forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

NATIONAL BIODIVERSITY OFFSET GUIDELINE

issued under section 24J of the National Environmental Management Act

FIRST EDITION (OCTOBER 2021)

Preface

This guideline has been published in terms of section 24J of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and must therefore be read together with the provisions of NEMA, including the national environmental management principles in section 2 of NEMA, as well as the Environmental Impact Assessment Regulations, 2014 (EIA Regulations) and other guidelines published under section 24J of NEMA. Of importance, the guideline must be read in the context of the mitigation hierarchy provided for in section 2(4)(a)(i) of NEMA as well as the Overall Policy on Environmental Offsetting.

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Abbreviations and acronyms.

BAR	Basic assessment report		**FEPA**	Freshwater Ecosystem Priority Area
CA	Competent authority		**I&AP**	Interested and affected party
CBA	Critical Biodiversity Area		**NBA**	National Biodiversity Assessment (2018)
CR	Critically Endangered		**NEMA**	National Environmental Management Act, 1998 (Act No. 107 of 1998)
DFFE	Department of Forestry, Fisheries and the Environment		**NEMBA**	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
EA	Environmental authorisation		**NEMPAA**	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)
EAP	Environmental assessment practitioner		**NFA**	National Forests Act, 1998 (Act No. 84 of 1998)
EEI	Ecosystem Extent Index		**NPAES**	National Protected Area Expansion Strategy
EIA	Environmental impact assessment, and includes basic assessment, and scoping and environmental impact assessment		**NWA**	National Water Act, 1998 (Act No. 36 of 1998)
EMPr	Environmental management programme		**SANBI**	South African National Biodiversity Institute
EN	Endangered		**SWSA**	Strategic Water Source Area
EPL	Ecosystem Protection Level			
ESA	Ecological Support Area			
ETS	Ecosystem Threat Status			

Definitions

In this guideline, unless expressly provided otherwise, or if the context provides otherwise, a word or expression to which a meaning has been assigned in the National Environmental Management Act, 1998 (Act No. 107 of 1998) (**NEMA**) or the Environmental Impact Assessment Regulations, 2014 (**EIA Regulations**), has the same meaning, and –

"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;

"biodiversity offset", for the purposes of this guideline, means the measurable outcome of compliance with a formal requirement contained in an environmental authorisation to implement an intervention that has the purpose of counterbalancing the residual negative impacts of an activity, or activities, on biodiversity, through increased protection and appropriate management, after every effort has been made to avoid and minimise impacts, and rehabilitate affected areas;

Offsets and trade-offs

Biodiversity offsets should be distinguished from trade-offs. A trade-off in the biodiversity context involves exchanging a negative outcome for biodiversity with another positive outcome, which does not necessarily benefit biodiversity. Trading off biodiversity for other positive outcomes is not a form of mitigation, like biodiversity offsetting. It falls outside of the scope of the mitigation hierarchy.

The following are examples of trade-offs in the biodiversity context:

- Ecological compensation (please see the definition below);
- Financial compensation: a financial contribution to a biodiversity initiative to compensate for a significant residual negative impact on biodiversity; and

Trade-offs should only be considered when biodiversity offsetting is not possible and where there are imperative reasons for overriding public interest. They should also be approached with extreme caution in the context of environmental authorisation applications given that our law demands a rational link between impacts on the environment and conditions of environmental authorisations directed at addressing those impacts.

The focus of this guideline is biodiversity offsetting. It, however, also tangentially deals with ecological compensation. It does not deal with other forms of trade-offs.

"Biodiversity Offset Implementation Agreement" means a legally binding agreement that is entered into between the holder of an environmental authorisation and a third party, or third parties, for the implementation of a biodiversity offset, more fully described in Chapter 10;

"Biodiversity Offset Management Plan" means a plan setting out the management actions to be taken at a biodiversity offset site to achieve and maintain specific conservation outcomes in the long term, more fully described in Chapter 7.6.1;

"biodiversity offset receiving area" means an area identified in an official policy, plan or programme as an optimal area for locating biodiversity offsets;

"Biodiversity Offset Report" means a specialist report prepared by a relevant specialist, or specialists, and submitted to a competent authority together with a basic assessment report, or environmental impact assessment report, setting out the findings of a biodiversity offset assessment, more fully described in Chapter 7.7;

"biodiversity offset site" means a suitable area in the landscape which meets the offset requirements in an environmental authorisation and is secured for biodiversity conservation in the long term;

"biodiversity priority area" means an area identified as a priority for biodiversity conservation in a spatial biodiversity plan, and includes Critical Biodiversity Areas, Ecological Support Areas, Freshwater Ecosystem Priority Areas and focus areas for protected area expansion;

"biodiversity target",

(a) when used in the context of ecosystems, means the minimum proportion of each ecosystem type that needs to be kept in good ecological condition in the long term in order to maintain viable representative samples of all ecosystem types and the majority of species associated with them, and is expressed as a percentage of the historical extent of an ecosystem type, measured as area, length or volume; or
(b) when used in the context of a species, means the minimum number of individuals in a population required to ensure the viability and persistence of that population, or the minimum number of populations of a species required to ensure the viability and persistence of that species, within a particular landscape context or defined in a provincial, national, continental or global conservation programme or strategy;

"candidate biodiversity offset site" means one of the potential biodiversity offset sites identified in a Biodiversity Offset Report;

"CBA Map" means a map of Critical Biodiversity Areas and Ecological Support Areas, based on a systematic biodiversity plan;

"coastal protection zone" means the area contemplated in section 16 of the National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) (**NEMICMA**);

"coastal public property" means the area contemplated in section 7 of NEMICMA;

"conservation area" means an area with a conservation designation that is effective at achieving *in-situ* conservation of biodiversity outside of protected areas in the long term;

"conservation servitude" means a servitude registered against the title deed of a property placing restrictions on the landowner and successors-in-title for the purposes of conservation of biodiversity on the relevant property;

"Critical Biodiversity Area" (CBA) means an area that must be maintained in a good ecological condition (natural or near-natural state) in order to meet Biodiversity Targets for ecosystem types as well as for species and ecological processes that depend on natural or near natural habitat, that have not already been met in the protected area network;[1]

"Critical Biodiversity Area (CBA): Irreplaceable (CBA 1)" means a CBA that is essential for meeting biodiversity targets because there are insufficient other options for meeting biodiversity targets for the features associated with the site;[2]

"Critical Biodiversity Area: Optimal (CBA 2)" means a CBA that has been selected as the best option for meeting Biodiversity Targets based on complementarity, spatial efficiency, connectivity and/or avoidance of conflict with other land or resource use;[3]

CBA Maps

CBAs are identified in Biodiversity Plans, such as CBA Maps and bioregional plans, which can be found at http://biodiversityadvisor.sanbi.org]

"ecological compensation" means the outcome of measurable actions to protect, restore and manage priority biodiversity, aimed at compensating for residual negative impacts on irreplaceable biodiversity and ecological infrastructure where these impacts cannot be offset and which should, instead and in the first instance, be avoided;

"ecological condition" means the extent to which the composition, structure and function of an area or biodiversity feature has been modified from a reference condition of "natural";

"ecosystem extent" means the proportion of an ecosystem type that remains intact (i.e. in a natural, near-natural or semi-natural condition) relative to its historical distribution;

[1] Please note that some provinces, such as the Western Cape Province, uses different methodologies for setting their biodiversity targets in systematic biodiversity plans.
[2] Please see footnote 1 above.
[3] Please see footnote 1 above.

"ecological infrastructure" means naturally functioning ecosystems that deliver valuable services to people, such as water and climate regulation, soil formation and disaster risk reduction;

"ecological processes" means the natural functions and processes that operate in a land- or seascape to maintain and generate biodiversity;

"Ecological Support Area" (ESA) means an area that must be maintained in at least fair ecological condition (semi-natural/ moderately modified state in which ecological function is maintained even though composition and structure have been compromised) in order to support the ecological functioning of a CBA or protected area, to generate or deliver key ecosystem services (e.g. water), or to meet remaining biodiversity targets for ecosystem types or species when it is not possible or necessary to meet them in natural or near-natural areas;

CBA Maps

CBAs are identified in Biodiversity Plans, such as CBA Maps and bioregional plans, which can be found at http://biodiversityadvisor.sanbi.org]

"ecosystem" means an assemblage of living organisms, the interactions between them and their physical environment.

"ecosystem protection level" means the indicator of how well represented an ecosystem type is in the protected area network, in which ecosystem types are categorised as well protected, moderately protected, poorly protected or unprotected, based on the proportion of the biodiversity target for each ecosystem type that is included in one or more protected areas;

"ecosystem services" means services and benefits to people and the economy provided by ecosystems, often classified into three broad categories: provisioning services, regulating services and cultural services;

"ecosystem threat status" means the indicator of how threatened an ecosystem type is (in other words the degree to which it is still intact or alternatively losing vital aspects of its function, structure or composition) in which Ecosystem types are categorised as Critically Endangered, Endangered, Vulnerable or Not Threatened, based on the proportion of ecosystem type that remains in good ecological condition relative to a series of biodiversity thresholds;

Ecosystem threat status

The status of the different ecosystem types in South Africa can be found in the National Biodiversity Assessment (NBA), or the list of ecosystems that are threatened or in need of protection published in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (**NEMBA**), whichever is more recent.]

"ecosystem type" means an ecosystem unit, or set of ecosystem units, that has been identified and delineated as part of a hierarchical classification system, based on biotic and/ or abiotic factors, with ecosystems of the same type to likely share broadly similar ecological characteristics and functioning;

"fatal flaw" means a major defect or deficiency in a project proposal that should result in environmental authorisation being refused, and from a biodiversity perspective, a residual negative impact that would have a Very High significance rating as determined in Chapter 6.2;

"mitigation" means to avoid negative impacts, and where they cannot altogether be avoided, to minimise and remedy them, including through rehabilitation, restoration, and/or offsetting;

"Other Natural Area" means an area in good or fair ecological condition (natural, near-natural or semi-natural) that is not required to meet biodiversity targets for ecosystem types, species or ecological processes;

"protected area" means an area recognised as a protected area in the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (**NEMPAA**);

"rehabilitation" means returning a disturbed, degraded or destroyed ecosystem to sustainable, productive use, with the emphasis on repairing ecological processes and ecosystem services;

"residual negative impacts" means negative 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 and minimise negative impacts, and/or rehabilitate and/or restore impacted areas within 30 years;[4]

"restoration" means returning a disturbed, degraded or destroyed ecosystem to its natural condition, with the species present being representative of the ecosystem that occurred on the site prior to disturbance, and ecological processes supporting the long-term persistence of the ecosystem and species, and the associated ecosystem services, through active (with interventions) or passive (without interventions) means;

"spatial biodiversity plan" means a spatial plan that identifies one or more categories of biodiversity priority area, using the principles and methods of systematic biodiversity planning, and which has been adopted in terms of relevant legislation;

"special habitat" means a biodiversity feature found nested within an ecosystem or spanning adjacent ecosystems, which contains or comprises unique elements that underpin or support species diversity,

[4] *It is acknowledged that the time it takes for full restoration differs from ecosystem type to ecosystem type, as well as the local conditions. Given that there is no readily accessible information on the recovery times of the different ecosystem types in South Africa, a general timeframe had to be used. The 30-year general timeframe in the definition of "residual impact" reflects that the difficulty in restoring South African ecosystems once they have been disturbed. It is based on the risk-averse and cautious approach.*

interaction or ecological processes within that ecosystem, and which can often only be identified at a finer scale than, for example, ecosystem assessments undertaken at national or provincial level;

"Strategic Water Source Areas" means areas of land that –

(a) supply a disproportionate (i.e. relatively large) quantity of mean annual surface water runoff in relation to their size and so are considered nationally important;
(b) have high groundwater recharge and where the groundwater forms a nationally important resource; or
(c) areas that meet both criteria (a) and (b);

Strategic water source areas

SWSAs can be found at http://biodiversityadvisor.sanbi.org

"threatened ecosystem" means an ecosystem with an Ecosystem Threat Status of Critically Endangered, Endangered or Vulnerable as determined by the latest edition of the NBA, or the list of ecosystems that are threatened or in need of protection published in terms of NEMBA, whichever is more recent;

1. Introduction

The purpose of this guideline is to indicate when biodiversity offsets are likely to be required as mitigation by any competent authority (**CA**), to lay down basic principles for biodiversity offsetting and to guide offset practice in the environmental authorisation **(EA)** application context.

This guideline is an implementation guideline contemplated in section 24J of the National Environmental Management Act, 1998 (**NEMA**). Guidelines published in terms of that section give guidance on, *inter alia*, "the implementation, administration and institutional arrangements of [the Environmental Impact Assessment Regulations, 2014 (**EIA Regulations**) or subsequent regulations regarding the environmental impact assessment process]."

This guideline is therefore applicable to applications for EA in terms of section 24 of NEMA. However, it can also be used to inform other administrative processes that may involve biodiversity offsetting, including applications for EA in terms of section 24G of NEMA, emergency directives contemplated in section 30A of NEMA, applications for licences under the National Water Act, 1998, the National Forests Act, 1998 and the National Environmental Management: Waste Act, 2008, applications for development rights in terms of the Spatial Planning and Land Use Management Act, 2013 and requests for the de-proclamation, or the withdrawal of declarations, of protected areas in terms of provincial legislation or NEMPAA.

This guideline is applicable in the terrestrial and freshwater realms. It is therefore not applicable in the offshore marine realm and estuarine ecosystems. The guideline focuses on ecosystems as the primary unit for expressing ecosystem-based offset requirements, given the strong foundation that

the EIA Regulations and EIA implementation already have in ecosystem concepts. However, some guidance on species and other biodiversity features are given, but to a lesser extent.

The guideline does not replace NEMA's provisions regarding EA processes, or the EIA Regulations. It guides the implementation of NEMA and the EIA Regulations in the context of mitigation of biodiversity impacts and use of biodiversity offsets, and should therefore be read in conjunction with those laws.

Biodiversity offsetting is a mitigation measure that is potentially applicable in all EA application processes regardless of the identity of the applicant. This guideline is therefore applicable to EA applications made by private persons or entities, as well as organs of state.

The guideline is for CAs, environmental assessment practitioners (**EAPs**), specialists in environmental assessment processes, commenting authorities, statutory conservation authorities, interested and affected parties (**I&APs**), applicants for EA (or other authorisations or licences) and financial institutions funding proposed projects that require EA.

2. Background

Biodiversity is fundamental to the health and well-being of people, as well as economic activity and socio-economic upliftment. The National Biodiversity Assessment (2018) (**NBA 2018**) states that South Africa's biodiversity assets and ecological infrastructure contribute significantly towards meeting national development priorities.

Ecosystem services are delivered by ecological infrastructure, including healthy mountain catchments, rivers, wetlands, coastal dunes, and nodes and corridors of natural habitat, which together form a network of interconnected structural elements in the landscape. Ecosystem services are essential for human well-being and supports economic activities.

Many economic activities are directly linked to biodiversity: it was estimated in 2018 that more than 400 000 people are employed in the biodiversity economy in South Africa (NBA 2018). There is still an immense opportunity to further unlock the value of biodiversity and ecosystems in support of the country's development path, especially as the knowledge base on the value of ecosystems and their effective management expands.

South Africa has a rich natural and biodiversity heritage. It is classified as a megadiverse country, which means that South Africa's biodiversity is also important in an international context.

South Africa's biodiversity is being gradually eroded and degraded (NBA 2018). South Africa's primary development plan, the National Development Plan (2012-2030) (NDP), notes that South Africa is currently in "ecological deficit".[5] The loss of biodiversity has negative socio-economic impacts (such

[5] An ecological deficit occurs when the footprint of a population exceeds the biocapacity of the area available to that population.

as adverse impacts on health, loss of livelihoods and the absence of protection against natural disasters or hazards).

One specific challenge identified through the trends analysis in developing the National Framework for Sustainable Development (2008) was the need to reverse the "continuing degradation or loss of biodiversity and functioning ecosystems" on which sustainable development depends. Biodiversity offsetting has been identified as one way in which biodiversity loss can be slowed down. In the NDP, it is recommended that measures are adopted "to protect the country's natural resources including an environmental management framework in which developments that have serious environmental or social effects need to be *offset* by support for improvements in related areas and a target for the amount of land and oceans under protection" (emphasis added). *Biodiversity* offsets are specifically recognised as a policy option to slow the degradation and erosion of South Africa's biodiversity in the National Biodiversity Framework, 2017-2022 published under the National Environmental Management: Biodiversity Act, 2004 (**NEMBA**).

Biodiversity offsetting, if done correctly, can advance the environmental right in the Constitution of the Republic of South Africa, 1996 (**Constitution**). Section 24 of the Constitution provides that everyone has the right to, amongst other things, have the environment protected for the benefit of present and future generations through reasonable legislative and other measures that, amongst other things, promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. Biodiversity offsetting is one of the ways in which South Africa's protected and conservation areas can be expanded, thereby promoting conservation. It may well also help to secure ecologically sustainable development as it mitigates the adverse impact of economic and social development on biodiversity, which, in turn, underpins such development.

In short, biodiversity offsetting has the potential to encourage more rigorous consideration of feasible development alternatives which avoid and minimise negative impacts on biodiversity, to help remedy and counterbalance the degradation and loss of biodiversity through increased protection and appropriate management, and to help South Africa to meet its international biodiversity and protected area targets. Biodiversity offsetting can therefore play a role in ensuring that biodiversity and ecological infrastructure can continue to provide the ecosystem services on which people depend for their livelihoods, and contribute to the achievement of the environmental right in section 24 of the Constitution.

Biodiversity offsetting is a relatively novel practice in South Africa. Unfortunately, it has not always been implemented in a defensible and consistent manner. This guideline intends to address the shortcomings of biodiversity offset practice in South Africa.

3. Legislative framework

As already noted, section 24 of the Constitution gives everyone the right to an environment that is not harmful to health or well-being, and to have the environment protected, through reasonable

legislative and other measures. NEMA, including the EIA Regulations, is one of the legislative measures that have been taken to advance that right. Biodiversity offsets are an integral part of the environmental management system created under NEMA. One of the national environmental management principles, principles that guide all environmental decision making, is that the disturbance of ecosystems and loss of biodiversity should be avoided, or where it cannot altogether be avoided, is minimised and remedied.[6] Biodiversity offsetting is one of the best means of remedying such disturbance or loss.

In the environmental management context, biodiversity offsetting consists of actions that are taken to comply with biodiversity offset outcomes required in conditions in EAs, Biodiversity Offset Implementation Agreements and environmental management programmes (EMPrs). The environmental management system provided for by NEMA and the EIA Regulations provide for a CA to grant EAs subject to conditions.[7] In appropriate circumstances (please see Chapter 6), a CA may grant an EA subject to the condition that a measurable biodiversity offset is implemented by the EA holder.

As already noted, this guideline is an implementation guideline contemplated in section 24J of NEMA. It must, in accordance with section 24O of NEMA and regulation 18 of the EIA Regulations, be taken into account by a CA when considering an application for an EA. It is therefore not absolutely binding can be deviated from when justifiable under the circumstances.

Given that this is a guideline contemplated in section 24J of NEMA, it is not directly applicable to regulatory processes other than environmental authorisation applications in terms of NEMA, which could culminate in decisions to issue approvals subject to biodiversity offset conditions. Parts of this guideline could however be used to support decision-making as part of those regulatory processes. When this guideline is used in the context of other regulatory processes, stakeholders, and decision-makers in particular, should take into consideration the differences between the EIA Regulations and the law governing those other regulatory processes. Examples of such other laws include the National Water Act, 1998 (Act No. 36 of 1998), the Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013), the National Forests Act, 1998 (Act No. 84 of 1998) and section 24G of NEMA.

The principles and policy statements on biodiversity offsetting in the Overall Policy on Environmental Offsetting are applicable to all biodiversity offsetting in all regulatory contexts. The overall principles and outcomes recommended in this guideline are aligned with those principles and policy statements.

4. Outcome statement and principles

The outcome statements and principles in this chapter serve as the general framework within which it must be determined if a biodiversity offset is required and within which biodiversity offsets must be

[6] Section 2(4)(a)(i) of NEMA.
[7] See Regulation 26(d) and (i) of the EIA Regulations.

designed and implemented. The outcome statement and principles should also guide decision-making and, as relevant, the setting of conditions regarding biodiversity offsets.

4.1 Desired outcomes of biodiversity offsets

The desired outcome of biodiversity offsets is to ensure the following:

1. That biodiversity is secured in the long term through the protection and appropriate management of ecosystems and species.

2. That efforts to secure biodiversity in the long term contribute to the expansion of South Africa's protected area network, and are focussed in areas identified as biodiversity priorities, with particular emphasis on the consolidation of priority areas and securing effective ecological links between priority areas.

3. That ecological infrastructure and the services and benefits it provides are maintained and where necessary restored.

4. That the cumulative impact of the authorised activity, or activities, and land and resource use change does not –
    - result in the loss of irreplaceable biodiversity or jeopardise the ability to meet biodiversity targets;
    - lead to any ecosystem with a threat status of Vulnerable or Least Concern becoming Endangered, or any Endangered ecosystem becoming Critically Endangered;
    - cause an irreversible decline in the conservation status of species and the presence of special habitats; and
    - cause a significant loss in ecosystem services.[8]

4.2 Principles for biodiversity offsetting

The following principles must be considered by a CA when taking decisions in relation to biodiversity offsets. All the principles in this Chapter apply equally to ecological compensation.

- ***Offsets are the final option in the mitigation hierarchy*** - Biodiversity offsets must only be considered once all the foregoing steps in the mitigation hierarchy have been considered to their full and feasible extent. The mitigation hierarchy dictates that the degradation and loss of biodiversity must be avoided, or where impacts cannot altogether be avoided, they should be minimised and the area adversely impacted by relevant activity should be rehabilitated. When,

[8] Sometimes the loss of ecosystem services can be compensated for through artificial provision of a replacement service. However, this guideline does not deal with that type of compensation. It only deals with required mitigation (focussing on biodiversity offsets) for impacts on biodiversity, i.e., the *natural* ecosystem components that provide the ecosystem service.

after taking the aforementioned mitigation measures, there are likely to be residual negative impacts on biodiversity of medium to high significance, they must be offset.

- ***Ecological equivalence (like-for-like) is the preferred offset type*** – Only when offsets remain the only mechanism to manage residual negative impacts and in order to counterbalance a residual impact, biodiversity offsets should comprise - or benefit - the same or similar biodiversity components as those components that would be negatively affected by the development. ***Trading-up offset types***, or biodiversity offsets which secure priority areas of greater importance or priority to biodiversity conservation than the area being impacted, may however be considered under certain circumstances in order to contribute to conservation objectives.

- ***Residual impacts on irreplaceable biodiversity cannot be offset –*** Where there are no options left in the landscape to counterbalance a residual impact in accordance with the ecological equivalence (like-for-like) principle (see above), that residual impact cannot be offset. That is, there would be a residual impact on irreplaceable biodiversity, which would prevent national biodiversity targets from being met. In these cases development would generally not be acceptable and the impacts should be avoided. Ecological compensation for residual impact which cannot be offset should only be considered only in *highly* exceptional circumstances, when there are imperative reasons for overriding public interest.[9] Ecological compensation requirements should be punitive in scale and cost (see Chapter 7.2.1).

  When dealing with ecological compensation, compensation measures should -
  - target priority areas of agreed equal or greater importance or priority to biodiversity conservation than the area being impacted; and
  - be designed to benefit the specific biodiversity components that will be negatively impacted by the development.

  Biodiversity offsets and ecological compensation may never be used as a reason why a particular EA application should be approved. Biodiversity offsets are mitigation measures that must be implemented when EA is granted for other, overriding, reasons.

[9] Please see the textbox below, the definition for "biodiversity offset" in the definitions section of this guideline as well as footnote 1 above. Please also consult DEA (2017), Guideline on Need and Desirability, Department of Environmental Affairs (DEA), Pretoria, South Africa

"Reasons for overriding public interest"

"Reasons for overriding public interest" should not be equated with socio-economic benefits. The allegation that an activity, or activities, such as the construction of low-cost housing or municipal infrastructure, in priority biodiversity areas will have socio-economic benefits would not be sufficient *on its own* to constitute "reasons for overriding public interest" given the extreme importance of conserving priority biodiversity. The loss of irreplaceable biodiversity cannot be replaced by socio-economic benefits. The circumstances under which an activity, or activities, could be authorised when it is likely to have a negative impact on irreplaceable biodiversity – in other words, when it is fatally flawed from a biodiversity perspective - must be truly exceptional

- ***Additionality*** **-** Biodiversity offset interventions must be additional to, or over and above, biodiversity conservation measures that are already required by law, or that would have occurred had the biodiversity offset not taken place.

- ***The quality and quantity of residual impacts on biodiversity must be considered in decision making involving biodiversity offsetting*** – When considering the significance of the residual impact to be counterbalanced by an offset intervention, the nature of the impacted biodiversity (e.g. whether it is part of a priority area), its threat status and protection level, ecological condition, and the size of the impacted area must be considered at the very least.

- ***Biodiversity offsets should embody the ecosystems approach and promote connectivity in the wider landscape*** **-** Biodiversity offsets should ideally involve the integrated management of land, water and living resources in a way that promotes ecological functionality and persistence. Biodiversity offsetting should therefore take a landscape-scale, rather than a site-specific view, to enable consideration of cumulative impacts, to promote connectivity between biodiversity priority areas.

Integrated landscape scale interventions

Integrated landscape-scale interventions are more likely to yield far greater, and more sustained, conservation benefits at less cost and reduced administrative burden than a number of small-scale, isolated interventions. A 'patchwork' of small-scale, isolated offset interventions poses a number of challenges including, among others: the high risk of failure if upstream or bordering degradation is not addressed in some way; increased demands on ecological management, enforcement and compliance monitoring capacity; the potentially limited environmental value of small, unconnected pockets of natural features; and reduced opportunities for maximising the benefits that could be accrued by integrated, landscape-scale interventions.

- ***Biodiversity offsets must result in long-term security and management of priority biodiversity -*** Biodiversity offsets should contribute to the long-term security of biodiversity priority areas and maintain or improve their ecological condition, thereby resulting in tangible and measurable positive outcomes for biodiversity conservation 'on the ground'. Biodiversity that is in good ecological condition promotes human well-being in the long term.

Timespan of a biodiversity offset

An offset can only contribute to the principal objective of slowing the loss and progressively reversing the degradation of biodiversity if it continues to counterbalance the residual negative impacts of the development to which it applies for as long as those residual impacts persist. For practical purposes, the counterbalancing outcomes of an offset intervention should ideally endure for a minimum of 99 years from the time that the residual impacts occurred or for as long as the residual impacts persist in the unlikely event that this is less than 99 years. The 99 year period should not be confused with the duration of the responsibility of the EA holder to implement the biodiversity offset.

- ***Biodiversity offset design must be defensible and transparent*** - The measure of the size and significance of the residual impacts on biodiversity caused by a proposed activity, as well as the design and implementation of biodiversity offsets, should be based on the best available biodiversity information and sound science, and should incorporate local, traditional and conventional knowledge and values as appropriate. Offsets must consider all significant residual impacts on biodiversity including direct, indirect and cumulative impacts. The scope of assessment must include the due consideration of impacts on priority biodiversity areas; impacts on biodiversity pattern (compositional and structural aspects of biodiversity, at the genetic, species or ecosystem level) and ecological processes (the functions and processes that operate to maintain and generate biodiversity); and impacts on ecosystems or species on which there is high dependence for health, livelihoods, safety and wellbeing. The Biodiversity Offset Report and audits of the offset performance, as well as biodiversity offset registers, should be made publicly available.

- ***Offsets must follow a risk averse and cautious approach*** - A biodiversity offset must be designed in a risk-averse and cautious way to take into account uncertainties about the measure of the extent and significance of the residual impacts (including uncertainties about the effectiveness of planned measures to avoid, minimize and rehabilitate impacts), and the uncertainties relating to the successful outcome and/ or timing of the biodiversity offset intervention.

- ***Offsets must be fair and equitable*** - The determination of residual impacts, and the design and implementation of biodiversity offsets to counterbalance these impacts, must 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, or cause significant negative effects that in turn would need to be remedied.

- ***Offset intervention timing*** - Implementation of a biodiversity offset should preferably take place before the impacts of the activity occur, or as soon thereafter as reasonable and feasible.

Biodiversity offset options

For practical purposes, at the very least, biodiversity offset options must be fully described in the Biodiversity Offset Report submitted as part of a basic assessment or environmental impact assessment report to inform a biodiversity offset condition in an EA. This information should be formulated in a way that facilitates and enables the efficient and effective monitoring and enforcement of compliance with the implementation of the approved offset intervention, its timing and required outcome.

- ***Biodiversity offsets must be measurable, auditable and enforceable -*** The required outcomes of a biodiversity offset must be practically measurable on the ground. Once the development is underway, residual impacts should be monitored and measured to ensure that the counterbalancing offset remains adequate. The offset's counterbalancing adequacy must, in turn, be monitored and audited in terms of clear and measurable management, performance and desired outcome targets, and provision must be made for corrective or adaptive actions where needed to ensure that targets are achieved.

5. Biodiversity offsets in the environmental authorisation application process

As already mentioned, this guideline is intimately linked with the environmental management system provided for in NEMA and the EIA Regulations. In this Chapter, the various steps of the biodiversity offsetting process are placed in the context of the **EA** application process provided for in NEMA and the EIA Regulations. The roles of the various role-players in both the EA application process in the context of biodiversity offsets are also explained.

For the purposes of this guideline, "EIA" must be taken to mean both "basic assessment" and "scoping and environmental impact assessment" as contemplated in the EIA Regulations.

5.1 An overview of the steps involved in the biodiversity offsetting process

This chapter gives a broad overview of the various steps of the biodiversity offsetting process in the context of the EA application process. More details on those steps are given in chapters 6, 7, 8, 9, 10,

11 and 12 below. For the purposes of this chapter, the EA application process is divided up into 4 phases: **the pre-application phase** (before the process for an EA application is commenced) ; t**he EIA phase** (the process of preparing a basic assessment report (**BA Report**), or environmental impact assessment report (**EIA Report**), and a draft EMPr) in the period between which the application for environmental authorisation is received by a CA and the date on which the EIA Report or BA Report is submitted by an applicant to a CA; **the decision-making phase** (the process for taking a decision to grant or refuse EA, and to approve or reject an EMPr) ; and t**he post-authorisation phase** (any steps taken after a decision has been made to grant EA and approve an EMPr).

The biodiversity offsetting process, which only applies when a biodiversity offset is required (see Chapter 6) involves the following steps:

- Identifying the need for a biodiversity offset.
- Determining the requirements of a biodiversity offset and compilation of a Biodiversity Offset Report.
- Selecting a biodiversity offset site.
- Securing the biodiversity offset site.
- Preparing a Biodiversity Offset Management Plan.
- Preparing biodiversity offset conditions for an EA.
- Concluding a Biodiversity Offset Implementation Agreement.

These steps are summarised in chapters 5.1.1, 5.1.2, 5.1.3, 5.1.4, 5.1.5, 5.1.6, and 5.1.7 below in relation the four phases of the EA application process identified in the first paragraph of this Chapter.

5.1.1 Identifying the need for a biodiversity offset

Please see **Chapter 6** of this guideline for more information on this step.

In this step, the proponent's EAP, or a relevant specialist or specialists, assesses whether it is likely that there would be unavoidable significant residual negative impacts on biodiversity which could require a biodiversity offset. It is strongly recommended that this step is taken in the pre-application phase. However, the need for a biodiversity offset is sometimes only identified after a report has been

generated through the National Environmental Web-based Screening Tool[10] or the EIA phase by the applicant's EAP or specialist, the CA,[11] a commenting authority or an interested or affected party.

It is important for a proponent, or applicant, to engage with relevant commenting authorities, including municipalities and, especially, conservation authorities when assessing whether or not a biodiversity offset is likely to be required (please see Chapter 8 below).

It is also important for a proponent, or applicant, to consult other environmental legislation or land use and planning legislation that could be applicable to the proposed development. Such legislation includes the National Forests Act, 1998, which imposes restrictions on development in natural forest ecosystems. Biodiversity offsets can also be required in regulatory approvals provided for in those laws.

It is emphasised here that biodiversity offsets may never be used as a reason why a particular EA application should be approved. Biodiversity offsets are mitigation measures that must be implemented when EA is granted for other, overriding, reasons. A BA Report or EIA Report must always explain how the mitigation hierarchy has been applied to arrive at the conclusion that a biodiversity offset is required.

As assessment of whether or not a biodiversity offset is likely to be required may well reveal a significant residual negative impact on irreplaceable biodiversity, which cannot be offset. In those instances, it is extremely unlikely that an EA should and will be granted. However, under highly exceptional circumstances, when there is imperative reasons for overriding public interest, an EA may be granted subject to the condition that, inter alia, ecological compensation is delivered.

5.1.2 Determining the requirements of a biodiversity offset

Please see **Chapter 7** of this guideline for more information on this step.

This step involves the preparation by a relevant specialist, or specialists, of a Biodiversity Offset Report, which sets out, amongst other things, the biodiversity outcomes that must be achieved in implementing a biodiversity offset and the candidate biodiversity offset sites where those objectives could be achieved. As with the previous step, it is strongly recommended that this step is commenced, and if possible, completed, in the pre-application phase. Taking steps in the biodiversity offsetting process in the pre-application phase could save the applicant time and costs since it will likely result

[10] Applicants for EAs must submit reports generated by the National Web-based Environmental Screening Tool, available at https://screening.environment.gov.za/screeningtool/, as part of applications for EA. That screening tool often provides an indication of the biodiversity sensitivity of the affected project area.

[11] A CA can, at any stage during the pre-application and EIA phases, advise a proponent, or applicant, of the likelihood that an environmental authorisation would be granted (based on the biodiversity sensitivity of the relevant area), or of a biodiversity offset being required in terms of Regulation 8(b) of the EIA Regulations. That regulation provides that a CA must advise the proponent or applicant of any matter that may prejudice the success of an application. The likelihood of a biodiversity offset being required is a factor that may well prejudice the success of an application.

in a smoother application process and avoid potential legal and practical complications later on in the process.

However, if the need for a biodiversity offset has only been identified when a report has been generated through the National Environmental Web-based Screening Tool or EIA phase, it should be completed in the EIA phase. It is strongly advised that a Biodiversity Offset Reports is submitted to a relevant CA together with a BA Report or EIA Report, and draft EMPr, at the end of the EIA phase to enable a CA to take a decision regarding the EA application. The absence of a Biodiversity Offset Report may well result in an EA being refused by a CA, or the decision to grant an EA being set aside on appeal or judicial review.

As with the previous step, it is crucial for the proponent, or applicant, to engage with commenting authorities, including municipalities, and especially, conservation authorities during this phase of the biodiversity offsetting process. The proponent, or applicant, or his or her EAP or specialist, would also need to engage with landowners, holders of rights in land and other stakeholders in the landscape during this phase.

When there may be overriding reasons of public interest for granting an EA when activity, or activities, would have a significant residual negative impact on irreplaceable biodiversity, it is strongly advised that the proponent or applicant instructs a specialist, or specialists, to prepare an Ecological Compensation Report, which sets out the biodiversity outcomes that must be achieved in implementing ecological compensation. An Ecological Compensation Report is to be submitted to a CA together with a BA Report or EIA Report, and draft EMPr at the end of the EIA phase. The absence of an Ecological Compensation Report may well result in an application for EA being refused, or the decision to grant an EA being set aside on appeal or judicial review.

5.1.3 Selecting a biodiversity offset site

Please see **Chapter 7.5** for more information on this step.

This step involves the selection of a biodiversity offset site that meets the biodiversity offset requirements specified in a Biodiversity Offset Report and/or the conditions of an EA. Preferably, the biodiversity offset site should be selected from the portfolio of candidate biodiversity offset sites given in a Biodiversity Offset Report. It is advisable that the site is selected in the pre-application phase, but if the need for a biodiversity offset was only identified after a report has been generated through the National Environmental Web-based Screening Tool or EIA phase, the site could be selected during the EIA phase or the post-application phase.

Some guidance is given on the selection of a site for ecological compensation in **Chapter 7 below.**

5.1.4 Securing the biodiversity offset site

More information is given on this step in **Chapter 7.6.1**.

During this step, the proponent, applicant or EA holder takes the necessary steps to secure the biodiversity offset site in perpetuity. Ideally, the biodiversity offset site should be secured by the declaration of the site as a protected area in terms of the National Environmental Management: Protected Areas Act, 2003, or by the registration of a conservation servitude in respect of such land if the declaration of a protected area is not possible under the circumstances. This step could be taken in the pre-application phase, but if the need for a biodiversity offset was only identified after a report has been generated through the National Environmental Web-based Screening Tool or EIA phase, the site could be secured in the EIA phase or post-application phase.

Sites on which ecological compensation would be implemented must also be secured in perpetuity.

5.1.5 Preparing a Biodiversity Offset Management Plan

More information on this step is given in **Chapter 7.6.1**.

In this step, the proponent's, applicant's or EA holder's specialist, or specialists, prepares a management plan for the biodiversity offset site. A Biodiversity Offset Management Plan sets out the specific measures that must be undertaken to achieve the required biodiversity outcomes on the biodiversity offset site. At which stage in the EIA process a Biodiversity Offset Management Plan is prepared depends on when the biodiversity offset site is selected, since a Biodiversity Offset Management Plan can only be prepared once the biodiversity offset site has been selected.

In the case of ecological compensation, the relevant specialist, or specialists must prepare an Ecological Compensation Management Plan.

5.1.6 Preparing biodiversity offset conditions for an environmental authorisation

Chapter 9 gives more information on this step.

This step is applicable when the CA has decided to grant EA for an activity, or activities, subject to the condition that a biodiversity offset is implemented. It involves the CA preparing EA conditions that require that a biodiversity offset is implemented. In the event that a draft Biodiversity Offset Management Plan has already been prepared by a specialist and it has been submitted to the CA, and the activity, or activities, have a lifespan of at least as long as the applicant's biodiversity offset liability, the CA can incorporate the provisions of the Biodiversity Offset Management Plan into the EMPr that is binding on the EA holder.

At the very least, a biodiversity offset condition in an EA must specify the biodiversity outcomes that must be achieved in implementing a biodiversity offset and that the EA holder must enter into a Biodiversity Offset Implementation Agreement with a third party (please see chapter 5.1.7 below). It must also, depending on the information before the CA, require the holder of the EA to select a biodiversity offset site, secure that site and prepare a Biodiversity Offset Management Plan for that site, if such Biodiversity Offset Management Plan was not prepared prior to the granting of the EA.

Pre-application studies and engagement

In this Chapter, it is recommended that certain steps are taken before the EA application process is commenced. The rationale for the recommendation is to simply the steps in the biodiversity offsetting process. The biodiversity offsetting process can take years to complete: effective offsetting often requires significant investigation into suitable biodiversity offset sites, negotiation with landowners around securing those sites, engagement with conservation authorities, clarifying the roles and responsibilities of multiple parties and, in most cases, the declaration of a protected area. By contrast, the EIA phase is 90 days (for a basic assessment) or 150 days (for a scoping and environmental impact assessment) in length. It is therefore strongly advised to pursue most of the steps involved in the biodiversity offsetting process prior to submitting an application, to avoid being inappropriately pressured by regulatory timelines.

If the need for a biodiversity offset is only identified after a report has been generated through the National Environmental Web-based Screening Tool or during or the EIA phase, it is highly unlikely that a biodiversity offset site would have been selected and secured by the end of the EIA phase. This, in turn, would mean that the CA needs to include lengthy, and sometimes complicated, biodiversity offset conditions in the EA and that the validity period of the EA has to be extended until certain steps in the biodiversity offset process can be completed in the post-application phase. In addition, given the short timeframes within which to conduct the assessments necessary to prepare a Biodiversity Offset Report in the EIA phase, there would be a risk of a CA refusing an EA application on the basis of insufficient information in a Biodiversity Offset Report to justify granting EA subject to a biodiversity offset condition.

Pre-application studies and engagement do not mean that an offset can 'leapfrog' other, preferred forms of mitigation earlier in the mitigation hierarchy. A CA will require evidence of the effort invested to exhaust other mitigation measures and project alternatives, before resorting to biodiversity offsets. Pre-application studies are therefore not guarantees that EA will be granted for an activity, or activities – biodiversity offsets and ecological compensation should never be used as the reason to grant EA.]

5.1.7 Concluding a Biodiversity Offset Implementation Agreement

More information on this step is given in **Chapter 11** below.

During this step, the applicant enters into a Biodiversity Offset Implementation Agreement with an implementing party. The agreement must incorporate the terms of a Biodiversity Offset Management Plan, and make those terms binding on both parties. This step is applicable when the terms of a Biodiversity Management Plan has not been incorporated into the EA holder's EMPr. This step is typically taken in the post-application phase.

The flow diagrams below show two permutations of the possible sequence of the steps involved in the biodiversity offsetting process in the context of the EA application process. The first diagram shows the sequence of events when a Biodiversity Offset Management Plan is available before the decision-making phase. The second diagram shows the sequence of events when the need for a biodiversity offset is only identified after a report has been generated through the National Environmental Web-based Screening Tool.

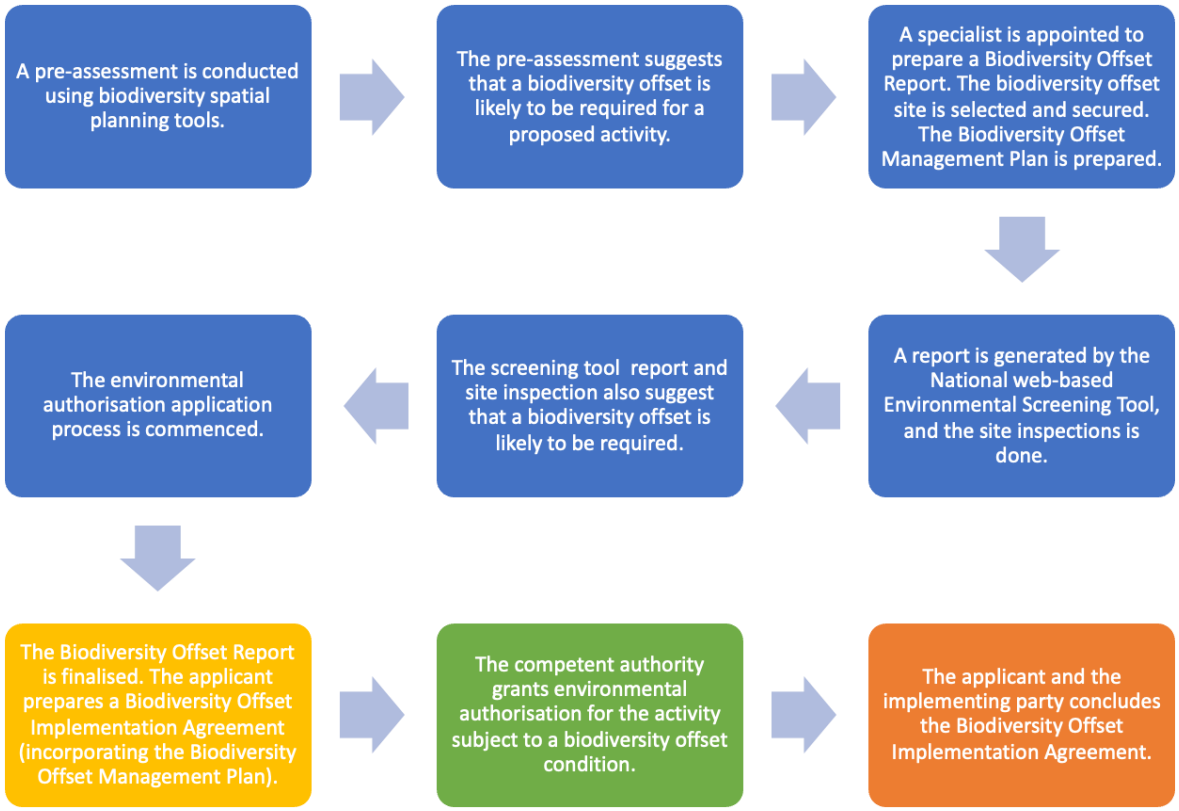

Figure 1 the sequence of events in the biodiversity offsetting process where the need for a biodiversity offset is identified before a report is generated through the National Environmental Web-based Screening tool. The blue boxes represent the pre-application phase, the yellow box, the EIA phase, the green box, the decision-making phase, and the orange box, the post-authorisation phase.

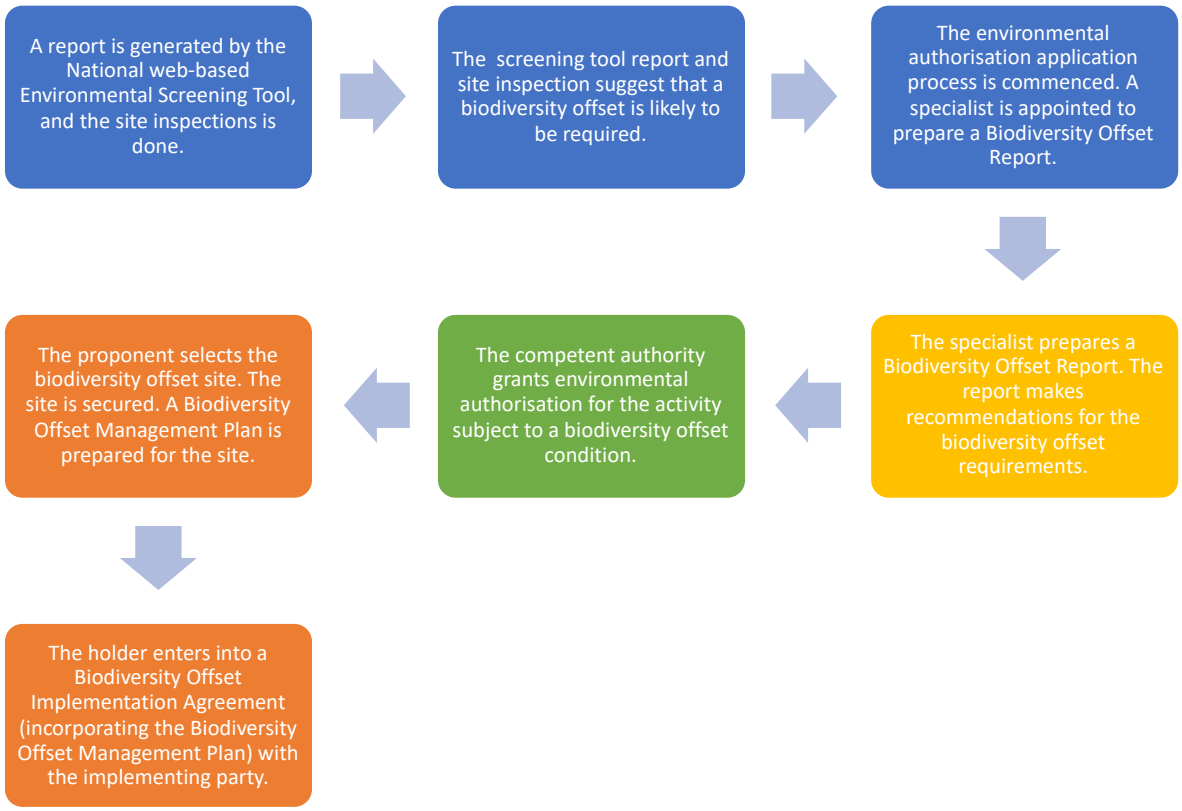

Figure 2 the sequence of events in the biodiversity offsetting process when the likely need for a biodiversity offset is only identified after a report has been generated through the National Environmental Web-based Screening Tool or during the EIA phase. The blue boxes represent the pre-application phase, the yellow box, the EIA phase, the green box, the decision-making phase and the orange boxes, the post-decision phase.

5.2 The roles and responsibilities of the different role-players in the biodiversity offsetting process

- **The proponent/ applicant** must appoint an EAP to carry out an EIA process on their behalf. When biodiversity offsets are likely to be required, the applicant should also appoint appropriately qualified specialists to compile relevant documentation for review by the CA, including but not limited to biodiversity specialist reports, Biodiversity Offset Reports, Biodiversity Offset Management Plans and Biodiversity Offset Implementation Agreements. All costs related to the investigation of biodiversity offsets would be to the applicant's account. If environmental authorisation is granted, the implementation of the biodiversity offset condition in the EA will be to the **EA holder's** account. These costs include the costs related to the design of the biodiversity offset (such as engaging landowners, preparing a Biodiversity Offset Management Plan and concluding necessary contracts), requesting the declaration of a protected area in respect of the biodiversity offset site, the management of the biodiversity offset site as well as the costs of auditing implementation against the Biodiversity Offset Management Plan.

- **The environmental assessment practitioner** (EAP) is responsible for coordinating the EIA process, drawing up Terms of Reference for specialists, and synthesising specialists' inputs. The EAP must ensure that the mitigation hierarchy has been adhered to (with due consideration of reasonable

and feasible alternatives) and, where residual negative impacts on biodiversity are likely to be significant, may need to appoint biodiversity specialists (and other specialists, as appropriate) to investigate and evaluate potential biodiversity offsets. The EAP must also ensure that all relevant I&Aps, including conservation authorities and other organs of state as well as the owners of land in which candidate biodiversity offset sites (see Chapter 7 below) are situated, have been adequately engaged about a proposed biodiversity offset and that offset-related issues and comments are accurately captured in the EIA documentation. Where offsets are required for terrestrial ecosystems as well as wetland ecosystems and/ or forest ecosystems, the EAP should strive to integrate these different requirements in the Biodiversity Offset Report with input from the relevant specialists, and select candidate offset areas which would meet all offset requirements, where at all possible.

- **Specialists** will give site- and context-specific information, assess potential impacts of activities on biodiversity and ecological infrastructure and evaluate their significance, recommend lower-impact project alternatives where feasible, provide an estimate of residual negative biodiversity impacts, propose appropriate biodiversity offset metrics and components, and, where appropriate, investigate and advise on securing, protecting, restoring and managing biodiversity offset sites. Specialists must have experience and expertise in biodiversity offset design and implementation, and must be registered with the South African Council for Natural Scientific Professions and/ or the Environmental Assessment Practitioners Association of South Africa. As part of the process of preparing Biodiversity Offset Reports, specialists engage the owners of land that could be selected as candidate biodiversity offset sites or biodiversity offset sites.

- **National and provincial conservation authorities** play a lead role in advising the CA[12] on proposed biodiversity offsets. Biodiversity specialists and EAPs must involve these authorities in EIA processes when the activities involved could have significant residual negative impacts on biodiversity or protected areas, and engage staff with regard to finding optimum biodiversity offsets that align with national and provincial protected area expansion strategies. The management authorities for protected areas that would be expanded by the inclusion of a biodiversity offset site should report on those biodiversity offsets as part of their statutory reporting responsibilities.[13]

- **The competent authority** is responsible for evaluating, and taking decisions on, EA applications. As part of that role, the CA reviews, amongst other documents, BA reports, scoping reports and EIA reports (**EIA reports**) submitted to them as part of EA applications. CAs may advise or instruct the proponent or applicant of the nature and extent of the processes that may or must be followed in an EA application process, or decision-support tools that must be used in order to comply with NEMA and the EIA Regulations. CAs should also advise the proponent or applicant of any matter

[12] In some instances, organs of state other than conservation authorities may also need to advise on appropriate offset measures, in particular the Department of Human Settlements, Water and Sanitation.
[13] See generally the National Environmental Management: Protected Areas Act, 2003.

that may prejudice the success of an application, such as unacceptable loss of biodiversity. In the context of biodiversity offsets, a CA must advise an applicant or its EAP when it is of the view that a biodiversity offset will be required, and that this guideline must be considered. The CA is also responsible for formulating the biodiversity offset condition(s) in an EA.

- **Local authorities** are primarily responsible for taking decisions on how land in their respective municipal areas is used. Municipalities are therefore required to be consulted during the EIA phase to ensure that biodiversity offset areas may be used for conservation purposes. Some municipalities also have their own Biodiversity Targets and therefore need to be consulted on the identification of a biodiversity offset site. Municipalities are also authorised to require biodiversity offsets in terms of SPLUMA and applicable municipal by-laws (see the bullet point below).

- **Organs of state responsible for processing applications for other applicable regulatory approvals** should also be consulted during the biodiversity offsetting process. Other regulatory approvals, other than an EA in terms of NEMA, may well be required for the same development, such as licences in terms of the National Water Act, 1998, licences in terms of the National Forests Act, 1998, development rights in terms of SPLUMA (and applicable municipal by-laws) and requests for the de-proclamation, or withdrawal of the declaration, of protected areas in terms of provincial legislation or NEMPAA . As alluded to in Chapter 1, biodiversity offsets could also be required as conditions to those regulatory approvals. It is therefore important for the CA and applicant to liaise with those organs of state to ensure that only one biodiversity offset is required, to avoid duplication.

- **Organs of state whose functions could be affected by a proposed biodiversity offset**: A proposed biodiversity offset could have implications for the performance of certain functions by organs of state. Those organs of state should be consulted to resolve potential conflicts.

6. When are biodiversity offsets required?

A biodiversity offset is required when a proposed listed or specified activity, or activities, is/are likely to have **residual negative impacts on biodiversity of moderate or high significance.** These negative impacts could affect biodiversity pattern (e.g. threatened ecosystems, species or special habitats), ecological processes (e.g. migration patterns, climate change corridors enabling shifts in species distributions over time,[14] or wetland function), ecosystem services (e.g. provision of clean water) or a combination of all three.

In this Chapter, the concepts of residual impacts and impact significance are discussed. A flow diagram of the steps that need to be taken to determine if a biodiversity offset is required is given in **Figure 1**.

[14] *Climate change modeling projects shifts in climatic envelopes that are likely to affect biodiversity. There is however some uncertainty as to how it might affect biodiversity.*

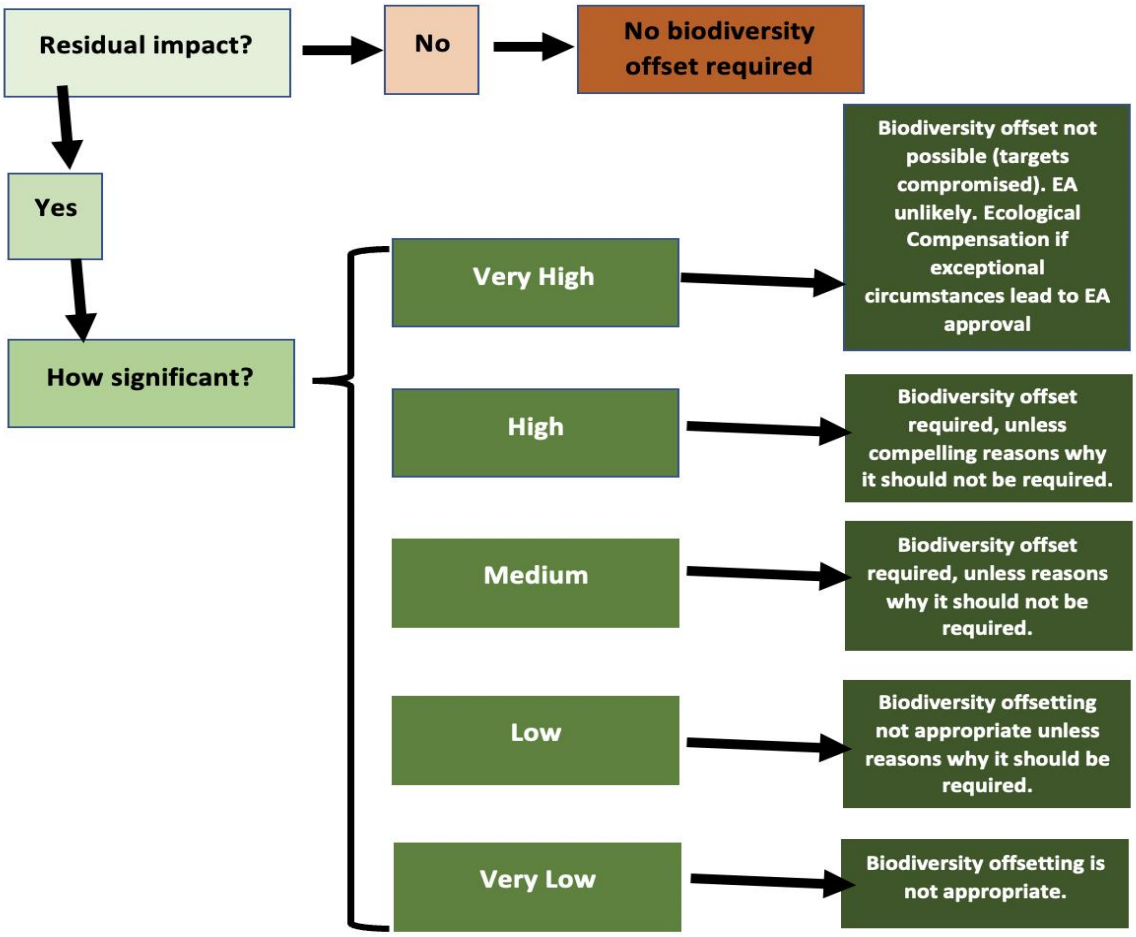

Figure 3 Flow diagram: When is a biodiversity offset required?

6.1 Residual impacts

A residual biodiversity impact is the impact of an activity, or activities, on biodiversity that remains after all efforts have been made to avoid and minimise the impacts of the activity, or activities, and to rehabilitate or restore the affected area to the fullest extent possible.

As part of an EIA, an EAP or a specialist is required to predict the possible negative impacts of an activity, or activities, on biodiversity, including direct impacts, indirect impacts, and cumulative impacts.[15] After those impacts have been identified, the EAP or specialist must investigate alternative project locations, designs, technologies, scales and layouts to determine if and how potentially significant negative impacts on biodiversity could be avoided or minimised. The EAP or specialist must also determine if, and how successfully, impacted areas could be rehabilitated or restored.

If predictions in the EIA state that all negative impacts on biodiversity cannot be avoided, and/or that impact minimisation and rehabilitation or restoration of the affected area cannot, with a high degree

[15] See Department of Environmental Affairs (2017), *Guideline on Need and Desirability, Department of Environmental Affairs (DEA), Pretoria, South Africa* at p14 for a description of "cumulative impacts."

of certainty, fully mitigate the impacts of the activity, or activities, on biodiversity, the proposed development would have residual negative biodiversity impacts.

The mitigation hierarchy, as set out in section 2(4)(a)(i) of NEMA, and applicable guidelines, should be followed to determine if there will likely be residual impacts.

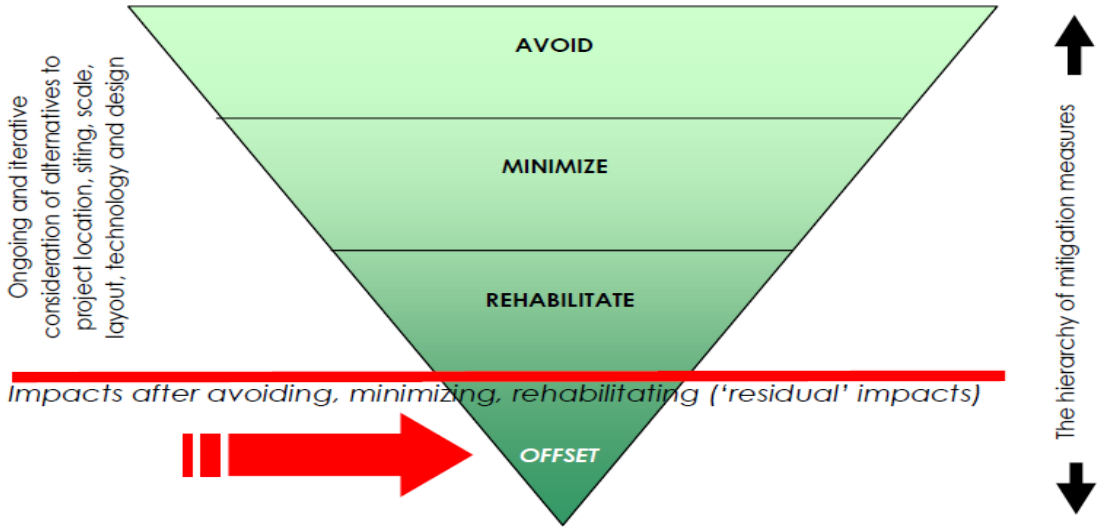

Figure 4 The mitigation hierarchy

6.2 Impact significance

Where residual negative biodiversity impacts are evaluated to be of medium or high significance, a biodiversity offset would be required. Biodiversity offsets are unlikely to be required when the residual negative impacts of a proposed activity, or activities, on biodiversity are evaluated to be of low significance. Biodiversity offsets are not appropriate when an activity, or activities, will have residual impacts on biodiversity of very high significance, including when residual negative impacts will result in loss of irreplaceable biodiversity.

Sufficient rigour and adherence to specific guidance on assessing biodiversity impacts and evaluating their significance must be demonstrated to the CA, drawing in particular on the applicable biodiversity[16] and species[17] protocols, used in conjunction with the National Environmental Web-

[16] Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation, published under Government Notice No. 320 in Government Gazette 43110 of 20 March 2020. These protocols cover terrestrial and freshwater biodiversity, and not marine biodiversity.

[17] Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation, published under Government Notice No. 1150 in Government Gazette 43855 of 30 October 2020. These protocols cover terrestrial and freshwater species and not marine species.

based Screening Tool (Screening Tool).[18] The report generated through the Screening Tool could give an early indication of the significance of the possible negative impacts of an activity, or activities, on biodiversity.

The approach for assessing impact significance for the purposes of this guideline is firstly, determining the biodiversity importance of the area negatively impacted by a proposed activity, or activities and the implications of the impacts – expressed in this guideline as a set of biodiversity thresholds, and secondly, determining if other factors related to impact significance render the impact of higher or lower significance than the threshold suggests.

There are no hard and fast rules for determining the biodiversity importance of an area and the implications of negative impacts on those areas. The thresholds given in Table 1 contain broad guiding factors to make such a determination. However, more nuance may well be required in the circumstances of a particular application for EA. Significance assessments should also take into account, for instance, the extent to which impacts would be reversible (i.e. if the pre-impact biodiversity could be reinstated within at most a 30-year period) and/ or would lead to irreplaceable loss of resources (i.e. a permanent loss of biological diversity).[19]

Table 1 Biodiversity thresholds, impact significance and implications for mitigation and biodiversity offsets

Threshold: the importance of biodiversity and/ or ecological infrastructure	**Impact Significance rating**	**Implications for mitigation and offsets**

'Exclusionary' threshold: residual impacts in this category cannot 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 –
• irreversible and irreplaceable loss of ecosystem or species, such as impacts on –
  ○ Critical Biodiversity Areas: Irreplaceable (CBA 1), especially where the feature(s) driving the designation as a CBA 1 is significantly negatively affected or will be compromised beyond its Biodiversity Target;[20]
  ○ protected areas, and more particularly, the natural or near natural parts[21] of protected areas;
	Very High	Activity should not be authorised except in exceptional circumstances. If an application is authorised, ecological compensation is required unless there are reasons

[18] Available at https://screening.environment.gov.za. The notice in terms of which the use of the screening tool was made compulsory was published under Government Notice No. 960 in Government Gazette No. 42561 of 5 July 2019.

[19] Adapted from Department of Environmental Affairs and Development Planning (DEA&DP) 2015. Western Cape Guideline on Biodiversity Offsets. Prepared by Susie Brownlie and Mark Botha for DEA&DP, Cape Town.

[20] Please take note that CBA 1s in some CBA Maps, such as the Western Cape Biodiversity Spatial Plan (2017), are not necessarily all regarded as irreplaceable. It is recommended that reasons are requested from a relevant conservation authority, such as CapeNature, as to why a particular area is a CBA 1.

[21] Development in protected areas, including the modified parts of protected areas (such as accommodation facilities and roads) require the consent of the relevant management authority. Development must also be

○ Critically Endangered ecosystems outside of CBAs; ○ confirmed habitats of Critically Endangered species, where those areas have not been included in CBA 1s; and ○ Ramsar sites; and • 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; and • irreversible or irreplaceable loss of highly valued ecological infrastructure at national or provincial scale and/or where there is a high level of dependence on the associated ecosystem services by local communities for livelihoods and health, and no feasible substitutes.		why ecological compensation should not be required.
Threshold of major potential concern: residual impacts in this category could lead to – • loss of vulnerable or potentially irreplaceable biodiversity in areas of recognised importance, such as – ○ Critical Biodiversity Areas: Optimal (CBA 2); ○ Endangered ecosystems outside of CBAs; ○ Natural forests; ○ Strategic Water Source Areas; ○ buffer zones around protected areas and protected area expansion zones identified in protected area management plans; ○ the Coastal Protection Zone; ○ areas seawards of development setback lines, and where development setback lines have been determined, within 1 km of the High Water Mark; or ○ areas within 100 meters of a watercourse; or • irreversible loss or deterioration of valued ecosystem services at provincial level.	**High**	Biodiversity offsets are likely to be required, unless there are *compelling* reasons why a biodiversity offset should not be required.
Threshold of potential concern: Residual impacts in this category could lead to – • irreversible loss of vulnerable biodiversity, such as - ○ Ecological Support Areas; ○ Strategic Water Source Areas; ○ Ecological infrastructure that provides highly significant ecosystem services, which is not within a SWSA and is not identified as an ESA; ○ conservation areas; ○ Vulnerable ecosystems or species; or ○ areas that have two or more of the following characteristics: Threatened Ecosystem, confirmed habitat for Threatened Species; or important ecological process area or corridor; or • irreversible loss or deterioration of valued ecosystem services at local level.	Medium	Biodiversity offsets are likely to be required, unless there are reasons why a biodiversity offset should not be required.

aligned with the management plan for a specific protected area as well as the reasons for declaration of the relevant protected area.

Threshold of Low concern: Residual impacts in this category include – • Other Natural Areas; or • impacts on Not Threatened or Least Concerned ecosystems or species, where those species or ecosystems do not – o support Protected or Threatened ecosystems or species; o constitute important ecological process areas or corridors; or o provide important ecosystem services.	Low	Biodiversity offsets are unlikely to be required, unless there are reasons why a biodiversity offset should be required.
Threshold of negligible concern: Impacts in this category are on highly modified areas.	Very Low	Biodiversity offsets will not be required.

The different thresholds have different implications for impact significance:

- If an exclusionary threshold is breached, impact significance is Very High and the proposed project is therefore fatally flawed and should not be approved. Biodiversity offsetting would not be feasible when there is loss of irreplaceable biodiversity, although ecological compensation would be required when such loss is considered justifiable under exceptional circumstances, unless there are reasons, based on the factors in the paragraph below, that ecological compensation should not be required.

- If a threshold of major concern is breached, impact significance is High and a biodiversity offset would be required unless, there are *compelling* reasons based on the factors in the paragraph below that a biodiversity offset should not be required.

- If a threshold of potential concern is breached, impact significance is Medium and a biodiversity offset would be required, unless the factors in the paragraph below suggest that no biodiversity offset should be required under the circumstances.

- If a threshold of low concern is breached, impact significance is Low and a biodiversity offset would not be required, unless the factors in the paragraph below suggest that a biodiversity offset should be required.

- If a threshold of negligible concern is breached, impact significance is Very Low and no biodiversity offset would be required.

'Significance' is a combination of the consequence and likelihood of an impact occurring. At least the following factors must be considered as part of the process of assessing the significance of a negative impact on biodiversity:

- The **consequence** of an impact is a combination of the intensity, extent and duration of the impact.

- Intensity (severity) of the ecological impact: the intensity of an ecological impact is given at a defined (usually spatial) scale. It is in influenced by such considerations as the condition or quality of the affected resource and the vulnerability of receptors to impacts. The biodiversity features of an area described in Table 1 are relevant considerations in intensity ratings. The greater the intensity, the greater the consequence, and the more significant the impact.

- Extent: the scale of expected impacts as a proportion or range of a given biodiversity feature, inversely related to viability of the remaining portion of that feature when the biodiversity feature impacted on is ecosystems, ecosystem extent (available in the look-up table), and specific provincial biodiversity targets, should be considered as part of this factor. The greater the extent, the greater the consequence, and the more significant the impact.

- Duration: how long the impact will last, from short-term to permanent, where permanent is a period of thirty years and above (unless the receiving environment justifies a shorter consideration of permanent). The longer the duration, the greater the consequence, and the more significant the impact.

- Likelihood of the occurrence of the impact: The more likely the impact, the greater the certainty of the impact significance. However, it is important to keep in mind that a risk-averse and cautious approach needs to be followed when the likelihood is more remote.

Where the significance ratings for biodiversity impacts are contentious or contested, leading to uncertainty about the need for a biodiversity offset, the CA could call for independent peer review of a biodiversity specialist study and/ or biodiversity offset report.[22]

7. Determining biodiversity offset requirements

Once it has been determined that a biodiversity offset is needed, the requirements for that biodiversity offset must be determined. The requirements for a biodiversity offset are set out in a Biodiversity Offset Report, which must be prepared by a relevant specialist, or specialists, and be submitted to a CA together with a BA Report or EIA Report at the end of the EIA phase. In preparing the Biodiversity Offset Report, the specialist, or specialists, must take the following steps:

1. Obtain a measure of the significant residual negative biodiversity impacts as a consequence of the proposed development.

[22] Section 24I of NEMA provides that the Minister or MEC may appoint an external specialist reviewer, and may recover costs from the applicant, in instances where - (a) the technical knowledge required to review any aspect of an assessment is not readily available within the competent authority; (b) a high level of objectivity is required which is not apparent in the documents submitted, in order to ascertain whether the information contained in such documents is adequate for decision making or whether it requires amendment.

2. Determine the required size of the biodiversity offset and, where applicable, its optimum location.

3. Consider unique or special biodiversity features of the area impacted by the authorised activity, or activities.

4. Investigate candidate offset sites that could meet the offset requirements.

5. Identify feasible implementation arrangements, governance structures and related protection and management considerations.

6. Ensure that the biodiversity offset site(s) and implementation arrangements would be acceptable to the relevant CA and conservation authority, and other relevant planning authorities.

7. Plan for implementation: consider the relevant protection and management measures needed for at least a 30-year period, and calculate the corresponding estimated financial requirements.

8. Prepare the Biodiversity Offset Report.

In this Chapter, guidance is given regarding each of the steps outlined above.

7.1 Obtaining a measure of the significant residual negative biodiversity impacts

The significant residual negative impact on biodiversity is calculated with reference to the factors listed and explained in Chapters 6.1 (residual impacts) and 6.2 (impact significance) above. In the context of residual negative impacts on ecosystems (both terrestrial and freshwater), the significant residual negative impact on biodiversity is expressed in hectares. Biodiversity offsets may well be required for significant residual negative impacts on biodiversity features other than ecosystems (e.g. threatened species). In those cases, relevant specialist advice is required, over and above the guidance given for ecosystems in this guideline.

7.2 Determining the right size of the biodiversity offset

This guideline gives a standard, area-based approach to calculating the size requirements for biodiversity offsets when the significant negative residual impact is on ecosystems (terrestrial (including coastal) and freshwater, but excluding offshore marine and estuarine). However, residual negative impacts on biodiversity cannot always be easily specified in terms of area. Negative residual impacts on species of conservation concern, ecological processes or ecosystem services, are examples of such instances. In those cases, the size of the biodiversity offset must be determined based on the advice of an appropriate specialist, or specialists. In some cases, the biodiversity offset site(s) targeted to remedy residual impacts on ecosystems may also accommodate offset activities that address the particular needs of impacted species. In other instances, additional offset site(s) and activities may be

required to counterbalance residual impacts on ecosystems, species of conservation concern and/ or key ecosystem services.

7.2.1 Standard approach to determining the required size of a biodiversity offset

The starting point for determining the size of a biodiversity offset is calculating an applicable ecosystem-based biodiversity offset ratio. A biodiversity offset ratio provides the area-based size of a biodiversity offset relative to the area of the residual negative biodiversity impact. Determining the size requirement of a biodiversity offset entails (1) determining a basic offset ratio based on Ecosystem Extent, Ecosystem Protection Level **(EPL)** and Ecosystem Threat Status **(ETS)**; and (2) adjusting the basic offset ratio based on an applicable CBA Map.

(1) Determining the basic offset ratio

The standard approach to determining a basic biodiversity offset ratio is based on biodiversity targets. Those targets are, in turn, based on Ecosystem Extent, Ecosystem Protection Level) and Ecosystem Threat Status (see text box on page 31) of the various ecosystem types identified in the ecosystem assessment conducted as part of the determination of ecosystems that are threatened and in need of protection in terms of the National Environmental Management: Biodiversity Act, 2004.[23] The applicable ratios are listed in the table hosted on the Department of Forestry, Fisheries and the Environment's website: www.environment.gov.za. The table will be reviewed periodically and updated, if and when necessary.

In terms of the standard approach, the following general rules apply:

- A 30:1 ratio applies in –
    - Critically Endangered ecosystems regardless of their Ecosystem Extent or EPL;
    - ecosystems with an Ecosystem Extent of 30% or less, regardless of their EPL or ETS; and
    - the case of ecological compensation.

- Sometimes biodiversity offsets are required for an activity, or activities, that are likely to have significant residual negative impacts on ecosystems with an Ecosystem Extent of 70% or greater. In those instances, a biodiversity offset ratio would need to be set based on the information before the decision-maker.

- For ecosystems with an Ecosystem Extent greater than 30% and less than 70%, the basic biodiversity offset ratio is adjusted according to the EPL of a given ecosystem (as shown in Figure 5). There are, however, exceptions to this general rule:

[23] Reference to be added soon.

- If the relevant ecosystem type's ETS is Endangered, the minimum biodiversity offset ratio is 10:1; and when it is Vulnerable, its minimum biodiversity offset ratio is 5:1.

- If the area is a CBA 1, the ratio is 30:1, and if it's a CBA 2, the ratio must be adjusted in the manner described in part (2) of this sub-Chapter below.

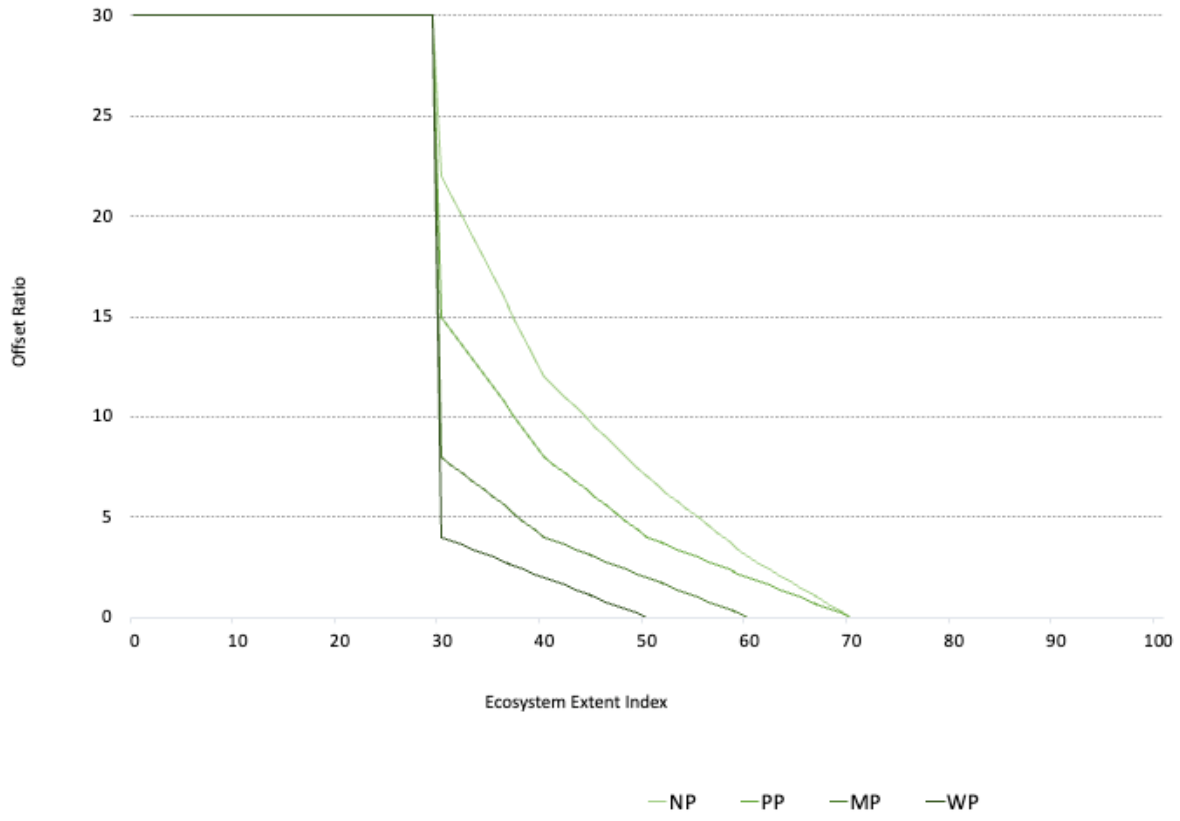

Figure 5 Biodiversity offset ratios based on Ecosystem Extent and EPL.

Please note that ETS has been factored into the standard approach in order to ensure that ecosystems that are threatened for reasons other than habitat loss also have higher offset ratios (please see the look-up table referred to above).

The latest ecosystem threat status assessment

The most recent **Ecosystem Threat Status** assessment was done in 2021. Like the assessment that was done as part of the NBA 2018, it is based on five criteria, namely the reduction in geographic distribution, restricted geographic distribution, environmental degradation, disruption of biotic processes and interactions, and a quantitative analysis that estimates the probability of ecosystem collapse. The approach for calculating the basic offset ratio is primarily based on the first of those criteria. The other criteria, however, also need to be taken into account when calculating the basic offset ratio. The fact that an ecosystem has restricted geographic distribution, or is generally in a poor ecological condition, for example, may well mean that the basic biodiversity offset ratio needs to be higher than it would have been in the absence of those factors.

Some provincial conservation authorities or CAs have adopted, or may in future adopt, province-specific approaches to determining biodiversity offset ratios, based on province-specific biodiversity targets. Those approaches take precedence over the standard approach provided for in this guideline. However, a strong motivation would need to be given for applying the province-specific approach when the province-specific approach would yield a lower ratio than the standard approach provided for in this guideline.

Consideration also needs to be given to how ratios are determined for development within the urban edges of cities and towns. It is more likely that there would be good reasons for adjusting biodiversity offset ratios down for activities within the urban edges of cities and towns given the relative scarcity of space and natural areas in those areas. In this regard, consideration should be given to approaches for determining biodiversity offset ratios for development within urban edges adopted by local authorities or provinces, when available.

'Like-for-better' biodiversity offsetting/ 'trading-up'

Wherever possible, a 'like-for-like' biodiversity offset should be required and provided to ensure that residual negative impacts on the affected biodiversity features are appropriately compensated. In exceptional cases, targeting biodiversity of greater conservation concern (for example, ecosystems that have higher threat status than the impacted ecosystem, or areas of higher biodiversity priority as indicated in applicable systematic biodiversity plans), may be justifiable. Where such an approach of 'trading up' is being considered, a strong motivation should be provided for this choice (for example, when it can be shown that there are no suitable areas of the same or proxy habitat available). Such motivation should also show the relationship between the biodiversity offset site's biodiversity and impacted biodiversity.

(2) Determining the adjusted biodiversity offset ratio

To ensure that biodiversity priorities are considered as part of the determination of the size requirement for a biodiversity offset, the relevant CBA Map must also be considered as part of that process. While any loss in a CBA 1 is generally considered irreplaceable[24], if it is found that the negative significant impact on biodiversity will take place in a CBA 2, the basic biodiversity offset ratio should be adjusted by increasing it by a factor of 1.5 up to a maximum of 30:1 as illustrated in Table 3.

Given that the ratio for ecological compensation is already 30:1, the adjustment covered in this section is not applicable.

[24] Please take note that CBA 1s in some CBA Maps, such as the Western Cape Biodiversity Spatial Plan (2017), are not necessarily all regarded as irreplaceable. It is recommended that reasons are requested from a relevant conservation authority, such as CapeNature, as to why a particular area is a CBA 1.

7.2.2 Different approaches to determining the required size of the biodiversity offset

Biodiversity offsets require that ecosystems are considered, protected and managed within their landscape and functional context (also see the principle that biodiversity offsets should embody the ecosystems approach and promote connectivity in the wider landscape in Chapter 4.2 above). Some ecosystems, namely forests and wetlands, require a slightly different approach to determining the size of offsets from the standard approach described above. For these ecosystems, historical guidance,[25] mitigation practice, and/or specific legal protection, necessitate this different approach. However, it is desirable for there to be alignment between the different approaches to biodiversity offsetting wherever possible. The approaches for natural forests and wetlands are discussed below.

Forest ecosystem types

Activities which have residual negative impacts on forest ecosystems often require both an EA and a licence in terms of the National Forests Act, 1998 (NFA). The NFA, the primary law for the protection of natural forests in South Africa, provides that natural forests must not be destroyed save in exceptional circumstances.[26] This implies that the target for conserving remaining forests is the remaining extent of the forest ecosystem type (i.e. they constitute irreplaceable biodiversity). Where an activity would have the effect of negatively impacting on a natural forest, and the "exceptional circumstances" referred to in the NFA are present, ecological compensation would be required. This compensation may include, but is not necessarily limited to, removing or reducing the activities or processes that impede or threaten forest regeneration, or that result in ongoing loss of that forest type, or a nearby related type. The strong protection given to natural forests by the National Forests Act, 1998 due the rarity of the biome and its high ecosystem services, in practice means that any impacts on such forests are regarded as serious, and in the case of endangered forest types, as fatally flawed.

As already stated, an offset may well be required where a listed or specified activity would involve the removal of one or more protected tree species,[27] despite the fact that application of this guideline's approach for determining when an offset is required suggests that no biodiversity offset is required. In such instances, the biodiversity offset requirements should involve an offset area to maintain or increase viable populations of the same tree species as those impacted, or involve reducing or removing other activities or processes that threaten the persistence, recruitment or survival of protected trees, or both.

[25] See, for example, Department of Agriculture, Forestry and Fisheries *Policy principles and guidelines for control of development affecting natural forests*(2010); and 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. 69 pages.

[26] Section 3(3)(a) of the National Forests Act, 1998.

[27] The latest list of protected tree species was published under Government Notice No. 155 in Government Gazette No. 44204 of 1 March 2021.

Wetland ecosystem types

Wetland ecosystems require mitigation for the loss of biodiversity (i.e. wetland ecosystem type and wetland species), and for impacts on wetland (hydrological) functioning. The standard approach described in Chapter 7.1 above also applies to wetlands. However, the negative impacts of an activity, or activities, on wetland functioning need to be addressed through the rehabilitation or restoration of degraded wetland systems, careful location of biodiversity offset sites in the wider hydrological landscape, and/or the removal, reversal or curbing of activities or processes threatening their effective functioning. Increasing wetland offset area is often not a suitable substitute for improving wetland functioning as an offset. Please consult Wetland Offsets: A Best Practice Guideline for South Africa (2016) for more guidance on wetland offsets. That guideline must be read in conjunction with this guideline.

7.3 Taking into consideration unique or special biodiversity features

Once the adjusted biodiversity offset ratio has been determined, biodiversity features other than Ecosystem Extent, EPL, ETS and biodiversity priority status must be considered to adjust the biodiversity offset requirements, if necessary. Those features include, but is not limited to, the following:

(a) **The condition of the affected habitat and potential offset site(s)**: The ecological condition of the biodiversity offset site should be comparable to, or better than, the ecological condition of the area impacted by the relevant activity, or activities.

(b) **The presence of any threatened or restricted range species**: The biodiversity offset site(s) must cater for these species.

(c) **The presence of any special habitats**: The biodiversity offset site should include these habitats (e.g. wetlands, quartzite/ calcrete patches, unique geological or hydrological features).

(d) **The role of the affected area in the bigger landscape with regard to ecological processes**: If it has been found that the affected area acts, for example, as an important fixed or flexible ecological corridor across a gradient, then the biodiversity offset should provide an effective substitute corridor/ link.

(e) **The presence of ecological infrastructure in the area**: If there is ecological infrastructure in the area on which local human communities and/ or society as a whole are reliant for ecosystem services, the biodiversity offset should contain or re-establish similar ecological infrastructure to benefit the significantly affected dependants. Where it is not feasible for this ecological infrastructure to be secured and managed through a biodiversity offset, compensation to provide acceptable services to the affected community should be provided.

The factors listed above would be of lesser importance in the case of ecological compensation than they are for biodiversity offsetting, but they are still relevant when selecting sites for ecological compensation (see Chapter 7.4.1 below).

7.4 Selecting and securing candidate biodiversity offset sites

The Biodiversity Offset Report must include a portfolio of candidate biodiversity offset sites. This is the case even when the biodiversity offset site has already been selected before the Biodiversity Offset Report was completed. In such a case, the process for selecting the proposed biodiversity offset site needs to be clearly specified in the Biodiversity Offset Report, and reasons must be given why that particular site has been selected over other candidate biodiversity offset sites.

The potential for and viability of securing each candidate biodiversity offset site identified in the Biodiversity Offset Report should then be investigated and reported on. It is important to engage with the relevant conservation authority during the site selection process to ensure that they would consider biodiversity offset sites to be acceptable.

The identification of candidate biodiversity offset sites, assessing the potential of each of candidate biodiversity offsets to be selected as a biodiversity offset site, consulting with a relevant conservation authorities and the selection of a biodiversity offset site from a portfolio of candidate biodiversity offset sites are dealt with under chapters 7.4.1, 7.4.2, 7.4.3 and 7.4.4 below.

7.4.1 Selecting candidate biodiversity offset sites

Once the biodiversity offset requirements have been determined, the relevant specialist, or specialists, appointed by the applicant should identify and screen a number of potential biodiversity offset sites, called “candidate biodiversity offset sites” for the purposes of this guideline. Biodiversity offset sites should ideally be located in biodiversity priority areas as determined in spatial biodiversity plans. These include Critical Biodiversity Areas, Ecological Support Areas, Freshwater Ecosystem Priority Areas and focus areas for protected area expansion.

The overriding principle of site selection is that, where possible, and as the highest priority for biodiversity offsetting, biodiversity offsets should be used to protect and maintain the irreplaceable elements of our biodiversity and natural heritage. The following principles must also guide site selection:

- Biodiversity offset sites should be selected for ecological equivalence (the “like-for-like” principle) or, where appropriate, there could be “trading-up” to select an area of relatively high or more urgent conservation priority.

- Selection should be guided as far as possible by existing biodiversity priority areas in the landscape (for example, the CBA and ESA network, Freshwater Ecosystem Priority Areas, and focus areas for

protected area expansion) and/or areas identified as strategic from an ecological infrastructure perspective (such as Strategic Water Source Areas).

- Biodiversity offsets should strive to secure the best examples of the features which have been impacted and to improve connectivity in the landscape between protected and priority areas for biodiversity.

- The final selection can be influenced by the reasonable consideration of factors other than the biodiversity value of the different candidate sites, such as: ease of the management of the site by a relevant management authority; and threats to conservation due to conflicting land use rights, claims or land use classification. These other factors should be considered cautiously and in the context of the outcomes and principles of biodiversity offsets given in Chapter 4.

For biodiversity offsets in **terrestrial ecosystems**, rehabilitation and preferably restoration of areas in modified condition (i.e. no longer natural or near-natural) is seen as an integral part of the required management of the offset site. For this reason, it is optimal for candidate biodiversity offset sites to be in a good ecological condition (natural or near-natural state), to minimise the additional burden of having to rehabilitate or restore an area.

In exceptional circumstances, where a specialist is considering selecting an area in a modified condition in the terrestrial realm as a candidate biodiversity offset site, the following principles need to be considered:

- The decline in condition of an ecosystem implies the loss of biodiversity pattern (i.e. species composition and ecosystem structure) and ecological functioning. The potential for rehabilitation or restoration decreases proportional to the extent of deterioration in condition, with growing effort and costs to achieve a return to a natural state. In areas of highly modified habitat, restoration is unlikely to be possible; an offset in such areas would not be acceptable.

- In terrestrial ecosystems, confidence in the success of restoration in reinstating biodiversity is generally low, and can take an extremely long time. The removal of invasive alien species is a key strategy in rehabilitation and restoration, but in many cases is already a legal requirement (i.e. it would not satisfy the 'additionality' principle of offsetting).

- If rehabilitation or restoration in the terrestrial realm is proposed as a distinct and measurable contribution to a biodiversity offset, robust and defensible motivation would be needed, with evidence-based assurance of outcomes for biodiversity, and specific, measurable, time-bound outcomes to determine when success has been achieved.

In **wetland and freshwater ecosystems**, on the other hand, it is more acceptable to select ecosystems in a modified state as candidate biodiversity offset sites. Rehabilitation and restoration are recognised as delivering improvements in ecosystem function, and they are explicitly accounted for in

determining offset requirements. That is, selecting areas with good potential for rehabilitation and restoration within recognised freshwater priority areas (FEPAs) or SWSAs may be advantageous. Those areas should be located in the same local or quaternary catchment, unless there are good reasons why they are not.

In the case of ecological compensation, an authorised activity, or activities, would result in the loss of irreplaceable biodiversity. Like-for-like offsetting is therefore not possible. The requirements of ecological compensation will depend on the circumstances of each case, but two general rules apply to site selection in those instances:

- A candidate site for ecological compensation must be an ecosystem of comparable type to the one that would be disturbed by the activity, or activities. For example, if the ecosystem that would be disturbed is a grassland type, the site for ecological compensation must be located in a grassland ecosystem.

- The site selected for ecological compensation should be of the same, or of higher, threat status, or at least a biodiversity priority area, such as a Critical Biodiversity Area, which is preferably located in a priority area for protected area expansion.

7.4.2 Assessing the potential for securing candidate biodiversity offset sites

Suitable biodiversity offset sites would need to be secured for biodiversity conservation in the long term. Ideally, sites need to be effectively protected in perpetuity. For this reason, a proponent would either have to own or purchase suitable land, or enter into a biodiversity stewardship agreement with owners of land situated in biodiversity offset sites, for at least 99 years. There are a host of legal mechanisms available for securing biodiversity offset sites, but the following mechanisms are the most common in practice:

- **The declaration of a protected area in terms of NEMPAA**: This is the preferred mechanism for securing a biodiversity offset site. Where possible, such declarations should be made in respect of areas adjacent to existing protected areas to increase the size of those protected areas. A written agreement underlying such a declaration should provide for ecological management in the long term, after the EA holder's responsibility in relation to the relevant development ends. Also note that protected areas can also be declared in terms of legislation other than NEMPAA. For example, forest nature reserves can be declared in terms of the National Forests Act, 1998, and World Heritage Sites can be declared in terms of the World Heritage Convention Act, 1999. However, given that NEMPAA comprehensively deals with the management of protected areas, declarations in terms of that Act is preferable.

- **Conservation servitudes**: A conservation servitude is a real right in the property of another that allows the beneficiary, usually a conservation authority or a conservation NPO/ PBO, certain circumscribed entitlements with regard to the conservation of biodiversity on another person's

property. Conservation servitudes are binding on successors-of-title and are enforceable against the world at large (not only one person). Conservation servitudes would work best when the EA holder is also the owner of the land constituting a biodiversity offset site. Ideally, a conservation servitude should be combined with a Biodiversity Offset Management Plan and penalties for breach, and be valid in perpetuity.

Servitudes and positive obligations

Servitudes cannot impose positive obligations on a landowner (only restrictions). If the EA holder is also the owner of the biodiversity offset site, and a conservation servitude has been elected as the measure for securing that area, it is recommended that the deed of servitude incorporates a restriction on the sale of the property. The restriction should specify that the property may not be sold to any person who is not willing to undertake to allow the implementing party to carry out the measures prescribed in a Biodiversity Offset Management Plan on the relevant land.

- **Purchasing credits from a recognised biodiversity offset bank**: A relevant authority may have approved a scheme that proactively delivers biodiversity offsets in biodiversity offset receiving areas and can sell credits. The purchase of specific credits must satisfy offset requirements; i.e. credits must trade in the same ecosystem or species habitat, and be of sufficient quantity. Please note that the different competent authorities may have specific governance frameworks for biodiversity offset banking.

The above mechanisms may require that the applicable land use, town-planning or zoning scheme be amended to ensure that the biodiversity offset site may be/ is used for conservation purposes.

The same mechanisms can be used to secure a site for ecological compensation.

7.4.3 Ensuring that the biodiversity offset options would be acceptable to the relevant conservation authority

As provided in Chapter 8 below, the specialist must engage conservation authorities and other relevant organs of state throughout the biodiversity offsetting process. As a general rule, a proposed biodiversity offset site should not be included as a candidate biodiversity offset site in a Biodiversity Offset Report (see below) unless it is acceptable to the relevant conservation authority. The Biodiversity Offset Report must confirm that the conservation authority has been engaged and supports the candidate biodiversity offset sites. The same general rule applies to selecting candidate sites for ecological compensation.

7.5 Selecting the biodiversity offset site

The selection of a biodiversity offset site is a crucial step in the biodiversity offset process. The content of a Biodiversity Offset Management Plan (see Chapter 7.6.1 below) depends heavily on which site

has been selected for the offset and the delineation of that site. In this Chapter, some principles regarding site selection and stakeholder engagement in the process of site selection are given.

Once the general requirements for a biodiversity offset have been set, a specific biodiversity offset site, or sites, must be selected, preferably from the portfolio of candidate biodiversity offset sites identified in the Biodiversity Offset Report. The site selection principles are given in Chapter 7.4.1 above.

Stakeholder engagement is an important component of the final site selection process. The owners and/ or occupiers of, and rights holders in, the land constituting the candidate biodiversity offset sites must be engaged to assess whether or not those owners or occupiers are willing to negotiate the use of their land for conservation purposes. As noted in Chapter 7.4.2, where candidate offset sites abut, or are close to, existing protected areas, discussions with the conservation authorities would be essential regarding future implementation and management arrangements and agreements to include the biodiversity offset site into the relevant protected area. In addition, conservation NPOs or PBOs, especially those that are active in the relevant landscape, could be engaged on the optimum location and design of a biodiversity offset to receive their suggestions and gauge their support.

Once the biodiversity offset site has been selected, the required biodiversity offset site must be effectively delineated, preferably by maps that are clearly georeferenced since the biodiversity offset site will not necessarily always coincide with cadastral boundaries.

The same guidance applies for selecting sites for ecological compensation. Please see Chapter 7.4.1 for general guidance on selecting candidate sites for ecological compensation.

7.6 Planning for biodiversity offset implementation

The applicant must consider the potential management arrangements for the biodiversity offset site as well as the financing of the relevant biodiversity offset. The management and financial arrangements must be recorded in a Biodiversity Offset Management Plan. However, if a biodiversity offset site cannot be selected before the decision-making phase, conceptual management and financial planning must be done during the EIA phase for each candidate biodiversity offset site identified in the Biodiversity Offset Report.

Managing the biodiversity offset site, and preparing Biodiversity Offset Management Plans is discussed in section 7.6.1 below. Financing biodiversity offsets is discussed in section 7.6.2 below. The same general guidance given in those chapters applies for planning for ecological compensation.

7.6.1 Management of the biodiversity offset site

Planning for the management of a biodiversity offset site involves considering how the biodiversity offset site will be managed and who will be responsible for that management: the implementing party. The management arrangements for a biodiversity offset site should be recorded in a Biodiversity

Offset Management Plan. A draft Biodiversity Offset Management Plan should ideally be submitted to the CA at the end of the EIA phase together with the Biodiversity Offset Report. However, when a biodiversity offset site has not been selected before the end of the EIA phase, conceptual management planning should be done for each candidate biodiversity offset site during the EIA phase, based on the ecosystem type and its typical management requirements, to aid the site selection process. That conceptual planning should then be included in the Biodiversity Offset Report.

A Biodiversity Offset Management Plan sets out any required demarcation, rehabilitation or restoration, ongoing conservation management activities and ecological outcomes required of the offset, as well as monitoring, adaptive or corrective management, auditing and reporting requirements. It furthermore specifies the roles and responsibilities of different parties for these activities and outcomes. Biodiversity Offset Management Plans must, as a minimum, specify -

- the biodiversity offset objectives and measurable biodiversity outcomes, against which performance will be evaluated;
- the management actions and where they must be conducted;
- the timelines for, and frequency of, implementation of actions;
- the roles and responsibilities of the various role-players;
- the monitoring requirements and a monitoring schedule;
- the auditing requirements and auditing schedule;
- periodic review of the Biodiversity Offset Management Plan; and
- reporting requirements with regard to the performance of the biodiversity offset.

Once a Biodiversity Offset Management Plan has been prepared for the biodiversity offset site, the EA holder would need to enter into a Biodiversity Offset Implementation Agreement (see Chapter 11 below) with the implementing party.

The identification of the implementing party and preparation of a Biodiversity Offset Management Plan should be done with the required legal mechanism used to secure the biodiversity offset site in mind. In cases where the biodiversity offset site will be secured through the declaration of a protected area, the chosen implementing party should meet the requirements of a management authority contemplated in NEMPAA and the Biodiversity Offset Management Plan would need to be aligned with the requirements for management plans in NEMPAA.

NEMPAA provides that a management authority must be appointed by the Minister or an MEC for the management of a protected area.[28] In terms of NEMPAA, any suitable person, organisation or organ of state can be appointed as the management authority for special nature reserves, nature reserves and protected environments.[29] A provincial conservation authority, municipality, non-profit organisation, public benefit organisation or conservation trust could therefore fill the role of implementing party. South African National Parks (SANParks) must however be appointed as the management authority for national parks.[30] SANParks would therefore need to be the implementing party in the case of a biodiversity offset resulting in the declaration of a new national park, or the extension of an existing national park.

The requirements for protected area management plans are set out in NEMPAA.[31] Ideally, the Biodiversity Offset Management Plan should meet those requirements to ensure that the terms of a Biodiversity Offset Management Plan can easily be translated into a protected area management plan, or incorporated into an existing protected area management plan, if an existing protected area will be expanded as part of a biodiversity offset. When a protected area is being expanded as part of a biodiversity offset, the management authority of the existing protected area must be consulted when the Biodiversity Offset Management Plan is being prepared.

When a biodiversity offset site will be secured by the declaration of a protected area, it is important to keep in mind that the EA holder will remain legally bound to deliver the required biodiversity outcomes despite the implementing party's appointment as the management authority of the protected area. It should also be kept in the mind that even though NEMPAA's requirements for protected area management plans, an existing management plan and consultations with a management authority should be taken into consideration when preparing a Biodiversity Offset Management Plan, the Biodiversity Offset Management must always be designed to deliver the biodiversity outcomes required in the conditions to an EA.

Where a conservation servitude is utilised to secure the biodiversity offset site, the EA holder will be directly responsible for implementing the biodiversity offset. The EA holder can delegate its management functions to a competent third party, but with the EA holder remaining ultimately responsible for the implementation of the biodiversity offset.

Partnerships between conservation NPOs, PBOs, organs of state, community-based organisations and/or developers are effective in helping to secure and manage offsets, integrate conservation with other activities and land uses, and potentially deliver a range of socio-economic benefits to communities in the area of the biodiversity offset site and the wider public.

[28] Section 38 of NEMPAA.
[29] Sections 38(1)(a) and (2) of the National Environmental Management: Protected Areas Act, 2003.
[30] Section 38(1)(aA) of the National Environmental Management: Protected Areas Act, 2003.
[31] See sections 40 and 41 of NEMPAA.

7.6.2 Financing the biodiversity offset

EA holders are responsible for covering all of the costs of a biodiversity offset. These include the costs of securing and protecting a suitable biodiversity offset site, establishing the biodiversity site, rehabilitating or restoring it, and managing it effectively for at least a 30-year period[32] or for the duration of the authorised activity, whichever is longer.

Please take note that this guideline does not deal with financial provisioning, as envisaged in section 24P of NEMA and the Financial Provisioning Regulations, 2015. Financial provisioning relates to financial security for the rehabilitation of areas disturbed by prospecting, mining, exploration and production, and related activities.[33] This guideline deals with financing biodiversity offsets (not rehabilitation) related to any of the listed or specified activities.

The costs of the biodiversity offset typically comprise -

- once-off funds needed up front (e.g. land purchase and/or lease and/ or transfer costs, notary fees, baseline ecological surveys, management plan, legal fees, infrastructure and equipment costs, declaration costs and any specialist advice);

- funds for rehabilitation, restoration and/or authorisations linked to these activities; and

- funds for ongoing management (e.g. staffing, transport, firebreaks and controlled burns, invasive alien species control, grazing management, predator or pest management, erosion control, annual monitoring and evaluation, independent audits, replacement of broken infrastructure or equipment, law enforcement, insurance, financial management fees, and a contingency amount).

Where developers enter into agreements with willing landowners to provide a biodiversity offset, payment to these landowners typically has two main components*, namely the amount of money required to finance biodiversity management of the offset site by the owner (covering any rehabilitation or restoration costs, specific and relevant management actions in line with a management plan, with monitoring and evaluation, and any specialist inputs), and a negotiable annual 'offset rental' to cover opportunity costs (i.e. change in market value of the site and/or income to the landowner because of the offset), administrative and/or management fees, and a profit and risk margin. These payments are negotiated between the landowner and developer.

* A landowner can sum these two amounts for the area to be made available as an offset, and divide by the number of hectares (or habitat units) of particular ecosystem or habitat to arrive at a price per ha (or habitat unit).

[32] It is widely accepted that 30 years is the minimum period within which meaningful biodiversity outcomes could be achieved. The 30-year period is also based on the length of a human generation, which is widely accepted to be more or less 30 years. In this way, biodiversity offsetting gives effect to the principle of inter-generational equity, espoused in the Constitution and NEMA.

[33] At the time of preparing this guideline, the National Environmental Management Laws Amendment Bill, 2017 was in Parliament. In that Bill, it is proposed that the scope of financial provisioning is extended to all listed or specified activities, and not only mining and mining-related activities.

The activities set out in the Biodiversity Offset Management Plan should be used to help determine the operational costs of the offset. Costs must be determined using current rates and adjusting for escalation over the 30-year period at least; i.e. the amount that needs to be invested to account for future management requirements. The funds required to implement a biodiversity offset must be subject to an annual financial audit by qualified independent financial auditors.

The funds for the implementation of a biodiversity offset must be provided by that organ of state, either as a lump sum payment up front and/ or by scheduled regular payments. When the developer is from the private sector, funds are best provided in full and up front as an endowment[34] or a 'sinking fund' to cover costs for the period of responsibility for the offset, or could make a series of regular payments.

Offset funds can be received, held and administered by organs of state[35], or by conservation NPOs/ PBOs or Trusts. Who is best placed to receive and administer the funds required to implement a biodiversity offset is determined by, *inter alia*, who is best placed to facilitate and expedite the relevant actions that must be conducted to implement the biodiversity offset; the regulatory regime and financial controls associated with the different financial vehicles; the type and timing of activities required on the ground; and financial and/ or investment decisions.

- It should be kept in mind that organs of state are bound by legislation on public finance, such as the Public Finance Management Act, 1999. If funds are held by an organ of state, appropriate steps should be taken to ensure that the funds are not absorbed into the National Revenue Fund at the end of a budget cycle.

- The funds required to implement a biodiversity offset could be received, held, invested and disbursed by a trust. The trust deed must determine how the trust will function, the roles and responsibilities of the trustees and the identity of the beneficiaries. The trust could be set up by the developer, or could be an independent trust set up by a conservation NPO/ PBO, or a voluntary association of persons with a constitution, or a combination.

There is a clear preference for a biodiversity offset that utilises an already established and dedicated entity such as a trust for the purposes of implementing the biodiversity offset and managing funds received from the project proponent. A trust is a dedicated, independent legal mechanism to cater for public interest objectives. It is better placed to offer perpetual succession and avoid being influenced by partisan (either private or public sector) interests. There are a number of examples of conservation trusts and associated funds in South Africa. The choice of financial instrument will, however, depend on the circumstances of each case.

[34] A fund based on the principal capital remaining intact for the duration of the period of responsibility for the offset, enabling it to be invested. The biodiversity offset is financed only through the income generated by the invested capital.
[35] To hold and administer funds for a biodiversity offset, an organ of state needs to be authorised to do so in terms of relevant legislation.

Tax and rates incentives provided for in relevant legislation should also be kept in mind when calculating the funds required for the implementation of a biodiversity offset. The Income Tax Act, 1962 gives tax incentives to set aside land for conservation, particularly in the case of national parks and nature reserves; a percentage of the value of the conservation land can be deducted from the landowner's taxable income[36]. In terms of the Local Government: Municipal Property Rates Act, 2004 a municipality may not levy municipal property rates in respect of most parts of special nature reserves, national parks and nature reserves. That Act also authorises municipalities to provide for municipal property rate exemptions, reductions or rebates for the owners of land that constitute protected areas or conservation areas in their rates policies.

7.7 Preparing the Biodiversity Offset Report

It is strongly advised that a Biodiversity Offset Report is prepared by a relevant specialist, or specialists, submitted to the CA at the end of the EIA phase. The content of a Biodiversity Offset Report will be depend on whether or not the biodiversity offset site has been selected by that phase or not. When a biodiversity offset has been selected in the pre-application or EIA phase, the Biodiversity Offset Report must, as a minimum, specify the following:

- That the mitigation hierarchy, including due consideration of project alternatives to avoid or minimise impacts, has been appropriately applied before considering biodiversity offsetting.

- A justification as to why a biodiversity offset or ecological compensation is required under the circumstances, and where relevant, why the "no-go" option is not recommended.

- The degree of risk that negative residual impacts cannot be offset (i.e. negative residual impacts on irreplaceable biodiversity and/or major constraints on finding suitable biodiversity offset sites to meet the offset requirements) and how the risk is to be addressed or mitigated.

- A measure of significant residual negative biodiversity impacts which must be offset.

- The applicable biodiversity offset ratios for impacted ecosystems.

- Any other considerations which are relevant to determining the size and characteristics of the biodiversity offset (for example, impacts on species of conservation concern with specific habitat requirements, impacts on ecological corridors and connectivity in the landscape, and impacts on important ecological infrastructure), and how the size of offset is to be adjusted to take these considerations into account.

[36] 'Allowance in respect of land conservation in respect of nature reserves or national parks'. Taxpayers are entitled to deduct the value of land declared as a nature reserve or national park at 4% per annum over 25 years in terms of Section 37D.

- An explicit statement on the required size of the biodiversity offset to remedy the residual negative biodiversity impacts, applying the basic offset ratio and adjustments as appropriate.

- The portfolio of candidate biodiversity offset sites, including the likelihood of each site's availability and feasibility.

- A description of the biodiversity offset site, and the reasons for the selection of that site from the portfolio of candidate biodiversity offset sites.

- The required biodiversity outcomes on the biodiversity offset site.

- The management measures that would need to be employed as part of the biodiversity offset for a defined period, for which the applicant would be responsible. Typically this period is not less than 30 years, and is longer if the impacting activity, or activities, will last beyond 30 years.

- An estimate of the financial needs related to securing, rehabilitating and managing a suitable biodiversity offset site for a minimum of 30 years.

- The legal mechanism, or mechanisms, in terms of which the biodiversity offset site has been/ will be secured**.**

- Any comments received from, or the outcomes of discussions with, a relevant conservation authority regarding the candidate biodiversity offset sites, the proposed mechanism for securing those sites and the proposed biodiversity offset outcomes for those sites.

If available by the end of the EIA phase, a copy of the Biodiversity Offset Management Plan must be appended to the Biodiversity Offset Report.

Where the biodiversity offset site cannot be identified before the decision-making phase, Biodiversity Offset Reports must, as a minimum, specify the following:

- That the mitigation hierarchy, including due consideration of project alternatives to avoid or minimise impacts, has been appropriately applied before considering biodiversity offsetting.

- The degree of risk that negative residual impacts cannot be offset (i.e. negative residual impacts on irreplaceable biodiversity and/or major constraints on finding suitable biodiversity offset sites to meet the offset requirements) and how the risk is to be addressed or mitigated.

- A measure of significant residual negative biodiversity impacts which must be offset.

- The applicable biodiversity offset ratios for impacted ecosystems.

- Any other considerations which are relevant to determining the size and characteristics of the biodiversity offset (for example, impacts on species of conservation concern with specific habitat requirements, impacts on ecological corridors and connectivity in the landscape, and impacts on important ecological infrastructure), and how the size of offset is to be adjusted to take these considerations into account.

- An explicit statement on the required size of the biodiversity offset to remedy the residual negative biodiversity impacts, applying the basic offset ratio and adjustments as appropriate

- The portfolio of candidate biodiversity offset sites, including the likelihood of each site's availability and feasibility.

- The required biodiversity outcomes on each of the candidate biodiversity offset sites identified in the Biodiversity Offset Report.

- The management measures that would need to be employed as part of the biodiversity offset for a defined period, for which the applicant would be responsible. Typically this period is not less than 30 years, and is longer if the impacting activity, or activities, will last beyond 30 years.

Where the relevant information is available, a Biodiversity Offset Report should in those instances, also include the following information:

- An estimate of the financial needs related to securing, rehabilitating and managing a suitable biodiversity offset site for a minimum of 30 years.

- The legal mechanism, or mechanisms, in terms of which the biodiversity offset site would be secured.

- Any comments received from, or the outcomes of discussions with, a relevant conservation authority regarding the candidate biodiversity offset sites, the proposed mechanism for securing those sites and the proposed biodiversity offset outcomes for those sites.

A biodiversity offset report may recommend specific conditions that can be considered by the CA, to give effect to the requirements, commitments, opportunities and limitations encountered during the determination of the offset, location of, and arrangements for security and management of the offset site, or offset sites, to be included in an EA as a biodiversity offset condition (see Chapter 9).

Care should be taken in the Biodiversity Offset Report to avoid including potentially sensitive information such as personal information, as contemplated in the Protection of Personal Information Act, 2013, of landowners and other third parties, or detailed property descriptions where landowners have not yet been engaged by the applicant.

"Biodiversity Offset Reports" and "Specialist Reports"

Biodiversity Offset Reports are not specialist reports as envisaged in the EIA Regulations. However, it is important that they are prepared by relevant specialists with expertise and experience in preparing biodiversity offset assessments and reports.

The same general guidance given in this Chapter applies to ecological compensation. A report to be submitted to the CA as part of a BA Report or EIA Report is called an Ecological Compensation Report.

8. Engaging with conservation authorities and commenting authorities

Applicants must engage with conservation authorities and other relevant organs of state in confirming offset requirements, locating suitable offset sites and developing offset proposals for consideration. In some instances, conservation authorities or organs of state will be involved in the implementation of biodiversity offsets, and Implementation Agreements will need to be negotiated (see 12.1 below). Reaching agreement between parties can require extensive consultation time which must be factored into timelines for the EA process.

The management authority of a protected area must be engaged if a candidate biodiversity offset site is aimed at expanding that protected area or if there are likely to be implementation, management, auditing or reporting implications for that management authority. In such cases, a letter of support or non-objection from a relevant management authority may be required by the CA on the suitability of the proposals in the biodiversity offset report.

Significant negative residual impacts on freshwater ecosystems (especially Freshwater Ecosystem Priority Areas) and/or hydrological regimes with biodiversity impacts, require careful consideration. Water-related biodiversity offsets or ecological compensation measures should be discussed with relevant staff in the Department of Water and Sanitation and a relevant catchment management agency (if one has been established for a particular region) to ensure alignment with relevant guidance and appropriate compliance with general authorisations or water use licence requirements.

Residual negative impacts on State forests, natural forests or woodlands or protected trees should be discussed with the Forestry Management Branch in the Department of Forestry, Fisheries and the Environment prior to finalising biodiversity offset or ecological compensation proposals. Conservation authorities and the management authorities for protected areas would need to consent to biodiversity offset or ecological compensation proposals where protected areas are impacted or where protected areas are the focus of mitigation measures.

The EIA report and/or the Biodiversity Offset Report should contain minutes or a record of outcomes of all meetings held with commenting and conservation authorities and relevant organs of state, as well as their comments submitted on the biodiversity offset proposals.

Engagement with conservation authorities and commenting authorities is an ongoing process, and is therefore relevant to all of the phases of the biodiversity offsetting process (please see Chapter 5.1).

Conservation authorities and commenting authorities should also be engaged in the manner contemplated in this Chapter in the case of ecological compensation.

9. Drafting biodiversity offset conditions for environmental authorisations

NEMA and the EIA Regulations make provision for EAs to be issued subject to conditions. Appropriate and carefully framed conditions are vital components of ensuring sound environmental management and to aid with compliance and enforcement. Given their complexity, biodiversity offsets often require lengthy and specific outcomes-focused conditions.

The principles of administrative justice apply when deciding on appropriate conditions. The key principles for offset conditions are that the conditions must not be vague (and must therefore be enforceable), they must be rationally related to the purpose for which the condition is being incorporated into the EA, and they must not be unreasonable.

In Chapters 9.1 to 9.8 below, guidance is given for particular elements of biodiversity offset conditions. The various elements given in Chapters 9.1 to 9.8 are not necessarily the only elements of an effective biodiversity offset condition: CAs are encouraged to apply their minds to each application to ensure that all of the elements of the biodiversity offsetting process is covered in biodiversity offset conditions.

The same guidance given in this chapter applies in the case of ecological compensation.

9.1 The biodiversity outcomes that must be achieved by a particular biodiversity offset

The most important component of a biodiversity offset condition is the one setting out the specific biodiversity outcomes that must be achieved through a biodiversity offset. This component includes the size of the relevant offset (see Chapter 7.2 above), the prescribed characteristics of the biodiversity that must be secured and managed as part of the biodiversity offset (see the like-for-like principle in Chapter 4.2 above, as well as the content of Chapters 7.3 and 7.4 above) and the specific outcomes that must be achieved in relation to a site that meets the size and biodiversity requirements.

If a biodiversity offset site has already been selected, and that site meets the requirements for a biodiversity offset under the circumstances, it would be unnecessary to specify the size and

biodiversity requirements as long as the site is described in detail (see Chapter 7 above). However, the prescribed biodiversity outcomes must still be specified.

9.2 The selection and securing of a biodiversity offset site

In instances where a biodiversity offset site has not already been selected or secured by the end of the EIA phase, the biodiversity offset conditions must require the EA holder to select a biodiversity offset site that meet the requirements for an offset under the circumstances (see Chapter 9.1 above) and to secure that site (see Chapter 7.6.1 above).

Given that a Biodiversity Offset Report includes a portfolio of candidate biodiversity offset sites, the biodiversity offset site should ideally be selected from that portfolio. It is therefore recommended that, if the CA is satisfied that candidate biodiversity offset sites in the Biodiversity Offset Report meets the requirements for a biodiversity offset under the circumstances, the CA requires the EA holder to select a biodiversity offset site from the portfolio of candidate biodiversity offset sites, and only if each option fails, can the EA holder select a biodiversity offset site that is not identified in the Biodiversity Offset Report, but still meets the requirements for a biodiversity offset under the circumstances.

In Chapter 7.6.1, it is stated that the preferred method for securing biodiversity offset sites is through the declaration of that site as a protected area in terms of NEMPAA. However, the EA holder does not have the legislative power to *declare* a protected area. That function may only be performed by the Minister responsible for the environment or a Member of the Executive Council responsible for the environment in a Province (**MEC**). The EA holder can, however, be required to submit a request for the declaration of the biodiversity offset site as a protected area to the Minister or an MEC, accompanied by required information. It is recommended that the EA holder is only given the option to pursue other means of securing the biodiversity offset site (such as the registration of a conservation servitude) if the Minister or MEC refuses to declare a protected area under the circumstances.

Even though it is recommended in this guideline that the EA holder should in most instances only be liable to implement a biodiversity offset for a 30 year period (see Chapter 9.5 below), the method of securing the site should afford the biodiversity offset site protection “in perpetuity,” or at minimum 99 years.

9.3 The obligation to prepare a Biodiversity Offset Management Plan for the biodiversity offset site

If a draft Biodiversity Offset Management Plan (see Chapter 7.6.1) was submitted to the CA at the end of the EIA phase, and the CA is satisfied that the Biodiversity Offset Management Plan would, if implemented, achieve the required biodiversity outcomes, the CA can either incorporate the terms of the Biodiversity Offset Management Plan into the EA holder’s EMPr, or require that the EA holder

enter into a Biodiversity Offset Implementation Agreement, in terms of which he, she or it undertakes to implement the terms of the Biodiversity Offset Management Plan (see Chapter 7.6.1 above).

However, if a Biodiversity Offset Management Agreement has not been submitted to the CA at the end of the EIA phase, the CA must require the EA holder to prepare a Biodiversity Offset Management Plan for the biodiversity offset site. It is strongly recommended that CAs require that Biodiversity Offset Management Plans contain the elements specified in Chapter 7.6.1 above.

If a Biodiversity Offset Management Plan is prepared in the post-application phase, it would not have to be approved by the CA. However, if it would not, if implemented, deliver the required biodiversity outcomes, compliance action can be taken against the EA holder for not complying with a condition of an EA.[37]

9.4 Entering into a Biodiversity Offset Implementation Agreement

If the terms of a Biodiversity Offset Management Plan has not been incorporated into an EMPr, the EA holder must be required to enter into a Biodiversity Offset Implementation Agreement with an implementing party, in terms of which agreement the EA holder undertakes to an implementing party to give effect to the terms of the Biodiversity Offset Management Plan. This will ensure that the specific activities required to deliver the prescribed biodiversity outcomes are enforceable against the EA holder. It would also obviate the need to make the validity period of the EA (see Chapter 9.7 below) at least as long as the EA holder is liable to implement the biodiversity offset.

When requiring an EA holder to enter into a Biodiversity Offset Implementation Agreement, care should be taken by the CA to include a "deadlock-breaking" condition. If the EA holder and implementing party are not able to come to an agreement, provision must be made for ways to break the deadlock between the two parties in order to ensure that the biodiversity offset condition is enforceable. An example of a dreadlock-breaking condition is a condition requiring that a dispute between the parties must be referred to arbitration for an arbitration award.

It is also advisable that the biodiversity offset condition specifies some essential clauses that must be included in a Biodiversity Offset Implementation Agreement. Biodiversity Offset Implementation Agreements are dealt with in more detail in Chapter 10 below.

9.5 Financial security for the biodiversity offset

In most instances, it would be most appropriate for an EA holder to make a lump sum payment of the funds estimated to be required for delivering a biodiversity offset into an appropriate financial vehicle. The rationale for such a requirement is that an EA holder may cease to exist before the lapse of the

[37] The failure to comply with a condition of an environmental authorisation is an offence in terms of section 49A of NEMA. An appropriately designated environmental management inspector may also issue a compliance notice to the EA holder for non-compliance with a condition of an environmental authorisation in terms of section 31L of NEMA.

30-year liability period. In some cases the EA holder can be required to make regular payments to the implementing party, such as when, for example, the EA holder is an organ of state or a mining company that has a mining right that authorises it to mine for at least 30 years.

When the EA holder is required to make a lump sum payment into a financial vehicle, the CA must specify the amount that must be paid and identify a financial vehicle. The amount must be equal to the estimated amount necessary for delivering the offset.

9.6 Timeframes for taking the steps in the biodiversity offset process

In most cases, the EA holder's responsibility to implement an offset will lapse after 30 years of the decision to grant EA subject to a biodiversity offset condition. However, in circumstances where the significant negative residual impacts on biodiversity are likely to endure for far longer, the period of liability can be linked to the lifespan of the activity that was authorised in the relevant EA (provided that such period exceeds 30 years). In the case of a mining operation conducted over a period in excess of 30 years, for example, an EA holder would be released from the obligation to implement a biodiversity offset only upon the receipt of a closure certificate, as contemplated in the Mineral and Petroleum Resources Development Act, 2002.

The CA could also specify the timeframes for the completion of specific steps in the biodiversity offsetting process, which are taken in the post-application phase, in the biodiversity offset condition. In other words, deadlines can be set for the selection of a biodiversity offset site, the securing of a biodiversity offset site, the completion of a Biodiversity Offset Management Plan and the conclusion of a Biodiversity Offset Implementation Agreement.

9.7 The period of validity of the environmental authorisation

The EIA Regulations[38] provide that the CA must specify when an EA lapses in the EA. The date on which it lapses is determined by when the authorised activity, or activities, are completed, or when all of the mitigation measures have been completed, whichever comes last. That does not however mean that EA containing a biodiversity offset condition must necessarily be valid for the full 30-year liability period. As a general rule, the EA must not lapse before the Biodiversity Offset Implementation Agreement (see Chapter 10) between the EA holder and the implementing party has been concluded.

9.8 Suspensive and resolutive conditions

In the context of biodiversity offsets, a suspensive condition would provide that the activities authorised in an EA may not commence until specified steps in the biodiversity offset process have been completed. Those steps may, for example, be the conclusion of a Biodiversity Offset Implementation Agreement between the EA holder and the implementing party (see Chapter 10), or

[38] See regulation 26 of the EIA Regulations.

the EA holder submitting proof of a financial guarantee of adequate financial resources to comply with the biodiversity offset condition to the CA, depending on the circumstances.

A resolutive condition in the biodiversity offset context would provide that an EA would lapse if specified steps in the biodiversity offset process have not been taken by a specific time, meaning that the activity, or activities, are no longer authorised. Resolutive conditions must be used with due regard to realistic timeframes within which the steps in the biodiversity offset process can be completed.

The relevant provisions of the EIA Regulations relating to monitoring, reporting and auditing apply for as long as the EA is valid.

10. Biodiversity Offset Implementation Agreements

When the provisions of a Biodiversity Offset Management Plan has not been included in an EMPr, those provisions must be incorporated into a Biodiversity Offset Implementation Agreement to ensure that the EA holder is legally bound to implement the specific measures required to deliver the biodiversity outcomes prescribed in a biodiversity offset condition in an EA.

Biodiversity Offset Implementation Agreements are contracts entered into between the EA holder and an implementing party in terms of which the implementing party undertakes to implement the measures specified in a Biodiversity Offset Management Plan, and the EA holder undertakes to support the implementing party financially and otherwise in so implementing that plan. A Biodiversity Offset Implementation Agreement therefore serves as a mechanism through which the outcomes and activities contained in the Biodiversity Offset Management Plan are made legally binding on, and therefore enforceable against, the EA holder.

A Biodiversity Offset Implementation Agreement must, as a minimum, contain the following clauses:

- Descriptions of the parties to the Biodiversity Offset Implementation Agreement.

- The required outcomes of the biodiversity offset which need to be achieved.

- The primary activities that need to be conducted to achieve the outcomes of the biodiversity offset as per the Biodiversity Offset Management Plan. The Biodiversity Offset Management Plan can also just be appended to the Biodiversity Offset Implementation Agreement and referred to in the agreement.

- The timeframes within which the primary activities specified in the Biodiversity Offset Management Plan must be completed to achieve the outcomes successfully.

- Descriptions of the roles and responsibilities of the parties to the agreement. As already stated, implementing party must be responsible for implementing the activities specified in the Biodiversity Offset Management Agreement, and the EA holder must be responsible for

supporting the implementing party financially or otherwise in doing so. While the implementing party will implement the Biodiversity Offset Management Plan, the EA holder must ultimately be liable for achieving the outcomes of the biodiversity offset.

- An undertaking on the part of the EA holder to make the funds necessary for the implementation of the biodiversity offset available to the implementing party. As stated in Chapter 7.6.2 above, the finances necessary for implementing an offset can be made available by means of the payment of a lump sum into a designated financial vehicle, or regular payments to the implementing party for the latter's services performed at specified milestones of the biodiversity offset implementation process. Note that it would not be necessary to include such a clause in a Biodiversity Offset Implementation Agreement if the biodiversity offset condition required the EA holder to pay a lump sum into a designated financial vehicle, and the EA holder has complied with that condition.

- When the EA holder will make regular payments (i.e. not a lump sum payment) to the implementing party at specified milestones of the biodiversity offset implementation process, the EA holder, if it is a private entity, must undertake to provide the implementing party with a guarantee of finances necessary to implement the relevant biodiversity offset. In cases where the EA holder is a subsidiary company or a local subsidiary of an offshore company, it would be ideal if the holding/parent company gives such guarantee, and/or that the holding/parent company is held jointly and severally liable for the funding of the biodiversity offset.

- A description of the structures that must be set up for monitoring the effectiveness of the activities undertaken to achieve the required outcomes, and joint decision making regarding corrective and/or adaptive steps that need to be taken, if necessary. Ideally, the relevant conservation authority should be part of that structure if it is not the implementing party.

- The auditing and reporting requirements of the EA holder: the EA holder must appoint, and pay for, an independent auditor to undertake periodic performance audits and to submit audit reports to the relevant conservation authority. For more detail on auditing, please see Chapter 12 below.

Ideally, a Biodiversity Offset Implementation Agreement should be structured in a way that incentivises early delivery of the biodiversity outcomes.

In contrast to the conditions of an EA, which can be enforced by the issuing of a compliance notice on a person who has not complied with the terms of such conditions in terms of section 31L of NEMA, the terms of a Biodiversity Offset Implementation Agreement are enforceable by one party against the other by force of the law of contract.

Agreements similar to Biodiversity Offset Implementation Agreements could be used in the context of ecological compensation, where they would be called Ecological Compensation Implementation Agreements.

11. The National Biodiversity Offset Register

It is recommended that the Department of Forestry, Fisheries and the Environment establishes, and maintains, an electronic register of biodiversity offset sites in South Africa, called the National Biodiversity Offset Register.

As soon as possible after a biodiversity offset site has been identified, it is recommended that the relevant CA records the site in the National Biodiversity Offset Register. The information in the National Biodiversity Offset Register should be updated regularly to ensure that a record is kept of the status of biodiversity offsets. The following information must be recorded in the National Biodiversity Offset Register:

- Province and municipal area
- Date on which the EA was issued
- EA number
- EA holder
- Biodiversity offset conditions and any amendments
- Date on which the Biodiversity Offset Management Plan was completed
- Date on which the biodiversity offset site was secured (i.e. the date on which the relevant protected area was declared, servitude was registered, etc.)
- Delineation of the biodiversity offset site
- Ecological description of the biodiversity offset site
- Date on which the Biodiversity Offset Implementation Agreement was concluded.

It is further recommended that a spatial layer representing the biodiversity offset sites is made publicly available online to ensure that the locations of biodiversity offset sites are known, and that they are avoided in development applications and approvals in so far as such development would prevent the EA holder and implementing party from achieving the required biodiversity offset outcomes.

12. Implementation, monitoring and auditing

A biodiversity offset must be implemented in accordance with the biodiversity offset condition(s) in theEA, read with a relevant Biodiversity Offset Implementation Agreement, or EMPr, if applicable.

That should mean that the EA holder is obligated to secure the biodiversity offset site and to implement the measures necessary to achieve the required biodiversity offset outcomes.

The EA holder or contracted implementing agent (as applicable) must track the performance of the biodiversity offset in terms of EA conditions and the required biodiversity outcomes stipulated in the Biodiversity Offset Management Plan through regular monitoring and evaluation. Where the intended outcomes are not being met and/or performance is inadequate, adaptive and corrective actions must be applied as necessary.

The independent auditor appointed by the EA holder must undertake audits on the implementation of the biodiversity offset at intervals that may be prescribed in an EA, an EMPr or a Biodiversity Offset Implementation Agreement, whichever is applicable. It is however recommended that auditing intervals are linked to other applicable audit intervals, such as reporting intervals relating to protected area management in terms of NEMPAA (when applicable). The auditor must submit its periodic audit reports to the relevant conservation authority at the end of each auditing interval. Audit reports must be made available to interested and affected parties on request to ensure transparency and public accountability.

The responsibilities of EA holders for biodiversity offsets are finite (i.e. at minimum 30 years). At the end of the period for which the EA holder is responsible, the management of the biodiversity offset site must be handed over to a suitable organ of state, person or organisation, with their consent, to ensure that its biodiversity is maintained. The process for planning for handing over the responsibility of managing the biodiversity offset site should be initiated early on in the 30-year period.

It is reiterated here that a biodiversity offset that does not meet the biodiversity offset requirements specified in an EA constitutes non-compliance with a condition of an EA. As already mentioned, the failure to comply with a condition of an EAis an offence in terms of section 49A(1)(c) of NEMA. An appropriately designated environmental management inspector could also serve a compliance notice on the holder of an EA found to be in non-compliance with a biodiversity offset condition in terms of section 31L of NEMA.

The same general guidance is applicable to the implementation, monitoring and auditing of ecological compensation.

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forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

NATIONAL BIODIVERSITY OFFSET GUIDELINE

Biodiversity offset ratios look-up table

October 2021 (First Edition)

Note: This is the table referred to in section 7.2.1 of the Draft National Biodiversity Offset Guideline under *"(1) Determining the basic offset ratio".*

Ecosystem type	Starting Ratios				RLE Ratios				Final Ratios			
	NP	PP	MP	WP	NP	PP	MP	WP	NP	PP	MP	WP
Aggeneys Gravel Vygieveld	0				0				0			
Agter-Sederberg Shrubland		0				0				0		
Agulhas Limestone Fynbos		0				30				30		
Agulhas Sand Fynbos			2				30				30	
Albany Alluvial Vegetation		6				10				10		
Albany Arid Thicket		0				0				0		
Albany Bontveld		0				0				0		
Albany Broken Veld			0				0				0	

Albany Mesic Thicket			0				0				0	
Albany Valley Thicket			0				0				0	
Albertinia Sand Fynbos		3				10				10		
Alexander Bay Coastal Duneveld	30				30				30			
Algoa Sandstone Fynbos		7				30				30		
Aliwal North Dry Grassland	0				0				0			
Amathole Mistbelt Grassland	0				0				0			
Amathole Montane Grassland		0				0				0		
Amersfoort Highveld Clay Grassland		3				0				3		
Andesite Mountain Bushveld			0				0				0	
Anenous Plateau Shrubland	0				0				0			
Atlantis Sand Fynbos		4				10				10		
Auob Duneveld				0				0				0
Barberton Montane Grassland				0				0				0
Barberton Serpentine Sourveld				0				0				0
Basotho Montane Shrubland		0				0				0		
Baviaans Valley Thicket				0				0				0
Baviaanskloof Shale Renosterveld				0				0				0
Bedford Dry Grassland	0				0				0			
Besemkaree Koppies Shrubland		0				0				0		
Bethelsdorp Bontveld	3				0				3			
Bhisho Thornveld	2				0				2			
Bloemfontein Dry Grassland		3				0				3		
Bloemfontein Karroid Shrubland			0				0				0	
Blombos Strandveld			0				0				0	
Blouputs Karroid Thornveld				0				0				0
Bokkeveld Sandstone Fynbos		0				0				0		
Boland Granite Fynbos				0				10				10
Breede Alluvium Fynbos		9				10				10		

Breede Alluvium Renosterveld	12				10				12			
Breede Quartzite Fynbos		0				0				0		
Breede Sand Fynbos		5				30				30		
Breede Shale Fynbos			0				10				10	
Breede Shale Renosterveld		2				10				10		
Buffels Mesic Thicket		0				0				0		
Buffels Valley Thicket	9				30				30			
Bushmanland Arid Grassland	0				0				0			
Bushmanland Basin Shrubland	0				0				0			
Bushmanland Inselberg Shrubland	0				0				0			
Bushmanland Sandy Grassland	0				0				0			
Bushmanland Vloere	0				0				0			
Canca Limestone Fynbos	0				0				0			
Cape Flats Dune Strandveld			1				10				10	
Cape Flats Sand Fynbos	30				30				30			
Cape Lowland Alluvial Vegetation		10				10				10		
Cape Seashore Vegetation				0				0				0
Cape Winelands Shale Fynbos				1				30				30
Carletonville Dolomite Grassland		1				0				1		
Cathedral Mopane Bushveld				0				0				0
Cederberg Sandstone Fynbos				0				0				0
Central Coastal Shale Band Vegetation				0				0				0
Central Free State Grassland		1				0				1		
Central Inland Shale Band Vegetation				0				0				0
Central Knersvlakte Vygieveld				0				0				0
Central Mountain Shale Renosterveld	0				0				0			

Central Richtersveld Mountain Shrubland				0				0				0
Central Ruens Shale Renosterveld	30				30				30			
Central Sandy Bushveld		1				0				1		
Ceres Shale Renosterveld		5				30				30		
Citrusdal Shale Renosterveld	30				30				30			
Citrusdal Vygieveld		0				0				0		
Crocodile Gorge Mountain Bushveld			0				0				0	
Crossroads Grassland Thicket			0				0				0	
De Hoop Limestone Fynbos			0				0				0	
Delagoa Lowveld			0				0				0	
Die Plate Succulent Shrubland	0				0				0			
Doringrivier Quartzite Karoo	0				0				0			
Doubledrift Karroid Thicket		0				0				0		
Drakensberg Afroalpine Heathland		0				0				0		
Drakensberg Foothill Moist Grassland		0				0				0		
Drakensberg-Amathole Afromontane Fynbos				0				0				0
Dry Coast Hinterland Grassland	8				5				8			
Dwaalboom Thornveld			0				0				0	
Dwarsberg-Swartruggens Mountain Bushveld		0				0				0		
East Griqualand Grassland		3				10				10		
Eastern Coastal Shale Band Vegetation		8				10				10		
Eastern Free State Clay Grassland	11				5				11			

Eastern Free State Sandy Grassland		3				0				3		
Eastern Gariep Plains Desert	0				0				0			
Eastern Gariep Rocky Desert	0				0				0			
Eastern Gwarrieveld		0				0				0		
Eastern Highveld Grassland		13				10				13		
Eastern Inland Shale Band Vegetation				0				0				0
Eastern Little Karoo	0				10				10			
Eastern Lower Karoo		0				0				0		
Eastern Ruens Shale Renosterveld	30				10				30			
Eastern Upper Karoo		0				0				0		
Eastern Valley Bushveld	0				0				0			
Eenriet Plains Succulent Shrubland	0				0				0			
Egoli Granite Grassland		30				30				30		
Elands Forest Thicket		0				0				0		
Elgin Shale Fynbos		30				30				30		
Elim Ferricrete Fynbos		10				10				10		
Escarpment Arid Thicket			0				0				0	
Escarpment Mesic Thicket		0				0				0		
Escarpment Valley Thicket				0				0				0
Fish Arid Thicket				0				0				0
Fish Mesic Thicket		0				0				0		
Fish Valley Thicket			0				0				0	
Frankfort Highveld Grassland	4				0				4			
Fynbos Riparian Vegetation				0				0				0
Gabbro Grassy Bushveld				0				0				0
Gamka Arid Thicket		0				0				0		
Gamka Karoo		0				0				0		

Gamka Valley Thicket	0				0				0			
Garden Route Granite Fynbos	12				30				30			
Garden Route Shale Fynbos		5				10				10		
Gauteng Shale Mountain Bushveld		0				0				0		
Geluk Grassland Thicket				0				0				0
Ghaap Plateau Vaalbosveld	0				0				0			
Goariep Mountain Succulent Shrubland				0				0				0
Gold Reef Mountain Bushveld			0				0				0	
Gordonia Duneveld			0				0				0	
Gordonia Kameeldoring Bushveld				0				0				0
Gordonia Plains Shrubland			0				0				0	
Goukamma Dune Thicket				0				0				0
Gouritz Valley Thicket		1				30				30		
Graafwater Sandstone Fynbos		0				0				0		
Grahamstown Grassland Thicket		1				0				1		
Granite Lowveld				0				0				0
Grassridge Bontveld			0				0				0	
Gravelotte Rocky Bushveld		0				0				0		
Greyton Shale Fynbos		2				30				30		
Groot Brak Dune Strandveld		5				30				30		
Grootrivier Quartzite Fynbos	0				0				0			
Hamburg Dune Thicket		0				0				0		
Hangklip Sand Fynbos			0				30				30	
Hantam Karoo	0				0				0			
Hantam Plateau Dolerite Renosterveld	0				0				0			
Hartenbos Dune Thicket		0				10				10		
Hawequas Sandstone Fynbos				0				0				0

Helskloof Canyon Desert				0				0				0
Highveld Alluvial Vegetation		0				0				0		
Hopefield Sand Fynbos		1				0				1		
Humansdorp Shale Renosterveld	10				10				10			
Income Sandy Grassland	7				10				10			
Ironwood Dry Forest				0				0				0
Ithala Quartzite Sourveld		0				0				0		
Kaalrug Mountain Bushveld			0				0				0	
Kahams Mountain Desert				0				0				0
Kalahari Karroid Shrubland	0				0				0			
Kamiesberg Granite Fynbos	0				0				0			
Kamiesberg Mountains Shrubland	0				0				0			
Kango Conglomerate Fynbos		0				0				0		
Kango Limestone Renosterveld		0				0				0		
KaNgwane Montane Grassland	10				10				10			
Karoo Escarpment Grassland			0				0				0	
Kasouga Dune Thicket			0				0				0	
Kathu Bushveld		0				0				0		
Kimberley Thornveld		0				0				0		
Klawer Sandy Shrubland	4				30				30			
Klerksdorp Thornveld		2				0				2		
Knersvlakte Dolomite Vygieveld			0				0				0	
Knersvlakte Quartz Vygieveld				0				0				0
Knersvlakte Shale Vygieveld		0				0				0		
Knysna Sand Fynbos		30				30				30		
Kobee Succulent Shrubland	0				0				0			
Koedoesberge-Moordenaars Karoo	0				0				0			
Koedoeskloof Karroid Thicket	0				0				0			
Kogelberg Sandstone Fynbos				0				30				30

Koranna-Langeberg Mountain Bushveld		0				0				0		
Kosiesberg Succulent Shrubland	0				0				0			
Kouebokkeveld Alluvium Fynbos		12				30				30		
Kouebokkeveld Shale Fynbos			2				30				30	
Kouga Grassy Sandstone Fynbos				0				0				0
Kouga Sandstone Fynbos				0				0				0
Kuruman Mountain Bushveld	0				0				0			
Kuruman Thornveld	0				0				0			
Kuruman Vaalbosveld	0				0				0			
Kwaggarug Mountain Desert				0				0				0
KwaZulu-Natal Coastal Belt Grassland	30				10				30			
KwaZulu-Natal Coastal Belt Thornveld	13				10				13			
KwaZulu-Natal Highland Thornveld		1				0				1		
KwaZulu-Natal Hinterland Thornveld	0				0				0			
KwaZulu-Natal Sandstone Sourveld	30				10				30			
Lambert's Bay Strandveld		0				30				30		
Langebaan Dune Strandveld				0				10				10
Langkloof Shale Renosterveld	17				10				17			
Lebombo Summit Sourveld	21				10				21			
Legogote Sour Bushveld		13				10				13		
Leipoldtville Sand Fynbos	12				10				12			
Lekkersing Succulent Shrubland			0				0				0	
Leolo Summit Sourveld	0				0				0			

Lesotho Highland Basalt Grassland	0				0				0			
Limpopo Ridge Bushveld				0				0				0
Limpopo Sweet Bushveld		0				0				0		
Little Karoo Quartz Vygieveld		0				0				0		
Loerie Conglomerate Fynbos		0				0				0		
Long Tom Pass Montane Grassland				0				0				0
Loskop Mountain Bushveld			0				0				0	
Loskop Thornveld		2				0				2		
Lourensford Alluvium Fynbos		30				30				30		
Low Escarpment Moist Grassland		0				0				0		
Lower Gariep Alluvial Vegetation		1				0				1		
Lower Gariep Broken Veld		0				0				0		
Lowveld Riverine Forest				0				5				5
Lowveld Rugged Mopaneveld				0				0				0
Lydenburg Thornveld		0				0				0		
Mabela Sandy Grassland	18				30				30			
Madikwe Dolomite Bushveld				0				0				0
Mafikeng Bushveld	2				0				2			
Makatini Clay Thicket				0				0				0
Makhado Sweet Bushveld		1				0				1		
Makuleke Sandy Bushveld				0				0				0
Malelane Mountain Bushveld				0				0				0
Mamabolo Mountain Bushveld		0				0				0		
Mangrove Forest				0				0				0
Maputaland Coastal Belt			4				10				10	
Maputaland Pallid Sandy Bushveld			0				0				0	
Maputaland Wooded Grassland			4				10				10	

Marikana Thornveld		9				10				10		
Matjiesfontein Quartzite Fynbos		0				0				0		
Matjiesfontein Shale Fynbos				0				0				0
Matjiesfontein Shale Renosterveld		0				0				0		
Midlands Mistbelt Grassland		14				10				14		
Moist Coast Hinterland Grassland	14				5				14			
Molopo Bushveld		0				0				0		
Mons Ruber Fynbos Thicket	0				0				0			
Montagu Shale Fynbos		0				0				0		
Montagu Shale Renosterveld		0				0				0		
Mooi River Highland Grassland		2				10				10		
Moot Plains Bushveld		0				0				0		
Mopane Basalt Shrubland				0				0				0
Mopane Gabbro Shrubland				0				0				0
Mossel Bay Shale Renosterveld	12				30				30			
Motherwell Karroid Thicket	10				30				30			
Mthatha Moist Grassland	11				10				11			
Muscadel Riviere	12				10				12			
Musina Mopane Bushveld			0				0				0	
Muzi Palm Veld and Wooded Grassland		0				30				30		
Namaqualand Arid Grassland				0				0				0
Namaqualand Blomveld		0				0				0		
Namaqualand Coastal Duneveld			0				0				0	
Namaqualand Granite Renosterveld	0				0				0			
Namaqualand Heuweltjie Strandveld		0				0				0		
Namaqualand Heuweltjieveld		0				0				0		

Namaqualand Inland Duneveld		0				0				0		
Namaqualand Klipkoppe Shrubland		0				0				0		
Namaqualand Riviere		0				0				0		
Namaqualand Sand Fynbos		0				0				0		
Namaqualand Seashore Vegetation		0				30				30		
Namaqualand Shale Shrubland	0				0				0			
Namaqualand Spinescent Grassland		0				0				0		
Namaqualand Strandveld		0				0				0		
Namib Lichen Fields	0				30				30			
Namib Seashore Vegetation	30				30				30			
Nanaga Savanna Thicket			0				0				0	
Nardouw Sandstone Fynbos	1				30				30			
Ngongoni Veld	11				5				11			
Nieuwoudtville Shale Renosterveld		5				30				30		
Nieuwoudtville-Roggeveld Dolerite Renosterveld		0				0				0		
Noms Mountain Desert				0				0				0
Norite Koppies Bushveld		0				0				0		
North Hex Sandstone Fynbos				0				0				0
North Kammanassie Sandstone Fynbos				0				0				0
North Langeberg Sandstone Fynbos				0				0				0
North Outeniqua Sandstone Fynbos		0				0				0		

North Rooiberg Sandstone Fynbos				0				0				0
North Sonderend Sandstone Fynbos				0				0				0
North Swartberg Sandstone Fynbos				0				0				0
Northern Afrotemperate Forest				0				0				0
Northern Coastal Forest				0				0				0
Northern Drakensberg Highland Grassland				0				0				0
Northern Escarpment Afromontane Fynbos				0				0				0
Northern Escarpment Dolomite Grassland		9				10				10		
Northern Escarpment Quartzite Sourveld			1				0				1	
Northern Free State Shrubland		0				0				0		
Northern Inland Shale Band Vegetation				0				0				0
Northern Knersvlakte Vygieveld			0				0				0	
Northern KwaZulu-Natal Moist Grassland		2				5				5		
Northern Lebombo Bushveld				0				0				0
Northern Mistbelt Forest				0				0				0
Northern Nababiepsberge Mountain Desert	0				0				0			
Northern Richtersveld Scorpionstailveld				0				0				0
Northern Richtersveld Yellow Duneveld	0				0				0			

Northern Upper Karoo	0				0				0			
Northern Zululand Mistbelt Grassland		3				10				10		
Northern Zululand Sourveld		0				0				0		
Nossob Bushveld				0				0				0
Nwambyia-Pumbe Sandy Bushveld				0				0				0
Ohrigstad Mountain Bushveld			0				0				0	
Olifants Sandstone Fynbos				0				0				0
Olifantshoek Plains Thornveld		0				0				0		
Oograbies Plains Sandy Grassland	0				0				0			
Oudtshoorn Karroid Thicket				0				0				0
Overberg Dune Strandveld				0				10				10
Overberg Sandstone Fynbos		0				10				10		
Paulpietersburg Moist Grassland		4				10				10		
Peninsula Granite Fynbos			5				30				30	
Peninsula Sandstone Fynbos				0				30				30
Peninsula Shale Fynbos				0				5				5
Peninsula Shale Renosterveld		30				30				30		
Phalaborwa-Timbavati Mopaneveld				0				0				0
Piketberg Quartz Succulent Shrubland	30				30				30			
Piketberg Sandstone Fynbos		0				0				0		
Pilanesberg Mountain Bushveld				0				0				0
Platbakkies Succulent Shrubland	0				0				0			
Polokwane Plateau Bushveld		2				0				2		
Pondoland-Ugu Sandstone Coastal Sourveld		4				5				5		
Postmasburg Thornveld	0				0				0			

Potberg Ferricrete Fynbos		4				30				30		
Potberg Sandstone Fynbos				0				0				0
Poung Dolomite Mountain Bushveld			0				0				0	
Pretoriuskop Sour Bushveld				0				0				0
Prince Albert Succulent Karoo		0				0				0		
Queenstown Thornveld	0				0				0			
Rand Highveld Grassland		6				5				6		
Richtersberg Mountain Desert				0				0				0
Richtersveld Coastal Duneveld		0				30				30		
Richtersveld Red Duneveld		0				0				0		
Richtersveld Sandy Coastal Scorpionstailveld	0				0				0			
Richtersveld Sheet Wash Desert				0				0				0
Riethuis-Wallekraal Quartz Vygieveld				0				0				0
Robertson Granite Fynbos				0				0				0
Robertson Granite Renosterveld				0				0				0
Robertson Karoo		0				0				0		
Roggeveld Karoo	0				0				0			
Roggeveld Shale Renosterveld		0				0				0		
Roodeberg Bushveld		0				0				0		
Rooiberg Quartz Vygieveld				0				0				0
Rosyntjieberg Succulent Shrubland				0				0				0
Ruens Silcrete Renosterveld	30				10				30			
Saldanha Flats Strandveld		10				10				10		
Saldanha Granite Strandveld		30				30				30		
Saldanha Limestone Strandveld			0				30				30	
Saltaire Karroid Thicket		0				0				0		

Sand Forest				0				0				0
Sardinia Forest Thicket	2				0				2			
Scarp Forest			0				0				0	
Schmidtsdrif Thornveld		0				0				0		
Schweizer-Reneke Bushveld		4				5				5		
Sekhukhune Montane Grassland	2				0				2			
Sekhukhune Mountain Bushveld		0				0				0		
Sekhukhune Plains Bushveld		5				10				10		
Senqu Montane Shrubland	0				0				0			
South Eastern Coastal Thornveld		2				0				2		
South Hex Sandstone Fynbos				0				0				0
South Kammanassie Sandstone Fynbos				0				0				0
South Langeberg Sandstone Fynbos				0				0				0
South Outeniqua Sandstone Fynbos				0				0				0
South Rooiberg Sandstone Fynbos				0				0				0
South Sonderend Sandstone Fynbos				0				30				30
South Swartberg Sandstone Fynbos				0				0				0
Southern Afrotemperate Forest				0				0				0
Southern Cape Dune Fynbos		0				0				0		
Southern Coastal Forest				0				0				0
Southern Drakensberg Highland Grassland		0				0				0		
Southern Kalahari Mekgacha			0				0				0	
Southern Karoo Riviere		0				0				0		

Southern KwaZulu-Natal Moist Grassland		6				10				10		
Southern Lebombo Bushveld		0				0				0		
Southern Mistbelt Forest			0				0				0	
Southern Nababiepsberge Mountain Desert	0				0				0			
Southern Namaqualand Quartzite Klipkoppe Shrubland		0				0				0		
Southern Richtersveld Inselberg Shrubland	0				0				0			
Southern Richtersveld Scorpionstailveld	0				0				0			
Southern Richtersveld Yellow Duneveld			0				0				0	
Soutpansberg Mountain Bushveld		0				0				0		
Soutpansberg Summit Sourveld				0				0				0
Soweto Highveld Grassland	12				5				12			
Springbokvlakte Thornveld		6				5				6		
St Francis Dune Thicket		0				0				0		
Steenkampsberg Montane Grassland		0				0				0		
Stella Bushveld	3				0				3			
Steytlerville Karoo	0				0				0			
Stinkfonteinberge Eastern Apron Shrubland				0				0				0
Stinkfonteinberge Quartzite Fynbos				0				0				0
Stormberg Plateau Grassland	0				0				0			
Strydpoort Summit Sourveld				0				0				0
Subtropical Alluvial Vegetation				0				0				0

Subtropical Dune Thicket				0				0				0
Subtropical Seashore Vegetation				0				0				0
Sundays Arid Thicket			0				5				5	
Sundays Mesic Thicket				0				0				0
Sundays Valley Thicket			0				0				0	
Suurberg Quartzite Fynbos			0				0				0	
Suurberg Shale Fynbos				0				0				0
Swamp Forest				0				0				0
Swartberg Altimontane Sandstone Fynbos				0				0				0
Swartberg Shale Fynbos		0				0				0		
Swartberg Shale Renosterveld		0				0				0		
Swartland Alluvium Fynbos		12				10				12		
Swartland Alluvium Renosterveld	2				5				5			
Swartland Granite Renosterveld	30				10				30			
Swartland Shale Renosterveld	30				30				30			
Swartland Silcrete Renosterveld	30				30				30			
Swartruggens Quartzite Fynbos			0				0				0	
Swartruggens Quartzite Karoo			0				0				0	
Swaziland Sour Bushveld		0				0				0		
Swellendam Silcrete Fynbos		5				10				10		
Tanqua Escarpment Shrubland			0				0				0	
Tanqua Karoo			0				0				0	
Tanqua Wash Riviere			0				0				0	
Tarkastad Montane Shrubland		0				0				0		
Tatasberg Mountain Succulent Shrubland				0				0				0
Tembe Sandy Bushveld			0				0				0	
Thorndale Forest Thicket		0				0				0		
Thukela Thornveld		0				0				0		

Thukela Valley Bushveld	0				0				0			
Transkei Coastal Belt		3				10				10		
Tsakane Clay Grassland		10				10				10		
Tsende Mopaneveld				0				0				0
Tshokwane-Hlane Basalt Lowveld				0				0				0
Tsitsikamma Sandstone Fynbos				0				0				0
Tsomo Grassland	2				0				2			
Tzaneen Sour Bushveld		3				10				10		
uKhahlamba Basalt Grassland				0				0				0
Umdaus Mountains Succulent Shrubland	0				0				0			
Umtiza Forest Thicket			0				30				30	
Uniondale Shale Renosterveld		0				0				0		
Upper Annisvlakte Succulent Shrubland			0				0				0	
Upper Gariep Alluvial Vegetation		0				0				0		
Upper Karoo Hardeveld		0				0				0		
Vaal Reefs Dolomite Sinkhole Woodland	0				0				0			
Vaalbos Rocky Shrubland		0				0				0		
Vaal-Vet Sandy Grassland	30				10				30			
Vanrhynsdorp Gannabosveld	0				0				0			
Vanrhynsdorp Shale Renosterveld		0				0				0		
Vanstadens Forest Thicket				0				0				0
VhaVenda Miombo				0				0				0
Vredefort Dome Granite Grassland	8				30				30			
Vyftienmyl se Berge Succulent Shrubland				0				0				0

Wakkerstroom Montane Grassland		0				0				0		
Waterberg Mountain Bushveld			0				0				0	
Waterberg-Magaliesberg Summit Sourveld				0				0				0
Western Altimontane Sandstone Fynbos				0				0				0
Western Bushmanland Klipveld	0				0				0			
Western Coastal Shale Band Vegetation				0				10				10
Western Free State Clay Grassland		0				0				0		
Western Gariep Hills Desert		0				0				0		
Western Gariep Lowland Desert	0				0				0			
Western Gariep Plains Desert	0				0				0			
Western Gwarrieveld		0				0				0		
Western Highveld Sandy Grassland	30				10				30			
Western Little Karoo			0				0				0	
Western Maputaland Clay Bushveld			4				10				10	
Western Maputaland Sandy Bushveld				0				30				30
Western Ruens Shale Renosterveld	30				30				30			
Western Sandy Bushveld				0				0				0
Western Upper Karoo	0				0				0			
Willowmore Gwarrieveld	0				0				0			
Winburg Grassy Shrubland		0				0				0		
Winterhoek Sandstone Fynbos				0				0				0

Wolkberg Dolomite Grassland				0				0				0
Woodbush Granite Grassland		30				30				30		
Xhariep Karroid Grassland		0				0				0		
Zastron Moist Grassland	0				0				0			
Zeerust Thornveld		0				0				0		
Zululand Coastal Thornveld	30				30				30			
Zululand Lowveld			0				0				0	