanged.

Where the population of threatened species is unlikely to be viable in the long term due to its isolation or small size, a case may be made for a 'trading up' offset, targeting the protection of habitat of a more threatened species, provided that this case has the support of CapeNature.

A risk-averse and cautious approach is required: where relocation of affected individuals and re-establishment of a population of a threatened species in a suitable location is proposed, which is to be secured and managed in perpetuity, the relocated population must be successfully established in its new home before conversion of their 'old' home is permitted.

[84] E.g. Habitat Evaluation Procedures and Habitat Suitability Indices as used in the US, the use of ecosystem or species values as used in states of Australia, persistence probability approaches proposed in New Zealand.

c) The presence of special habitats

Where the affected area contains special habitats (Box 7), the significance of the residual impact would depend on particular type of special habitat, its rarity, the project context and the irreplaceability 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.

In some cases, where proposed development would, in all probability, be authorized due to broader strategic issues in the public interest despite their irreplaceability, residual impacts on special habitats would be unavoidable. In these cases, compensatory conservation should be required either through 'trading up' type offsets, or through rehabilitation of degraded 'like' special habitats, in both cases securing those habitats in perpetuity.

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 ecosystem services with socio-economic and/ or heritage value

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, accessible 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.

Residual negative impacts may not always be able to be addressed through pattern and/or process offsets. Moreover, there may be instances where valued ecosystem services rely on biodiversity pattern or process not recognised as significant using a strict 'biodiversity' approach (e.g. livelihoods may depend on a particular plant species that has little biodiversity importance, or on a 'Least Threatened' ecosystem for grazing). In these cases, offsets or other form of compensation must be considered to remedy specific losses and meet the needs of the user community.

In cases where offsets were possible, the offset area must deliver the same quantum of substitute services to the affected communities and/ or society as that lost as a result of the proposed development; in some cases it may be necessary to secure more than one area, or different offset areas, to provide adequate remedy and achieve this desired outcome.

Important to note: size of offsets to remedy the loss of ecosystem services

An 'outcomes based' approach to determining the size of offsets for residual impacts on ecosystem services is considered to be 'the ideal': the offset area must deliver the same quantum of ecosystem services to the affected communities and/ or society as that lost as a result of the proposed development. However, in many situations, there is insufficient knowledge about the dynamics of

affected ecosystems to be able to predict, with certainty, either the effect of habitat conversion on different ecosystem services, and/ or the effect of comparable habitat rehabilitation or restoration in another location on ecosystem services.

A practical approach to offsetting impacted ecosystem services thus often reverts to an area-based, lost habitat calculation. A relatively simple approach would be to work out the 'additional conservation value' gained through offset activities and calculate the total area required for full remedy. For example, plugging artificial drains in a 'reclaimed' wetland would add wetland habitat over time.

Important to note: evaluating residual impacts on ecosystem services with socio-economic value

In South Africa, 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[85]. With regard to the value 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 has 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).

Offsets for residual impacts on biodiversity may also address residual impacts[86] on ecosystem services, since biodiversity underpins these services.

Where a social/ livelihood 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 (e.g. harvestable goods, medicinal plant species, freshwater supplies, grazing areas for livestock, fuelwood, etc.) and associated ecosystem services? Are these values considered to be significant?
- What are the non-use values of the residually affected biodiversity (e.g. totem species or habitats/ ecosystems of cultural heritage value) 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?

[85] Not all environmental impacts need to be converted to monetary values: the DEA&DP guideline for economic specialist input into EIAs (van Zyl *et al* 2005) 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 option and existence values are more difficult to measure and require the use of more controversial techniques such as contingent valuation.

[86] 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.

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.

It is of the utmost importance that not only ***impacts of the proposed project*** on socioeconomic and heritage values are addressed, but also that ***impacts on socioeconomic and heritage values of proposed biodiversity offsets*** are evaluated (Section 6.5).

f) The probable timing of achieving the offset

Ideally, the biodiversity offset should be in place before the impact to avoid problems associated with time lags between the impact and the offset. In some cases, particularly where impacts are of high significance and biodiversity is highly threatened, the size of offset must be increased to minimise risks of 'bottlenecks'. Depending on the risk of 'bottlenecks' and the level of vulnerability of the affected biodiversity or ecosystem services (and the levels of dependence on people on those services), multipliers could be used as a disincentive for time lags between the impact and the offset's being secured. However, it is important to realise that simply increasing the size of an offset area may not address the risks of 'bottlenecks'; other offset activities or remedies may be needed in this respect.

- Where habitat in good or pristine condition is to be secured and managed for biodiversity conservation, and the offset site(s) would be protected within a period of 1 year after the impacts would occur (as stipulated in the conditions of environmental authorization), then no multiplier would be applied. Multipliers of 1.25 to 1.5 must be used where the offset would take longer than 1 year to secure, that multiplier increasing with greater delays.

- Where the offset activity comprises rehabilitation/ restoration (e.g. for wetland offsets), then time lag multipliers may be applied in relation to the delay to achieve full rehabilitation/ restoration and associated ecosystem services beyond a specified deadline; either an increase in area or additional offset activities would constitute these multipliers[87].

g) The level of risk or uncertainty associated with the outcome of the offset

- In situations where there is a high level of risk or uncertainty about the outcome of a proposed biodiversity offset, namely where:
  - rehabilitation or restoration is proposed, but the success of these offset activities is not known, as there is little prior experience on which to draw;
  - the level of confidence in predicting residual impacts is low and impacts may be greater than estimated; and/ or
  - background patterns of land and/ or natural resource use may pose a threat to the future viability of a potential offset area, then -

[87] Reference should be made to MacFarlane *et al,* (2012) for these multipliers

the size of the proposed offset may be increased to provide an appropriate 'safety margin' for the offset[88]; e.g. multipliers of 1.5 have been proposed as appropriate for wetland rehabilitation/ restoration. In addition, appropriate supporting activities must be provided to remove or substantially reduce threats to the offset site(s). These activities could comprise introducing alternative, more sustainable livelihoods and/ or alternative sources of those materials that are under threat. Increasing the size of buffer zones around offset sites would also help to reduce threats.

In all cases it is important to realize that simply increasing the size of an offset area may not remedy specific risks or uncertainties; other offset activities may be needed in this respect.

7.4.2 Locating offsets in the landscape – 'offset receiving areas'

Important to note: locating offsets

The transformation of natural habitat associated with development results in increasingly isolated fragments or 'islands' of habitat in the landscape. This fragmentation of habitat effectively prevents exchange of biodiversity, interferes with – or prevents – ecological processes and, over time, leads to loss of ecological integrity and biodiversity.

Habitat fragmentation is one of the major causes of species extinction today[89] and one of the leading causes of loss of biodiversity in the Western Cape. The location of biodiversity offsets in the landscape to promote connectivity between areas of natural habitat, minimise further fragmentation, and provide for corridors across altitudinal, soil/ geological and climate gradients is thus of the utmost importance.

Biodiversity offsets to remedy loss or deterioration of ecosystem services must be located so that they benefit those parties adversely affected by the development (e.g. rehabilitation of an upstream wetland would improve water quality downstream). The location of site(s) to offset biodiversity pattern and process may be more flexible in the landscape, provided that it satisfies the 'like for like' principle.

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

- ***On-site offsets*** (also known as 'set asides') would be acceptable if they could make a meaningful contribution to achieving biodiversity 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). Financial provision for their effective management would have to be made, and the Offset Management Plan would essentially form part of the EMPr for the development site.

Important to note: on-site offsets

When offsets are proposed on development site (set asides) they should be explicitly and separately described in relation to compensating for residual negative impacts, once other on-site mitigation measures (i.e. avoiding, minimizing, repairing or restoring negative impacts) have been taken into account.

- ***Off-site offsets*** should apply when appropriate offsets cannot be secured on the site. They would involve securing (through purchase or formal agreement such as stewardship) areas of

[88] Moilanen *et al* 2009 note that considerations of uncertainty, correlated success/failure, and time discounting should be included in the determination of the offset ratio, to avoid a significant risk that the exchange is unfavorable for conservation in the long run.

[89] Muradian 2001

like habitat, with associated financial provision for their effective management. A specific Offset Management Plan would need to be drawn up.

When the applicant chooses to purchase or otherwise secure the offset habitat, it is important to locate the biodiversity offset optimally. The condition of a potential offset area for freshwater/ wetland habitat may depend in part on the condition of associated upland biotopes that will influence both the quality and quantity of drainage entering the system. That is, it is important to consider potential offset sites in a broader systems context, taking into account probable future land uses in the catchment that could jeopardise the success of the offset site.

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, protected area expansion strategies or FEPAs. These areas are known as '*receiving areas*' for offsets (Figure 18). As far as possible, offset sites should be connected to other formally protected sites and/ or improve the connectivity between priority areas for biodiversity conservation. It is also important that the conservation targets of metropolitan and municipal areas specifically, and of the province as a whole, are given due consideration in determining the location of biodiversity offsets; a priority would be to locate biodiversity offset sites in the same metropolitan/ municipal area as the development site where at all practicable to ensure that those bearing the cost of the impact benefit from the offset.

Offsets should be located in the landscape to (in order or priority):

a) Make the maximum contribution to securing, protecting and/or linking biodiversity priority areas, and consolidating ecological corridors in the landscape identified in biodiversity, bioregional or conservation plans, climate change adaptation corridors/ plans, SDFs, EMFs, FEPAs, fine scale plans, (etc). These areas are broadly grouped as '**key offset receiving areas'**. Biodiversity offset sites must preferably be located within the same municipal area as the development site where feasible and where suitable 'offset receiving areas' are located in that area; only where conservation targets have been met and/ or there are no feasible 'offset receiving areas' could biodiversity offsets be considered beyond the municipal boundaries.
b) Minimise fragmentation of habitat, consolidate or buffer existing protected or priority conservation areas and/or create corridors between these areas;
    - Provide comparable ecosystem services to those delivered by impacted site;
    - Provide comparable ecosystem services specifically to those parties adversely affected by impacts on 'their' ecosystem services;
    - Be in the same biotope, bioregion and, preferably, the same sub-catchment as the impact site; and
    - Be as close to the impacted site as possible.
c) Ensure that there is a buffer between the offset site and potential threats to that site. Since measures to rehabilitate wetlands rely in part on maintaining the condition of the upstream catchment, it is important to provide for *at minimum* a 30m buffer area and/ or seek to integrate terrestrial and freshwater ecosystem offsets.

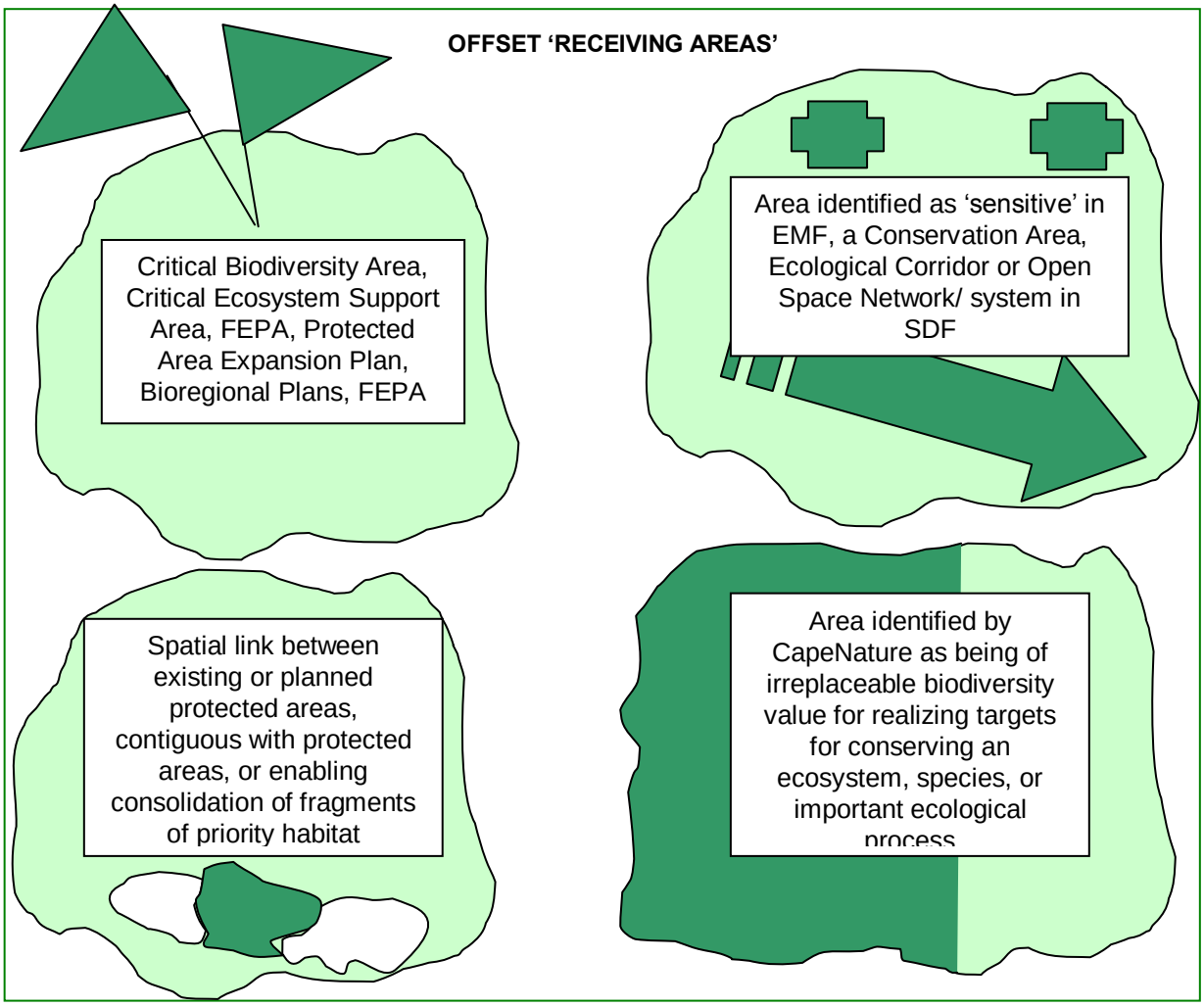


Figure 18 : Priority receiving areas for biodiversity offsets

7.5 Considering the impacts of, and on, potential biodiversity offsets

Setting aside an area as a biodiversity offset may negatively affect current users or planned future uses of that area.

- Setting aside areas for conservation may curtail or prevent existing uses, with potentially significant negative effects that in turn might require offset or compensation.
- Setting aside areas for conservation may displace the activities of current users of living natural resources to another priority area for conservation, resulting in negative impacts on biodiversity elsewhere.

In addition, existing or planned development activities may pose a threat to the future viability of a potential offset area:

- Areas may be earmarked for particular development in spatial development plans or frameworks (e.g. future road corridor, township expansion).
- Observed trends in the use of land and/ or natural resources may point to a major threat to the viability of an offset (e.g. expansion of informal settlement, conversion of land for subsistence agriculture).

- There may be existing rights to land (e.g. prospecting or mineral rights, subdivision or development rights) that could jeopardise the area for conservation purposes.
- There may be unresolved land claims on the potential offset site.
- Previous land uses may have resulted in contamination of soils or water on the site.

It is essential that both the impacts of, and on, prospective biodiversity offset sites are taken into account in choosing the optimum offset, since they have a number of practical, cost and conservation implications. A 'first prize' would be to select an offset site where there would be no or negligible negative impacts on local communities, but where improved management of the site could deliver better ecosystem services to that community and/ or provide opportunities to obtain revenue from sustainable use of the site. It is also valuable to seek opportunities for synergies with development plans and strategies (e.g. boosting nature-based tourism).

Where a potential offset site is being used by local communities, negotiations with stakeholders may lead to formal agreement between the proponent, conservation agency and the local community whereby some form of payment for conservation management (or 'payment for ecosystem services') is reached to compensate those whose existing activities may be curtailed, thereby promoting a different form of livelihood.

7.6 Determining the best way to secure the biodiversity offset

According to s2(4)(k) of 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 for CapeNature to work in partnership with a Public Benefit Organization (PBO)[90] 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. Such an arrangement would require each and every holder of an authorization conditional on securing a biodiversity offset to enter into a binding agreement with that body regarding the implementation and management of the required biodiversity offset.

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.

7.6.1 Options for securing biodiversity offsets

Four 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 an appropriate statutory conservation authority or an accredited PBO;
- Entering into Stewardship agreements to declare land as a protected area;
- Conservation servitudes; or
- Purchasing or otherwise acquiring land of like habitat.

[90] Defined in the Income Tax Act 58 of 1962. A non-profit company, a trust and/ or a voluntary association of persons with a constitution may register as a non-profit organisation (NPO). The NPO can apply for the status of a Public Benefit Organisation (PBO); one of its purposes being to undertake one or more public benefit activities, carried out in a non-profit manner and with altruistic or philanthropic intent. PBOs are entitled to a broad range of fiscal benefits, including a partial income tax exemption, exemption on donations tax and they can apply for the right to receive tax deductible donations.

Other mechanisms that do not offer the same level of security in the long term are not acceptable. They are better seen as interim or 'holding' strategies, or reinforcement of other strategies, rather than adequate offset strategies in themselves.

The applicant or a third party appointed to act on the applicant's behalf could pursue the design, location and implementation of the offset.

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.

However, to signal to prospective developers and land owners the intended use of biodiversity offset sites for conservation purposes, they should be rezoned for this special purpose once they have been secured, in a manner that is consistent with the relevant zoning scheme.

Donating money for the management of under-funded municipal or provincial protected areas is **not considered to be appropriate in the Western Cape**.

Biobanking, mitigation, habitat or **conservation banking**, also referred to as credit trading schemes[91], are not considered appropriate in the Western Cape ***at this stage***. Some countries (particularly the USA and Australia) have developed biodiversity or conservation banks involving a system of trading of biodiversity (habitat or species) credits. 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. No such credit scheme exists in South Africa at present. However, the development of such a system may have potential in future, only if there were a predictable demand for biodiversity offset sites created through strong and consistently applied policy/ regulation.

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.

7.6.1.1 Donation of land to an appropriate statutory conservation authority or an accredited Public Benefit Organization

In cases where the proponent owns land which would meet the requirements of a biodiversity offset, the simplest route to secure that area would be for the applicant to donate it to an appropriate statutory conservation authority (i.e. CapeNature or SANParks), or a recognized, accredited 'offsets PBO[92]' that is willing and has the capacity to handle such donations.. Acceptably endowed capital fund/s, explicitly and specifically to be used for managing, monitoring and auditing that offset area, would also need to be established and transferred to the offset recipient. The size of that fund would have to be established in the offset planning process and be acceptable to the receiving party. The conclusion of the donation should be a suspensive clause in the environmental authorization.

[91] e.g. Government of Western Australia 2006.

[92] 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.

7.6.1.2 Securing private land through Stewardship agreements

Landowners can participate in a range of agreements, ranging from 'national park' and 'nature reserve' (the most secure option) and 'protected environment' in terms of the National Environmental Management (NEM) Protected Areas Act 57 of 2003, to 'biodiversity agreements'.

Having an area declared as a 'nature reserve' or 'protected environment' would best secure a biodiversity offset site, since these protected area categories afford some level of protection from mining activities. In these cases, the proponent commits to securing the offset site (either an on-site or off-site offset) through stewardship[93]: the applicant essentially obtains a commitment from the landowner of the offset site to enter into stewardship agreement. This commitment is obtained through negotiation, often involving financial payment to the landowner linked to management and/ or rehabilitation of that site, and compensation for lost opportunity for its productive use. The landowner then enters into formal agreement with SAN Parks (in the case of a National Park), or the Member of the Executive Council (MEC) responsible for provincial protected areas and CapeNature, to establish and manage a Nature Reserve in terms of subsection 23(1) or Protected Environment (subsection 28(1)) of the NEM Protected Areas Act.

Biodiversity Agreements, where the landowner enters into an agreement with CapeNature to manage land for biodiversity conservation, and associated restrictions are registered in the Title Deeds of that land in perpetuity, could also be appropriate. Title Deed restrictions need to be registered in favour of a 2nd party, either CapeNature or a conservation PBO.

Important to note: requirements of stewardship

Securing a site under stewardship requires at minimum a formal agreement to manage biodiversity on the property, a Land Surveyor's diagram, the preparation of a biodiversity management plan which defines management practices to meet the objectives of the site, and advertising of the intention to protect the area for conservation (i.e. public participation). An adequately resourced fund for the offset site (Section 7.6.2) would have to be set up, and preferably some form of insurance or performance bond. If any actions were required from third parties (e.g. monitoring and/or auditing, or specialist advice by CapeNature staff, clearing of alien invasive species or wetland rehabilitation by the DEA's Natural Resource Management programmes) they would also have to be funded according to an agreed schedule at specified rates[94]. These steps mirror the requirements for securing and planning for management of a biodiversity offset.

Important to note: Tax incentives and rates reduction

Where activities or uses of the proposed offset area by existing users would be restricted or prevented as part of the stewardship agreement, the proponent must give consideration to payment (or other form of appropriate compensation) for the lost use or development opportunities. In addition, where land owners, occupiers or users modify their use of the offset area and help in its management for conservation, they could ask for financial or in kind compensation.

Cognisance must be taken of recent amendments to Income Tax laws[95] that provide incentives for biodiversity conservation.

[93] To date, landowners have asked to join the stewardship programme and voluntarily entered into stewardship agreements. With biodiversity offsets, landowners are being asked by developers to do so; a situation sometimes described as 'reactive stewardship'.
[94] E.g. there is a memorandum of agreement between DEA and DWS regarding financial and practical arrangements for DWS to draw on DEA's natural resource management programmes to undertake specific resource management activities on its behalf, on condition that DWS provides the necessary funding.
[95] In terms of the Revenue Laws Amendment Act 2008, pertaining to changes to the Income Tax Act 58 of 1962

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.

7.6.1.3 Conservation servitudes

Conservation, 'green' or 'non user' servitudes are an established common law tool that grants third parties rights in respect of a specific property for conservation purposes; these rights represent restrictions on the full use of land by the landowner. Conservation servitudes must have a beneficiary, typically a conservation PBO/ NGO, and/ or a conservation agency such as CapeNature. The use of conservation servitudes in South Africa is not new; e.g. Ethekwini Municipality makes use of them. Their advantage is that they can be swiftly implemented, are registered on the property's title deeds (i.e. in perpetuity), give real rights to third parties, can be bought from a landowner and can be made subject to a management plan. In essence, conservation servitudes are equivalent to Biodiversity Agreements in terms of stewardship arrangements.

7.6.1.4 Purchasing, or making funds available to acquire, land of like habitat or better

This is often the quickest, simplest and most predictable way to conclude an offset. If the offset area were not owned or under the control of the proponent, then securing that area could be pursued through outright purchase of the land or long term lease, with a legally enforceable commitment to concluding a stewardship agreement.

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 and the CEA 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.

7.6.1.5 Biodiversity banking and credit trading schemes

Biobanking, mitigation, habitat or conservation banking, also referred to as credit trading schemes[96], have potential in future to support biodiversity offsets. No such system is currently up and running in the province. This form of banking requires strong oversight and regulation on the part of the competent authority/ies, and there needs to be a predictable demand for offset sites for such a system to flourish.

Biodiversity credit trading schemes[97] provide a mechanism for an authority to register and trade biodiversity credits. These credits are determined through evaluation of the quantity, quality and conservation value of biodiversity that would be subject to a secure and binding agreement in perpetuity. Credits are offered for purchase by landowners, reflected and characterized in a computerized register, and can be bought by developers for use as offsets. The system thus helps to match credits to specific offsetting requirements, following which the buying and selling of native

[96] e.g. Government of Western Australia 2006.

[97] e.g. Dept of Sustainability and the Environment, Victoria, Australia's BushBroker scheme. 2006.

vegetation credits is undertaken by the owners and buyers of credits or their agents. Ongoing management can form part of the vegetation credit agreement.

In the Western Cape, any future credit trading scheme should incorporate the following considerations, amongst others:

- Ecosystem type and status;
- Contribution to conservation of recognized priority areas;
- The area available;
- The condition of the affected habitat;
- The presence of threatened species;
- The presence of special habitats;
- The biodiversity process value of the affected habitat;
- Any known threats, rights or claims to the site in question; and
- The importance of the area in terms of delivering valued ecosystem services.

The possibility of expanding or adjusting the Stewardship Programme to accommodate biodiversity credit trading could be explored in future.

7.6.2 Financial implications of, and mechanisms to finance, biodiversity offsets

Biodiversity offsets principally involve **securing and managing habitat in priority areas for conservation**. There are a number of different mechanisms that could be used to fund the acquisition, securing and/ or management of biodiversity offset(s). Funding options, implications and requirements will be different for private and public applicants and the recipients of funds; e.g. the funding source may have direct implications for adhering to regulatory compliance (and specifically the Public Finance Management Act 1 of 1999 and the Municipal Finance Management Ac 56 of 2003t[98]) (government departments would be bound by these Acts, as would SANParks and CapeNature as public entities).

The choice of fund will depend on the specific case and context:

- **Endowment Fund**: The biodiversity offset is financed through the income generated annually from a proportion of the annual growth of capital invested in a ring-fenced fund.

- **Revolving Fund**: Regular or periodic contributions are required to augment the original capital.

- **Sinking Fund**: This fund has a finite, pre-determined life span. It is a fixed period investment and the entire capital and investment income is disbursed over a predetermined period of time.

Funds could be kept in specific and separate accounts set up for the explicit purpose of financing the biodiversity offset.

A Trust is a dedicated legal mechanism which can provide a vehicle for the funds and/ or for ownership of offset property; it is a legal mechanism for the controlling of money or property by specific persons (for example either directors or Trustees) for a specific purpose defined in the founding documents of the Trust (e.g. Trust Deed or Memorandum and Articles). A Trust Fund caters for public interest objectives, and thus is better placed to offer perpetual succession and avoid being influenced by partisan (either private or public sector) interests than other options.

In all cases, the CEA must endorse the proposed financing mechanism and confirm that the financial provision for acquiring and/or managing offsets is sufficient.

[98] Smith Ndlovu Summers. 2012 *Memorandum of advice:* The implementation of financial biodiversity offsets in the context of South Africa's environmental laws and laws applicable to the regulation of public finance. Prepared for SANBI.

Characteristics peculiar to each of these mechanisms are outlined in the sections that follow.

7.6.2.1 Direct purchase of land for the offset

The costs of acquiring and securing 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 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 before the development could proceed. This fact suggests that it could be prudent for a proponent to pursue the investigation, identification and obtaining an option to purchase/ secure an acceptable offset as early as possible in the EIA process, entirely at the proponent's risk.

7.6.2.2 Negotiated financial agreement with landowners

The proponent could negotiate a legal agreement linked to a financial package with landowners to manage a suitable offset site for biodiversity conservation in the long term. The financial package would have to be acceptable to landowners, taking due account of the opportunity costs associated with restricting the use of land, and the costs of managing the land for conservation. Where it is clear that offsets would be required of an applicant, s/he or an appointed agent could approach landowners of candidate sites to explain the implications of setting aside areas as a biodiversity offset, and the possible optional arrangements, to gauge their likely willingness to enter into such an agreement. This agreement would have to be formally drawn up and signed off before development could begin.

7.6.2.3 Monetary payment

A mechanism could be set up for the State or an Independent Trust or PBO, to pursue the acquisition and management of the biodiversity offset[99] on behalf of the proponent, and administer and manage the necessary associated funds.

The main options comprise:

a) ***A dedicated public entity at either national or provincial level*** is established in terms of a particular statute[100] to act as a type of 'clearing house' and consolidate all biodiversity offset-related financial transactions[101]. The founding statute of this entity must establish a mandate which permits it to implement biodiversity offsets (the acquisition of land, administration, management and accounting of offset transactions) and transfer funds to and from other public entities to this end. This entity would be subject to the requirements of the Public Finance Management Act 10 of 1999 (PFMA) or Municipal Finance Management Act 56 of 2003 (MFMA) and the associated range of obligations insofar as financial corporate governance requirements are concerned, as well as the Prevention and Combating of Corrupt Activities Act 12 of 2004. A trust deed or equivalent instrument would need to be established which ring-fences[102] the funds specifically for biodiversity offsets, and a separate bank account would be required. Any financial contribution received by

[99] It is assumed that best practice EIA and the contents of this guideline, as relevant, would be applied 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.
[100] There is currently no dedicated trust mechanism contemplated in NEMA; such mechanism could be created by an Act of Parliament.
[101] Advantages: avoid duplication of financial and corporate governance requirements; avoid multiple transactions between different organs of state and provincial conservation agencies and/or other public entities; avoid capacity or administrative constraints; and avoid a potential conflict of interest where for example an organ of state procures payment for a project proponent into an offset fund.
[102] Specifies that money would be used for an explicitly-defined purpose only.

the public entity would need to be held in trust and for the specific and narrow purpose of the biodiversity offset in question.

b) ***DEA&DP or CapeNature, or a Municipality*** sets up a dedicated special Account or Trust Fund, solely for a particular biodiversity offset. Money is paid in trust by the applicant to the authority or agency, who pays the money into that Account. The identity of the applicant would govern the applicability of the PFMA or MFMA to the transfer of funds. This option presents a number of challenges in terms of the PFMA, MFMA and the Prevention and Combating of Corrupt Activities Act 12 of 2004.

c) An ***existing, independent organization*** (PBO or conservation NGO) with an appropriate, dedicated Trust (e.g. Table Mountain Fund of WWF; The Wildlife Land Trust) where funds could be ring-fenced for offset purposes[103], could receive biodiversity offset funds. Money is paid by the applicant to the PBO or Trust; that body invests the money with a financial institution to secure the funds and ensure proper growth of the fund.

d) ***The applicant*** establishes a dedicated independent entity (e.g. PBO or Trust) specifically for the biodiversity offset in question, in order to manage the money for that offset. Money is paid by the applicant to the PBO or Trust; that body invests the money with a financial institution to secure the funds and ensure proper growth of the fund.

Interesting to note: translating the required offset area into a monetary measure

In South Australia, as an example, payments to the Native Vegetation Council *in lieu* of providing physical habitat, are calculated based on the area cleared (i.e. area residually impacted), the 'set-aside ratio' (a sliding scale from 2:1 to 10:1, depending on the condition of cleared habitat), and land values for the district, based upon advice provided by the Valuer-General's office, including an amount to allow for the future maintenance of these protected areas[104].

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 and the proportionately larger buffer area needed to maintain an effective core area for maintaining diversity and ecosystem function. (These implications could be reduced by adding parcels of land to existing reserves, consolidating fragments and avoiding long, thin areas);
- Preventative fire management may seem expensive upfront, but is often a significant risk reduction strategy that pays back handsomely;
- The more nutrient loading and/or pollution on the site, the greater the management costs;
- The greater the use of land for recreation, tourism or other activity, 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 and restoring ecosystem function).

[103] The Directors of this Trust would be drawn from government, biodiversity or environmental NGOs and respected members of society, who would agree on a set of rules and criteria for the Trust Fund's operation. The Trust Fund would be structured to meet different needs of particular geographical areas or biotopes, and/ or best to meet the different types of financial contribution (e.g. endowment, phased payments, etc.).

[104] Government of South Australia Department of Water, Land and Biodiversity Conservation. September 2005.

7.7 Reaching agreements with landowners and implementing agents

Where the applicant intends to purchase or lease appropriate land as an offset it would be necessary, before drawing up an Offset Management Plan for the target site, to:

a) to reach agreement with a suitable landowner and include issues such as ownership, access, title deed restrictions, management, monitoring and auditing of the proposed offset site; and
b) to draw up contracts with an implementing agent(s) who would be responsible, for example, for establishing and securing the site for conservation, for drawing up and/ or implementing the management plan, for undertaking specific rehabilitation work (e.g. on degraded wetlands, to clear invasive alien species, etc.).

In some situations, customary activities or resource use by parties in the vicinity of a proposed offset site could be curtailed or prevented by the setting aside of that area for biodiversity conservation. Negotiations with affected parties may lead either to formal agreement between the proponent and stakeholders, whereby some form of payment in compensation is agreed to, and/ or payment would be made (performance based) for clearly defined conservation management actions on the offset site(s); essentially providing an alternative livelihood. Provided that formal and binding agreement can be reached to secure the land for conservation purposes in perpetuity, and there are no conflicts of interest among parties to the agreement, this type of initiative may avoid the need for the project applicant to purchase land for an offset.

Establishing clear roles and responsibilities and formalizing them in agreements is crucial; payment would be performance based; conditional on compliance with the agreement.

In effect, the agreement(s) drawn up with the implementing agent(s) contains the applicant's formal commitment to undertaking a suite and schedule of activities to meet the offset requirements. This agreement constitutes the Offset Agreement referred to in Section 8.2.

8. Reporting on biodiversity offsets

Where biodiversity offsets are required in mitigation of impacts, an Offset Report must be included in the BAR or EIR. The level of investigation of suitable offsets required at the time of BAR or EIR submission must ***at minimum*** be sufficient to provide the decision maker with strong assurance that an offset would be appropriate and feasible, and could, and would, be successfully secured and managed by the applicant or an appointed implementation agent. A more detailed Offset Report could then be submitted after (if) conditional authorization were issued, within a specified timeframe.

Important to note: high-level Offsets Report or detailed Offset Report?

It would be preferable for the applicant to prepare a detailed Offset Report for inclusion in the BAR or EIR; a detailed Offset Report would give the CEA and CapeNature greater assurance regarding the proposed biodiversity offset earlier on, and reduce the need for additional studies post-authorization..

However, proponents may be reluctant to invest time and money in securing landowner or purchase agreements on specific properties and/ or drawing up management plans/ programmes for different site options before environmental authorization has been granted. In addition, the timeframes for EIA processes - particularly the BAR process - may not allow for detailed offset planning.

At least a high-level Offset Report must therefore be submitted **with the BAR or EIR**. A **detailed Offset Report should preferably be submitted with the EIR**.

Where the applicant opts to submit a high-level Offset Report with the BAR or EIR, the details of each offset site and its management needs, as well as associated financial provision and means to secure and manage the site(s), plus implementation responsibilities, would need to be investigated and captured in an Offset Agreement with the intended implementing agent subsequent to any granting of environmental authorization conditional on a biodiversity offset (Figure 14).

This section focuses on:

- **An Offset Report** which is relatively **high level** and typically included in the BAR. It captures the main findings of the offset design and implementation planning process and plays a major role in informing final decision making on the proposed development;
- A **detailed Offset Report** and associated **Offset Agreement** which should preferably **be submitted with the EIR**, or in the case of the **BAR is prepared after (if) environmental authorization is granted**; and
- An **Offset Management Plan** which details how the proposed offset would be managed, monitored and audited, who would be responsible for these activities, the costs of management, and what specialist(s) advice would be needed to inform that management. This Plan is typically prepared to inform budgeting and financial provision for managing the offset site(s.

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

8.1 High-level Offset Report for inclusion in BAR

The high-level Offset Report would be submitted as a specialist report with, and incorporated into, the BAR or EIR. It should aim to answer the key questions given in Box 11. At minimum, it should include the following information:

1. An evaluation of the adequacy of measures considered and adopted to avoid, minimize and rehabilitate potentially significant negative impacts on biodiversity. (That is, were these measures sufficient; were reasonable and feasible alternative measures investigated, or could greater effort have been made particularly to avoid and minimize these impacts?)
2. A clear statement regarding the appropriateness of considering biodiversity offsets in this case. (That is, are there any residual impacts of 'very high' significance that could lead to irreplaceable loss of biodiversity and/ or priority ecosystem services?).
3. A reliable measure of residual negative impacts on significant biodiversity and ecosystem services requiring offsets.
   - It must take into account gaps in information or low levels of confidence in the predicted negative impacts.
   - It must give due consideration to uncertainties or low levels of confidence in the outcome of proposed measures to avoid, minimise and/ or rehabilitate negative impacts.

4. The duration of residual negative impacts of the proposed activity on biodiversity, taking a risk-averse approach, to determine the minimum duration of the biodiversity offset(s)[105].
5. An explicit statement on the required size of the biodiversity offset to remedy these residual negative impacts, applying the basic offset ratio and adjustments as appropriate.
6. A description of the offset options considered (like for like habitat, trading up, monetary payment), giving defensible reasons for arriving at the proposed offset type.
7. Where the proposed offset comprises physical habitat to be secured and managed:
   a) Evaluation of the probable availability of suitable offset site(s) in the surrounding landscape to meet offset requirements.
   b) Description of potential site(s) for biodiversity offset(s).
   c) Description of stakeholder engagement process in identifying and evaluating the adequacy and acceptability of the proposed offset site.
   d) Description of proposed approach to securing the offset site(s) (e.g. conservation servitude, nature reserve/ stewardship) and how it would be managed.
   e) Evaluation of probable adequacy of proposed offset site(s) by biodiversity specialist(s) and, where relevant, a social/ livelihood specialist:
      - *Is there a high level of confidence that offset site(s) would remedy 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?* (
      - *Would the offset sites be located in recognised 'offset receiving areas'?*
      - *If relevant, is the motivation for a 'trading up' offset defensible in the specific context?*
      - *Would the offset site(s) be functionally viable in the long term?*
   f) A reliable estimate of the costs of acquiring or securing, rehabilitating and managing the necessary offset site(s) for the duration of residual negative impacts;
   g) Responsibility for managing, monitoring and auditing the biodiversity offset;
      - *Who would be responsible for implementing, managing and auditing the biodiversity offset?*
      - *Statement regarding the adequacy of capacity of the institution, organization or other party to meet obligations in terms of above responsibilities;*
   h) What measures would be taken to 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. where offsets are to remedy loss of biodiversity underpinning valued ecosystem services, would the proposed offset(s) 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 would these negative impacts be avoided;*
      - *Would the proposed use of the biodiversity offset site(s) be compatible with biodiversity conservation objectives? In particular, where an offset for residual negative impacts on biodiversity also provides offsets for residual impacts on ecosystem services, assurance must 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).*

[105] Particularly important when determining *in lieu* monetary compensation and funds required to manage offset site(s), as well as for planning ahead with regard to the handover or 'inheritance' of these sites for conservation in the longer term, when the applicant's responsibility for the offset site(s) ends.

i) What mechanism is to be used to provide sufficient funds for acquiring/ securing and managing the biodiversity offset site(s) for the duration of residual negative impacts of the proposed activity (i.e. who will be the recipient of money – a Trust, PBO, etc? Will funds take the form of an endowment/ revolving fund/ sinking fund)?

8. Where the proposed offset involves monetary payment:

a) Details of the proposed offset amount and the basis on which it was determined. The Offset Report must show the measure of residual biodiversity loss, the size of an appropriate offset that would adequately remedy for that loss, and the 'translation' of that offset size into the costs of acquiring and managing[106] a suitable offset for the duration of the residual negative impacts resulting from the proposed activity.

b) Details of the receiving party/ies or fund/s.

c) Details of any agreement/s between parties involved.

d) Schedule of payments, where appropriate.

e) Performance auditing and reporting schedule.

f) Statement of any risks associated with the offset, and measures that would be needed to minimise these risks.

Important to note: CapeNature's input to decision making involving biodiversity offsets

As the agency responsible for biodiversity conservation in the Western Cape, CapeNature's advice and position on all proposed biodiversity offsets must play a central role in the CEA's either supporting and endorsing the selection and design of that offset, with recommended conditions, and/or rejecting the proposed offset (with reasons).

8.2 Detailed Offset Report as the basis for an Offset Agreement

If the proposed development were authorized conditional on a biodiversity offset, detailed offset planning, including offset site selection and securing, the management requirements, implementation arrangements and financial provision for the offsets would need to be finalized.

In particular, the following issues would need to be addressed and refined, and captured in a detailed Offsets Report:

a) Final offset site selection and an accurate description of land parcels, hectares of targeted ecosystem/ habitat;

b) Systematic evaluation of their adequacy in meeting the offset requirements stipulated in the conditions of authorization;

c) Description of any impacts on ecosystem services and/or associated socioeconomic or heritage factors associated with securing the proposed offset site. Engagement with key affected parties would be essential to this end;

d) Description of how specific offset site(s) are to be secured (i.e. given legal protection) and by whom (i.e. applicant or an appointed third party). Reference must be made to any proposed contracts or agreements governing the offset area;

e) Description of how specific offset site(s) are to be managed and monitored, by whom, when and how often;

f) Description of how specific offset site(s) are to be audited, by whom, when and how often;

[106] The management costs must be explicitly linked to the management plan, as addressed in the next section.

g) Description of reporting to the CEA and key stakeholders on offset performance and results of offset audits, by whom, when and how often;

h) Description of how any impacts on affected parties would be offset or compensated;

i) Breakdown *of* costs of acquiring or securing, establishing, managing, monitoring and auditing the offset site(s) for the required timeframe, taking into account escalation. Reference must be made to the Offset Management Plan for management costs (refer Table 9); and

j) Details of the funding mechanism/ vehicle and financial guarantees or performance bonds to be used to provide and manage the requisite finances[107] to secure and manage the offset(s). Financial guarantees must be in the name of the implementing agent, or placed in an accessible escrow account at a registered financial services provider, with 10% administrative penalty in case the State needs to exercise the guarantee should the applicant default.

On the basis of the detailed Offset Report, the outcomes that the applicant commits to achieving in order to satisfy explicitly the decision maker's information needs (**Section 6.5.3**), should be captured in a signed Offset Agreement with the implementation agent(s). The Agreement(s) should be referenced in the conditions of environmental authorization if submitted as part of the EIR for decision making purposes.

If the detailed Offset Report were prepared **after** a conditional authorization has been issued (e.g. in the BAR and some S& EIR processes), then a signed Offset Agreement(s) would need to be drawn up at that stage. The authorization in this case should be amended by the CEA to refer explicitly to the Offset Agreement(s) once accepted by CapeNature and the CEA.

8.3 Offset Management Plan

Where biodiversity offset site(s) are to be secured and managed, the proponent would need to prepare an **Offset Management Plan**.

The proponent must appoint a registered natural scientist with appropriate qualifications to prepare an ecological management plan for the offset site. In addition, a resource economist must be appointed to work out the associated costs of managing the site; these costs – taking into account escalation – must be accommodated in the financial provision for the biodiversity offset.

Box 14 : Contents of an Offset Management Plan:

- Site establishment requirements to enable management.
- Management (and, where appropriate, a rehabilitation/ restoration) plan with clear objectives, targets, actions, responsibilities, and timelines[108].
- Monitoring and evaluation requirements with associated indicators.
- Appropriate corrective or adaptive management in response to monitoring results, and audit requirements.
- Performance auditing and reporting requirements. Audits should be undertaken by an independent specialist and submitted to the competent authority on an annual basis.
- Roles and responsibilities for all of the above activities.
- Schedule of costs linked to management plan and associated activities, specialist input, management of offset bond or trust fund. The operations and payments from the fund must be stipulated in a schedule/annex to the Offsets Management Plan.

[107] S24(P) of NEMA defines 'financial provision' in relation to applications relating to prospecting, exploration, mining or production as the insurance, bank guarantee, trust fund or cash that applicants for an environmental authorisation must provide in terms of this Act guaranteeing the availability of sufficient funds to undertake, amongst others, the '*remediation of any other negative environmental impacts*'.

[108] 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.

The Offset Management Plan must address, amongst other aspects:

a) Once-off establishment costs (e.g. fencing, surveying, subdivision, legal costs, advertising costs, any NEMA EIA/ other authorization requirements (e.g. rezoning), infrastructure or equipment, signage);
b) Any initial rehabilitation costs (e.g. wetland rehabilitation, intensive invasive alien species eradication, rehabilitation/ recreation of riparian buffers, etc);
c) Ongoing/ annual management costs
   - Fire management
   - Monitoring and eradication programme for alien, invasive and weedy species (plants), and alien and invasive animals
   - Appropriate management and monitoring of threatened/ Red List species
   - Safeguarding and monitoring areas known to provide valuable ecosystem services
   - Management of trespassing, illegal settlement, poaching or harvesting
   - Capacity building and skills training (where appropriate), and
   - Local community involvement in use and management of, and benefit from, the offset site.
d) Reporting on offset performance to the CEA, CapeNature and other key stakeholders.

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. In some instances, partnerships with NGOs, community-based organizations and/or research institutions may offer significant potential in drawing up plans for implementing and managing biodiversity offsets. (The perspective that 'applicants are best at developing, conservation bodies are best at conserving' has relevance to offsets.)

For large-scale or controversial projects, where the offset will have an adverse impact on local parties, and/ or where there is a high level of interest in the offset, an oversight body should be established to monitor the area set aside as an offset, to check on its performance in terms of management targets and desired outcomes. Such a body should include independent technical experts, community representatives and CapeNature.

9. CONCLUSIONS

This guideline addresses the use of biodiversity offsets as a policy instrument for environmental management in the Western Cape. Biodiversity offsets in the Western Cape form part of the 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 or reviewing proposed offsets.

The guideline explains how, when and by whom the need for offsets is identified and required of the applicant. It also explains the roles of environmental assessment practitioners, biodiversity (and other) specialists, and offset specialists in investigating and designing appropriate offsets, to be evaluated by the provincial biodiversity conservation agency CapeNature and the Competent Environmental Authority.

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 if a predictable regulatory environment for biodiversity offsets were established.

Currently there may be adequate areas for many ecosystems in the Western Cape that could serve as offset areas. With time, however, these opportunities will 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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Appendix 1: Considerations for determining financial provision for biodiversity offsets			
Financial provision to secure and manage biodiversity offset			
A: Estimated cost of acquiring and securing offset land			
Ecosystem type	**Average cost of land in that vegetation type (R/ha)** [109]	**Offset area (ha)**	**Anticipated cost of offset (R)**
(name)			
(name)			
Etc.			
		Land survey costs	
		Legal/ transaction costs (e.g. lodging notarial deeds, gazetting, advertisements or legal notices)	
		Costs of fencing, equipment, infrastructure needed to implement offset	
		Other (e.g. signage, compensation of affected parties)	
		Total cost	
B: Estimated cost of offset establishment			
Item		**Area, number or extent**	**Anticipated cost (R)**
Costs of any permits, authorizations triggered by offset activities (e.g. rehabilitation works)			
Costs of fencing, equipment, infrastructure needed to implement offset			
Other (e.g. signage, compensation of affected parties)			
		Total cost	
C: Estimated cost of intensive initial management			
For each ecosystem type and for offset area as a whole during the first x years			
Item		**Area, number or extent**	**Anticipated cost (R)**
Rehabilitation of eroded areas or physical / structural rehabilitation work			
Intensive clearing of dense infestations of invasive alien species			
Costs of any permits, authorizations triggered by offset activities (e.g. rehabilitation works)			

[109] It is crucial that this estimated cost of land is up to date and/ or projected in terms of longer term trends in land value over the period during which land must be secured. If underestimated, it would be impossible to secure the necessary offset.

	Total cost	
D: Estimated cost of annual management		
For each ecosystem type and for offset area as a whole over the required timeframe, taking into account escalation/ inflation		
Item	**Area, number or extent**	**Anticipated cost (R)**
Fire management		
Erosion management		
Alien and invasive species control/ management		
Faunal management		
	Total cost	
E: Other costs		
For each offset area		
Administrative costs		
Risk premium/ insurance		
Other (specify)		
Total costs (sum A-E)		

Good practice dictates that all costing exercises should be peer reviewed by a qualified, competent specialist.

Appendix 2: Roles and Responsibilities in addressing biodiversity offsets in the Western Cape

Process	Responsibility and tasks						
	CEA (DEA&DP, DMR or DEA)	**Applicant / proponent**	**EAP**	**Specialist/s**	**Local authorities and Other competent authorities (e.g. DWS, DAFF**	**NGOs/ other stakeholders**	**Biodiversity conservation agencies: CapeNature, SANParks (if relevant)**
BASIC ASSESSMENT PROCESS & BASIC ASSESSMENT REPORTING							
Pre-application	To advise applicant on any matters that may prejudice the application, including potentially significant and unacceptable impacts on biodiversity and/ or priority ecosystem services. Where activities are indisputably in the public interest, and there are clearly no alternatives that would enable impacts to be avoided or prevented, then advise applicant to engage services of biodiversity specialists and to investigate offsets, noting that an offset study would not be a guarantee of environmental authorization.	Preferable to meet with CEA. If significant impacts on biodiversity likely then appoint relevant ecologist/ biodiversity specialist. If application is in an important biodiversity area, conduct thorough baseline studies, identify any 'fatal flaws' in the proposal that could prejudice the application, consider all reasonable and feasible alternatives to avoid/ prevent, and then minimize impacts. If residual significant impacts on biodiversity probable and unavoidable, and the project is of overriding public importance and the applicant intends proceeding with the application, it is advisable to consult CapeNature regarding these impacts. IF CapeNature and/ or CEA requires biodiversity offset study as a decision-support tool, appoint biodiversity offset specialist.		Professionally registered ecologist to conduct reliable baseline study and inform consideration of reasonable and feasible alternatives to avoid/ prevent, and then minimize impacts on important biodiversity. If offset study needed (CEA requirement or probably unavoidable and significant residual impacts), offset specialist to work with biodiversity and other specialists to explore options.			Advise applicant (if approached) regarding likely significance of impacts and the need to consider alternatives to avoid/ prevent, and then minimize impacts. If project would clearly and unavoidably have residual negative impacts on important biodiversity, taking into account all probable reasonable and feasible alternatives, and would be overridingly in the public interest, advise that an offsets study is done.
Notice of intention to apply for environmental authorization		Must give notice of an application or proposed application for environmental authorization, and open and maintain a register of interested and affected parties who are entitled to comment on reports and plans.			Must ensure that they register as interested and affected parties.		
Public participation process Please note that there may be two such processes where the	To comment on the proposed application, adequacy of biodiversity and, where relevant, biodiversity offset studies, to identify and request additional information or studies deemed necessary	Must make information on the proposed activity available to interested and affected parties.	To ensure that all interested and affected parties, including CapeNature, SANParks (if appropriate), conservation NGOs, local authorities and other competent		To comment on the proposed application, on key issues and concerns with regard to potentially significant impacts on biodiversity and/ or ecosystem services. To give input and comment on the adequacy of the BAR, including • baseline biodiversity studies, • appropriate use of best available biodiversity/ bioregional plans and information,		

Process	Responsibility and tasks						
	CEA (DEA&DP, DMR or DEA)	**Applicant / proponent**	**EAP**	**Specialist/s**	**Local authorities and Other competent authorities (e.g. DWS, DAFF**	**NGOs/ other stakeholders**	**Biodiversity conservation agencies: CapeNature, SANParks (if relevant)**
timeframes for the process are extended by 50 days.	to inform decision making. Additional information could include, e.g., biodiversity data, revision of the assessment and evaluation of impact significance, the need to address alternatives to avoid/ prevent, and then minimize, significant negative impacts, and the need for biodiversity offsets and their investigation. Be strongly guided by CapeNature's comments on the adequacy of the BAR; the assessment and evaluation of impacts on biodiversity and ecosystem services, and on biodiversity offset studies.		authorities – particularly DWS – are alerted to the EIA process and given the opportunity to engage.		• the adequacy of the assessment/ evaluation of impacts on biodiversity and priority ecosystem services, • application of the mitigation hierarchy and consideration of reasonable and feasible alternatives. To identify and request additional information or studies (e.g. biodiversity data, the need to address alternatives to avoid/ prevent, and then minimize, significant negative impacts). Where significant residual impacts are predicted and alternatives have been adequately addressed, state the need for biodiversity offsets to be investigated. Where biodiversity offsets have been investigated, comment on the appropriateness of offsets, the adequacy of determining and measuring residual negative impacts, the design and location of offsets, the availability of suitable offset site(s), financial provision, approach to securing offset site(s), implementation arrangements, and the need for any additional information considered essential to inform decision making. To give clear statement on the probable implications of the proposed activities with regard to biodiversity conservation in the Western Cape, and associated international, national and provincial obligations.		
Basic Assessment Report (BAR)	Must ensure that BAR fulfils NEMA EIA Regulation requirements, and satisfies NEMA principles with regard to biodiversity, renewable resources and ecological integrity. Must ensure that comments and inputs given during the public participation process have been duly considered.	Must provide EAP and specialist(s) with reliable and relevant information. Must adhere to 'good practice' EIA, legal requirements and guidelines on biodiversity-inclusive EIA and biodiversity offsets. Must make information on the proposed activity available to interested and	Must prepare a BAR that satisfies NEMA EIR Regulations and contains enough relevant and reliable information for the CEA to make a decision on the best practicable environmental option. Must contain a statement of the need and desirability of the proposed project (i.e. is	Provide specialist input to EAP. Assessment and evaluation of biodiversity impacts project must satisfy NEMA principles. Biodiversity and/ or biodiversity offset specialist to work closely with other specialists (e.g. water, social, heritage) when priority ecosystem			

Process	Responsibility and tasks						
	CEA (DEA&DP, DMR or DEA)	**Applicant / proponent**	**EAP**	**Specialist/s**	**Local authorities and Other competent authorities (e.g. DWS, DAFF**	**NGOs/ other stakeholders**	**Biodiversity conservation agencies: CapeNature, SANParks (if relevant)**
	Accepts or refuses BAR.	affected parties.	it in 'the right place' and being proposed 'at the right time'. Must demonstrate that all reasonable and feasible alternatives have been investigated to ensure that significant impacts would first be avoided/ prevented, then minimized, and finally offset. Must transparently assess and evaluate the significance of impacts and state explicitly the extent to which impacts would be mitigated, and any irreversible impacts or loss of irreplaceable biodiversity/ ecosystem services. Must accurately incorporate the findings of specialists, including biodiversity and offset specialists. Must record comments of interested and affected parties and responses to those comments.	services affected. Advise on all feasible and reasonable alternatives to avoid or minimize impacts on biodiversity and ecosystem services, and ensure rigorous application of the mitigation hierarchy. Apply the methodology for evaluating significance of impacts presented in this guideline. Determine significance of residual negative impacts and need for biodiversity offsets. Biodiversity offset specialist to follow the approach to designing and locating offsets set out in these guidelines. Must state explicitly the extent to which impacts would be mitigated, and any irreversible impacts or loss of irreplaceable biodiversity/ ecosystem services			
Decision on BAR	Authorization granted or				May appeal decision.		

Process	Responsibility and tasks						
	CEA (DEA&DP, DMR or DEA)	Applicant / proponent	EAP	Specialist/s	Local authorities and Other competent authorities (e.g. DWS, DAFF	NGOs/ other stakeholders	Biodiversity conservation agencies: CapeNature, SANParks (if relevant)
	refused. Conditions may include biodiversity offset and must be explicitly and carefully worded to ensure that offsets would be adequate and could be audited and enforced.						
Detailed Offset Report, Offset Management Plan, financial provision and implementation arrangements to meet conditions of authorization.	To review adequacy of documentation in relation to their meeting conditions of environmental authorization. Be strongly guided by CapeNature's comments on the adequacy of these documents. Request additional information prior to accepting documents where they are inadequate. Where unacceptable, reject these documents (implying that the proposed activities must not commence).	Appoint biodiversity offset specialist (and additional specialists where required) to undertake detailed biodiversity offset design and implementation planning. Investigate landowner willingness and obtain legal agreements with landowners to site offsets on land. Investigate and set up vehicles to receive and administer funds to secure and/ or manage offset sites.		Prepare Detailed Offset Report, and Offset Management Plan (if relevant), including costing and financial provision, ways to secure offsets, and appropriate implementation arrangements.	Engage in the detailed design and selection of offset sites. Seek partnerships and local community benefits from offset implementation and management.	Engage in the biodiversity offset design and implementation planning. Seek partnerships and local community benefits from offset implementation and management.	CapeNature advises applicant on final offset design, location and implementation arrangements, and on Stewardship options if relevant. CapeNature to review documents to evaluate their adequacy. To submit comment to CEA with firm recommendations.
Compliance monitoring and enforcement	Review audits. Where proponent's monitoring indicates non-compliance or poor progress towards stated targets, may request adaptive or corrective action, or may issue a compliance order if there are reasonable grounds to believe non-compliance (s31 L-N of NEMA).	Applicant responsible for submitting independent audits of offset performance to CEA. When submitting independent audit of offset performance, and where findings indicate poor compliance with Offset Management Plan or recommendations of		Independent audit of offset at specified and regular intervals to ensure it complies with Detailed Offset Report contents, Offset Management Plan and conditions of environmental authorization. Audits to be submitted to CEA.	May be involved in, or assist with, monitoring and evaluation of offset performance, and adaptive management. Where non-compliance with conditions of environmental authorization is suspected, would inform CEA.		Undertake audits of applicant's independent offset audit findings at intervals and advise CEA on poor/ non-compliance and any actions that need to be taken to ensure compliance with conditions of environmental

Process	Responsibility and tasks						
	CEA (DEA&DP, DMR or DEA)	**Applicant / proponent**	**EAP**	**Specialist/s**	**Local authorities and Other competent authorities (e.g. DWS, DAFF**	**NGOs/ other stakeholders**	**Biodiversity conservation agencies: CapeNature, SANParks (if relevant)**
		Detailed Offset Report, must submit measures to rectify these shortcomings and engage key stakeholders regarding such measures (NEMA 2014 EIA Regulations).		Annual financial audit to check and ensure sufficiency of funds to meet ongoing management requirements of offset, and adjust arrangements as appropriate.			authorization. May be involved in advising applicant or appointed implementation agent on adaptive or corrective action if appropriate.
SCOPING & EIA, PREPARATION OF EIR							
Pre-application	To advise applicant on any matters that may prejudice the application, including potentially significant and unacceptable impacts on biodiversity and/ or priority ecosystem services. Where activities are indisputably in the public interest, and there are clearly no alternatives that would enable impacts to be avoided or prevented, then advise applicant to engage services of biodiversity specialists and to investigate offsets, noting that an offset study would not be a guarantee of environmental authorization.	Preferable to meet with CEA. If significant impacts on biodiversity likely then appoint relevant ecologist/ biodiversity specialist. If application is in an important biodiversity area, conduct thorough baseline studies, identify any 'fatal flaws' in the proposal that could prejudice the application, consider all reasonable and feasible alternatives to avoid/ prevent, and then minimize impacts. If residual significant impacts on biodiversity probable and unavoidable, and the project is of overriding public importance and the applicant intends proceeding with the application, it is advisable to consult CapeNature regarding these impacts. IF CapeNature and/ or CEA requires biodiversity offset study as a decision-support tool, appoint biodiversity offset specialist.		Ecologist to conduct reliable baseline study and inform consideration of reasonable and feasible alternatives to avoid/ prevent, and then minimize impacts on important biodiversity. If offset study needed (CEA requirement or probably unavoidable and significant residual impacts), offset specialist to work with biodiversity and other specialists to explore options.			Advise applicant (if approached on proposed development) regarding likely significance of impacts and the need to consider alternatives to avoid/ prevent, and then minimize impacts. If project would clearly and unavoidably have residual negative impacts on important biodiversity, taking into account all probable reasonable and feasible alternatives, and would be overridingly in the public interest, advise that an offsets study is done.
Notice of intention to apply for environmental		Must give notice of an application or proposed application for environmental authorization, and open and maintain a register of interested and affected parties who are entitled to comment on reports and			Must ensure that they register as interested and affected parties.		

Process	Responsibility and tasks						
	CEA (DEA&DP, DMR or DEA)	**Applicant / proponent**	**EAP**	**Specialist/s**	**Local authorities and Other competent authorities (e.g. DWS, DAFF**	**NGOs/ other stakeholders**	**Biodiversity conservation agencies: CapeNature, SANParks (if relevant)**
authorization		plans.					
SCOPING & PREPARATION OF SCOPING REPORT							
Public participation process	To comment on the proposed scope of EIA and Terms of Reference (ToR) for specialist studies, including biodiversity and offset studies. To identify and request additional information or revised ToR where deemed necessary to enable informed decision making. Changes to scope of EIA could include, e.g., biodiversity data, revision of the assessment and evaluation of impact significance, the need to address alternatives to avoid/ prevent, and then minimize, significant negative impacts, and the need for a specific biodiversity offsets investigation. Be strongly guided by CapeNature's comments on the adequacy of the Scoping Report and the need for/ scope of specialist studies on biodiversity and ecosystem services, and on biodiversity offset studies.	Must make information on the proposed activity available to interested and affected parties.	To ensure that all interested and affected parties, including CapeNature, SANParks (if appropriate), conservation NGOs, local authorities and other competent authorities – particularly DWS – are alerted to the EIA process and given the opportunity to engage.		To comment on key issues and concerns with regard to potentially significant impacts on biodiversity and/ or ecosystem services, and the proposed scope of specialist studies in the EIA, as well as their ToR. To specify the need for, and/or scope of: • baseline biodiversity studies, • particular specialist studies., e.g. on specific taxa or components of conservation concern,. • use of best available biodiversity/ bioregional plans and information, • the assessment/ evaluation of impacts on biodiversity and priority ecosystem services, • sequential application of the full mitigation hierarchy, • due consideration of all – or specific - reasonable and feasible alternatives, • where significant residual impacts are predicted and all reasonable and feasible alternatives have been adequately addressed, biodiversity offsets study. Where biodiversity offsets are to be investigated, comment on the proposed scope of offset study: • appropriateness of offsets • need to take into account biodiversity / bioregional and other key plans, pattern, process, ecosystem services; • the need to measure residual negative impacts; • the approach to offset design and location; • availability of suitable offset site(s); • need to secure offset site(s); • need for financial provision; • need for explicit implementation arrangements, • need for any additional information considered essential to inform decision making.		
Scoping Report	Must ensure that Scoping	Must provide EAP and	Identify the key	Assist EAP in			

Process	Responsibility and tasks						
	CEA (DEA&DP, DMR or DEA)	Applicant / proponent	EAP	Specialist/s	Local authorities and Other competent authorities (e.g. DWS, DAFF	NGOs/ other stakeholders	Biodiversity conservation agencies: CapeNature, SANParks (if relevant)
	Report fulfils NEMA EIA Regulation requirements, and proposed Plan of Study (PoS) for EIA would satisfy NEMA principles with regard to biodiversity, renewable resources and ecological integrity. Must ensure that comments and inputs given during the public participation process have been duly considered. Accepts or refuses Scoping Report.	specialist(s) with reliable and relevant information. Must adhere to 'good practice' EIA, legal requirements and guidelines on biodiversity-inclusive EIA and biodiversity offsets. Must make information on the proposed activity available to interested and affected parties.	biodiversity/ecosystem services issues and risks, and ensure related specialist studies form part of the EIA. Eliminate from consideration, where possible, alternatives that would cause loss of irreplaceable biodiversity. Ensure that all reasonable and feasible alternatives that would avoid or minimize negative impacts on biodiversity or ecosystem services are to be addressed. Set out scope of EIA and specialist studies; to include biodiversity specialist(s) where impacts on biodiversity would potentially be significant. The PoS for EIA should describe the involvement of the biodiversity (and other) specialists, and the proposed scope of those specialist studies. ToR for these studies should be included. Specialists should be	identifying significant biodiversity and/ or ecosystem services issues that must be addressed. Eliminate, where possible, alternatives that would cause loss of irreplaceable biodiversity. Identify alternatives that would avoid or minimize impacts on biodiversity and ecosystem services. May assist in fine-tuning ToR for specialist studies during the EIA.			

Process	Responsibility and tasks						
	CEA (DEA&DP, DMR or DEA)	**Applicant / proponent**	**EAP**	**Specialist/s**	**Local authorities and Other competent authorities (e.g. DWS, DAFF**	**NGOs/ other stakeholders**	**Biodiversity conservation agencies: CapeNature, SANParks (if relevant)**
			required to use the methodology for evaluating significance of impacts on biodiversity provided in this guideline.				
EIA, PREPARATION OF EIR							
Public participation process Please note that there may be two such processes where the timeframes for the process are extended by 50 days.	To comment on the proposed application, adequacy of biodiversity and, where relevant, biodiversity offset studies, to identify and request additional information or studies deemed necessary to inform decision making. Additional information could include, e.g., biodiversity data, revision of the assessment and evaluation of impact significance, the need to address alternatives to avoid/ prevent, and then minimize, significant negative impacts, and the need for biodiversity offsets and their investigation. Be strongly guided by CapeNature's comments on the adequacy of the BAR; the assessment and evaluation of impacts on biodiversity and ecosystem services, and on biodiversity offset studies.	Must make information on the proposed activity available to interested and affected parties.	To ensure that all interested and affected parties, including CapeNature, SANParks (if appropriate), conservation NGOs, local authorities and other competent authorities – particularly DWS – are alerted to the EIA process and given the opportunity to engage.		To comment on the proposed application. To give input and comment on the adequacy of the EIR, including • baseline biodiversity studies, • appropriate use of best available biodiversity/ bioregional plans and information, • the adequacy of the assessment/ evaluation of impacts on biodiversity and priority ecosystem services, • application of the mitigation hierarchy and consideration of reasonable and feasible alternatives. To identify and request additional information or studies (e.g. biodiversity data, the need to address alternatives to avoid/ prevent, and then minimize, significant negative impacts). Where significant residual impacts are predicted and alternatives have been adequately addressed, state the need for biodiversity offsets to be investigated. Where biodiversity offsets have been investigated, review and comment on: • appropriateness of offsets • the adequacy of determining and measuring residual negative impacts on biodiversity and ecosystem services; • offset design and location; • adequacy of proposed offset site(s); • proposed way to secure offset site(s); • adequacy of financial provision; • adequacy and appropriateness of proposed implementation arrangements, need for any additional information considered essential to inform decision making.		

Process	Responsibility and tasks						
	CEA (DEA&DP, DMR or DEA)	**Applicant / proponent**	**EAP**	**Specialist/s**	**Local authorities and Other competent authorities (e.g. DWS, DAFF**	**NGOs/ other stakeholders**	**Biodiversity conservation agencies: CapeNature, SANParks (if relevant)**
					To give clear statement on the probable implications of the proposed activities with regard to biodiversity conservation in the Western Cape, and associated international, national and provincial obligations.		
Environmental Impact Report (EIR)	Must ensure that EIR fulfils NEMA EIA Regulation requirements, and satisfies NEMA principles with regard to biodiversity, renewable resources and ecological integrity. Must ensure that comments and inputs given during the public participation process have been duly considered. Accepts or refuses EIR.	Must provide EAP and specialist(s) with reliable and relevant information. Must adhere to 'good practice' EIA, legal requirements and guidelines on biodiversity-inclusive EIA and biodiversity offsets. Must make information on the proposed activity available to interested and affected parties.	Must prepare an EIR that satisfies NEMA EIR Regulations and contains enough relevant and reliable information for the CEA to make a decision on the best practicable environmental option. Must contain a statement of the need and desirability of the proposed project (i.e. is it in 'the right place' and being proposed 'at the right time'. Must demonstrate that all reasonable and feasible alternatives have been investigated to ensure that significant impacts would first be avoided/ prevented, then minimized, and finally offset. Must transparently assess and evaluate the significance of impacts and state explicitly the extent to which impacts would be	Provide specialist input to EAP. Assessment and evaluation of biodiversity impacts project must satisfy NEMA principles. Biodiversity and/ or biodiversity offset specialist to work closely with other specialists (e.g. water, social, heritage) when priority ecosystem services affected. Advise on all feasible and reasonable alternatives to avoid or minimize impacts on biodiversity and ecosystem services, and ensure rigorous application of the mitigation hierarchy. Apply the methodology for evaluating significance of impacts presented in this guideline. Determine significance of residual negative impacts and need for biodiversity offsets.			

Process	Responsibility and tasks						
	CEA (DEA&DP, DMR or DEA)	Applicant / proponent	EAP	Specialist/s	Local authorities and Other competent authorities (e.g. DWS, DAFF	NGOs/ other stakeholders	Biodiversity conservation agencies: CapeNature, SANParks (if relevant)
			mitigated, and any irreversible impacts or loss of irreplaceable biodiversity/ ecosystem services. Must accurately incorporate the findings of specialists, including biodiversity and offset specialists. Must record comments of interested and affected parties and responses to those comments. Integrate biodiversity specialist study findings into EIA Report and EMP.	Biodiversity offset specialist to follow the approach to designing and locating offsets set out in these guidelines. Must state explicitly the extent to which impacts would be mitigated, and any irreversible impacts or loss of irreplaceable biodiversity/ ecosystem services. Provide specialist input to EAP. Advise on need and appropriateness of considering biodiversity offsets.		May comment on proposal to investigate biodiversity offsets	Give guidance on the value of biodiversity loss and suitable types of compensation
Decision on application	Authorization granted or refused. Conditions may include biodiversity offset and must be explicitly and carefully worded to ensure that offsets would be adequate and could be audited and enforced.				May appeal decision.		
Detailed Offset Report, Offset Management Plan, financial provision and implementation arrangements to	To review adequacy of documentation in relation to their meeting conditions of environmental authorization. Be strongly guided by	Appoint biodiversity offset specialist (and additional specialists where required) to undertake detailed biodiversity offset design and implementation planning.		Prepare Detailed Offset Report, and Offset Management Plan (if relevant), including costing and financial provision, ways to secure offsets, and	Engage in the detailed design and selection of offset sites. Seek partnerships and local community benefits from offset	Engage in the biodiversity offset design and implementation planning. Seek partnerships and	CapeNature advises applicant on final offset design, location and implementation arrangements, and on Stewardship options if relevant.

Process	Responsibility and tasks						
	CEA (DEA&DP, DMR or DEA)	**Applicant / proponent**	**EAP**	**Specialist/s**	**Local authorities and Other competent authorities (e.g. DWS, DAFF**	**NGOs/ other stakeholders**	**Biodiversity conservation agencies: CapeNature, SANParks (if relevant)**
meet conditions of authorization.	CapeNature's comments on the adequacy of these documents. Request additional information prior to accepting documents where they are inadequate. Where unacceptable, reject these documents (implying that the proposed activities must not commence).	Investigate landowner willingness and obtain legal agreements with landowners to site offsets on land. Investigate and set up vehicles to receive and administer funds to secure and/ or manage offset sites.		appropriate implementation arrangements.	implementation and management.	local community benefits from offset implementation and management.	CapeNature to review documents to evaluate their adequacy. To submit comment to CEA with firm recommendations.
Compliance monitoring and enforcement	Review audits. Where proponent's monitoring indicates non-compliance or poor progress towards stated targets, may request adaptive or corrective action, or may issue a compliance order if there are reasonable grounds to believe non-compliance (s31 L-N of NEMA).	Applicant responsible for submitting independent audits of offset performance to CEA. When submitting independent audit of offset performance, and where findings indicate poor compliance with Offset Management Plan or recommendations of Detailed Offset Report, must submit measures to rectify these shortcomings and engage key stakeholders regarding such measures (NEMA 2014 EIA Regulations).		Independent audit of offset at specified and regular intervals to ensure it complies with Detailed Offset Report contents, Offset Management Plan and conditions of environmental authorization. Audits to be submitted to CEA. Annual financial audit to check and ensure sufficiency of funds to meet ongoing management requirements of offset, and adjust arrangements as appropriate.	May be involved in, or assist with, monitoring and evaluation of offset performance, and adaptive management. Where non-compliance with conditions of environmental authorization is suspected, would inform CEA.	Undertake audits of applicant's independent offset audit findings at intervals and advise CEA on poor/ non-compliance and any actions that need to be taken to ensure compliance with conditions of environmental authorization. May be involved in advising applicant or appointed implementation agent on adaptive or corrective action if appropriate.	