

Best Practice Guidelines for Implementing the Mitigation Hierarchy in South Africa

*Guidelines on implementing the mitigation hierarchy in impact assessment
practice in South Africa*

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MITIGATION HIERARCHY GUIDELINE

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Project background

This guideline has been developed through a collaboration between the Endangered Wildlife Trust, BirdLife South Africa and Enviro-Insight, with funding from Rand Merchant Bank; and is intended to support improved implementation of the mitigation hierarchy by specialists, environmental assessment practitioners and developers. It is further intended to assist competent authorities to better assess adherence to the mitigation hierarchy in projects seeking environmental authorisation and to set robust licensing conditions.

It is envisioned that this document will be further refined in the future. The most recent version of guideline, as well as a series of training lectures on the mitigation hierarchy, can be accessed at: <https://ewt.org.za/resources/mitigation-hierarchy/>

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Table of Contents

Abbreviations and acronyms	vi
Definitions.....	vii
1. Introduction	1
2. Background.....	2
3. Legislative framework	3
4. Outcome statement and principles.....	6
4.1 Desired outcomes of the mitigation hierarchy	6
4.2 Principles for applying the mitigation hierarchy.....	7
5. Applying the mitigation hierarchy in the environmental authorisation application process.....	11
5.1 Applying the mitigation hierarchy in the EA application process.....	13
5.1.1 Defining the Project Area of Influence	15
5.1.2 Early identification of valued environmental components and determining the likelihood of significant or unacceptable negative impacts	15
5.1.3 Early avoidance of likely unacceptable negative impacts or ‘fatal flaws’	16
5.1.4 Detailed assessment of impacts of a proposed project and evaluation of impact significance	17
5.1.5 Avoiding potentially significant negative impacts	17
5.1.6 Minimising negative impacts	17
5.1.7 Rehabilitating areas which are negatively affected by development	18
5.1.8 Determining and measuring residual negative impacts	18
5.1.9 Incorporating mitigation measures into the EMPr and/or closure plan	18
5.1.10 Designing and planning implementation of biodiversity offsets and compensation	19
5.2 Engaging with authorities and other interested and affected parties in the EIA process	19
5.3 The responsibilities of the different role-players in applying the mitigation hierarchy	19
6. The mitigation hierarchy and impact significance	21
6.1 Impact significance.....	23
6.1.1 Evaluating significance against Thresholds of Concern and Limits of Acceptable Change	24
6.1.2 Evaluating significance using set criteria	28
6.2 Avoiding highly sensitive, unique or irreplaceable resources	30
6.2.1 Spatial avoidance	31
6.2.2 Temporal avoidance	32
6.2.3 Design-based avoidance	32

6.3	Minimising impacts	32
6.3.1	Physical controls	33
6.3.2	Operational controls	33
6.3.3	Abatement controls	34
6.4	Rehabilitation and restoration	34
6.5	Measuring residual negative impacts	35
6.6	Designing adequate biodiversity offsets or compensation	36
6.7	Making trade-offs within the mitigation hierarchy	36
7.	Mitigation measures in the EIA report.....	37
8.	Capturing mitigation measures in plans and programmes.....	39
9.	Decision making	40
9.1	Recommendations for decision making.....	40
9.2	Decision making by the Competent Authority.....	41
10.	Drafting mitigation conditions for environmental authorisations.....	41
10.1	The outcomes that must be achieved by particular mitigation measures	42
10.2	Suspensive or resolute conditions	42
10.3	Financial provision and assurance for mitigation	43
10.4	The period of validity of the environmental authorisation	43
11.	Implementation, monitoring and auditing.....	43
	References	44

Figures, tables and text boxes

Figures

Figure 1: The mitigation hierarchy

Figure 2: Applying different steps in the mitigation hierarchy at different phases of the EA application process

Figure 3: Implications of different steps in the mitigation hierarchy

Figure 4: Determining the significance of impacts in the absence of ToC, LAC

Tables

Table 1: Thresholds of Concern, impact significance, and the mitigation hierarchy

Table 2: Determining the Consequence rating of an impact

Table 3: Using Consequence and Likelihood to determine significance

Text boxes

Box 1: Thresholds of Concern and Limit of Acceptable Change

- Box 2: The mitigation hierarchy, biodiversity offsets, compensation and trade-offs
- Box 3: Applying the mitigation hierarchy and engaging from the pre-application stage
- Box 4: Valued environmental components
- Box 5: Cumulative impacts
- Box 6: Mitigation requirements in relation to Site Ecological Importance
- Box 7: Irreplaceable loss of resources and irreversible impacts
- Box 8: Reducing uncertainty
- Box 9: Search, rescue and translocation

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Abbreviations and acronyms

CA	Competent authority	LAC	Limit(s) of Acceptable Change
CBA	Critical Biodiversity Area	NBA	National Biodiversity Assessment (2018)
CBO	Community-based organisation	NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
Constitution	Constitution of the Republic of South Africa, 1996	NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
DFFE	Department of Forestry, Fisheries and the Environment	NEMPAA	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)
EA	Environmental authorisation	NGO	Non-government organisation
EAP	Environmental assessment practitioner	PAOI	Project Area of Influence
EIA	Environmental impact assessment, and includes basic assessment, and scoping and environmental impact assessment	SANBI	South African National Biodiversity Institute
EIA Regulations	Environmental Impact Assessment Regulations, 2014	SEI	Site Ecological Importance
EMPr	Environmental management programme	ToC	Threshold(s) of Concern
ESA	Ecological Support Area	ToR	Terms of Reference
I&AP	Interested and affected party	VEC	Valued environmental component

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 –

“activity” refers to an activity identified in any notice published by the Minister responsible for environmental affairs or the Member of the Executive Council responsible for environmental affairs in terms of section 24D of NEMA as a listed or specified activity;

“alternative” in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to the (a) property on which, or location where the activity is proposed to be undertaken; (b) type of activity to be undertaken; (c) design or layout of the activity; (d) technology to be used in the activity; or (e) operational aspects of the activity; and includes the option of not implementing the activity;

“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” 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;

“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 spatial plan” means a spatial plan that identifies one or more categories of biodiversity priority area, using the principles and methods of systematic biodiversity planning;

“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;

“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);

“compensation” means the act of making up or recompensing for loss, damage or injury by providing substitute resources to remedy that harm. Biodiversity offsets are a subset of compensation;

“conservation area” means an area with a conservation designation that is effective at achieving *in-situ* conservation of biodiversity outside of formally protected areas¹ (see “protected area” definition) in the long term;

“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 by the protected area network.² CBAs are identified in spatial biodiversity plans, such as CBA Maps and bioregional plans, which can be found at <http://biodiversityadvisor.sanbi.org>;

“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;

“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;

“cumulative” impacts are the past, current and reasonably foreseeable future impacts of an activity (or activities), considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities. Simply stated, they are the combined negative impacts over time or in space of the proposed activity on the same environmental

¹ Chapter 2 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) provides for several types of protected area in South Africa, including national parks, special nature reserves, nature reserves, marine protected areas and protected environments. Forest nature reserves, forest wilderness areas, specially protected forests, mountain catchment areas and world heritage sites are declared in terms of other legislation and recognised by the Protected Areas Act. All have formal status as protected areas.

² Please note that some provinces, such as the Western Cape Province, use different methodologies for setting their biodiversity targets in systematic biodiversity plans.

receptor as current and foreseeable future activities. They may seem to be insignificant when seen in isolation, but collectively they have a significant effect;

“development” refers to a proposed policy, plan, programme, process or project which involves one or more listed or specified activities in terms of sections 24(1) and 24(2) of NEMA, for which the potential consequences, or impacts on the environment must be considered, investigated, assessed and reported on to the competent authority. ‘Development’ in this guideline encompasses all listed or specified activities (which trigger the requirement for an environmental authorisation), as well as associated infrastructure, structures and other actions necessary to the development;

“duration of impact” is the length of time the impact will last, ranging from short term to permanent;

“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”;

“ecological infrastructure” means naturally functioning ecosystems which 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. clean 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. ESAs can be found in biodiversity plans, including CBA Maps and biodiversity spatial plans, which are available at <http://biodiversityadvisor.sanbi.org>;

“ecosystem” means an assemblage of living organisms, the interactions between them and their physical environment;

“ecosystem services” means services and benefits to people and the economy provided by ecosystems, often classified into three broad categories: provisioning services (e.g. food and clean water), regulating services (e.g. erosion and flood control) and cultural services (e.g. recreational hiking);

“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 the ecosystem type that remains in good ecological condition relative to a series of biodiversity thresholds. The threat status of the different ecosystem types in South Africa can be found in 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**). However, if a more recent ecosystem assessment has been conducted (such as the one that was done as part of the National Biodiversity Assessment (NBA)), then that ecosystem assessment should also be considered;

“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;

“extent of impact” means the spatial scale of the impact under consideration, as a proportion of the spatial range of a receptor. Impacts can be site specific, localised, or received at a provincial, national, or international scale. Importantly, where the impacted receptor is found only in South Africa, the ‘extent’ of any impact that affects the entire spatial range of the receptor is considered to be global;

“fatal flaw” means a major defect or deficiency in a project proposal which should result in environmental authorisation being refused, and from a biodiversity perspective, a residual negative impact that would have a Very High significance rating³ (see Chapter 6);

“impact” includes direct impact, indirect impact and cumulative impact;

“indirect impacts” are impacts which are not a direct result of a development, can manifest later in time and/or at a different place from the development site, and often following complex impact pathways. They are sometimes referred to as ‘secondary impacts’;

“induced impacts” are a subset of indirect impacts. They result from activities that occur in response to socioeconomic opportunities associated with new development: e.g. giving access to previously remote areas and untapped resources, potential employment, and/or enterprises to service new settlements⁴;

an **“irreversible”** impact means one which arguably cannot be reversed in time (e.g. permanent decrease in area of a specific vegetation type through urban expansion). Some, but not all, irreversible impacts will lead to irreplaceable loss of resources⁵, depending on their value, availability and extent. They may, or may not, be acceptable to society as a whole and/or affected communities in terms of their current values;

an **“irreplaceable loss of resources”** refers to the loss of a valued environmental component which, when destroyed or irreversibly changed, cannot be replaced or re-created (e.g. a population of a species, a species, loss of an ecosystem or a reduction in the extent of an ecosystem below biodiversity

³ A proposed project should be considered fatally flawed where it would result in irreplaceable loss of biodiversity or ecological infrastructure, or other unique or indispensable resources.

⁴ See further: IAIA Fastips, Induced Impacts:
http://www.jsia.net/6_assessment/fastips/Fastips_17%20Induced%20Impacts.pdf.

⁵ ‘Resources’ as used in this guideline refers to natural (ecological and biodiversity) resources.

targets), and/or there are no acceptable, affordable or accessible substitutes for affected parties. An impact leading to irreplaceable loss of resources is, by definition, irreversible;

“Limit(s) of Acceptable Change” (LAC) is the limit of variation in environmental quality or a receptor which is considered to be acceptable or tolerable by affected human communities and human society as a whole (whichever is most conservative) in a particular context and, if exceeded, is the point at which any impact becomes unacceptable;

“magnitude” of impact, also referred to as ‘intensity’, is the severity of impact on a receptor at a defined scale. It is influenced by the sensitivity of the receptor and its quality/condition, its importance to interested and affected parties (I&APs), and its vulnerability and resilience to impacts;

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

“mitigation plan” refers to an environmental management programme (EMPr), closure plan, biodiversity offset plan, or other applicable plan or programme intended to guide the implementation of measures to avoid, minimise, rehabilitate or restore, offset or compensate, and/or remedy any latent negative environmental impacts of a proposed development;

“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;

“Project Area of Influence” (PAOI) means the area, with its associated ecosystems, species and their habitats, ecological infrastructure, and ecological processes and functions, which could be affected by the proposed development (including associated activities, infrastructure and structures);

“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**);

“range-restricted” or **“restricted range”** means the presence of terrestrial species of flora, vertebrate and invertebrate fauna with a global population extent of occurrence of 10 000 km² or less;

“receptors” refers to those environmental components (e.g. vegetation, species of flora or fauna, ecosystems or natural landscapes) which are likely to be negatively affected, either directly or indirectly, by proposed development within the PAOI;

“rehabilitation” means returning a disturbed, degraded or destroyed ecosystem to sustainable, productive use (but not its original natural condition), 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 (including to prevent) and minimise negative impacts, and/or rehabilitate any impacted areas within the prescribed timeframes specified for the completion of the rehabilitation in the environmental authorisation;

“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;

“significance” determines whether a negative impact or risk is sufficiently important that it should be avoided, minimised or otherwise mitigated, using benchmarks or thresholds beyond which such an impact could be considered unacceptable in the environmental and social context of a project;

“significant impact” means an impact that may have a notable effect on one or more aspects of the environment⁶ or may result in non-compliance with accepted environmental quality standards, thresholds or targets, and is determined through rating the effects of an impact on receptors based on criteria such as extent, duration, magnitude and probability of occurrence;

“Strategic Water Source Areas” means areas of land that supply a disproportionate (i.e. relatively large) quantity of mean annual surface water runoff in relation to their size (surface area) and so are considered nationally important; and/or have high groundwater recharge where the groundwater forms a nationally important resource;

“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;

“Thresholds of Concern” (ToC) are limits of acceptability along a continuum of change in specific environmental indicators or values (e.g. deterioration in water quality) for an environmental impact which, if exceeded, cause that impact to take on far greater significance;

“trade-offs” occur when two or more conflicting objectives are being pursued in a situation where natural resources are limited, and result in a specific negative outcome for one attribute being exchanged for a positive outcome for another attribute in time and/or space (e.g. loss of indigenous forest area to enable commercial food production);

⁶ Referred to in this guideline as ‘receptors’, as per the definition provided.

“valued environmental components” (VEC) are elements of the natural and human environment which are identified as having scientific, social, cultural, heritage, economic, archaeological, palaeontological or aesthetic importance.

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1. Introduction

The purpose of this guideline is to communicate basic principles and an optimum approach for applying the mitigation hierarchy when assessing the impacts of a proposed development and demonstrating due consideration of alternatives in the context of an application for environmental authorisation (**EA**) within South Africa. The main objective of applying the mitigation hierarchy is to prevent or limit negative impacts of development on the environment.

This guideline is therefore applicable to applications for EAs in terms of section 24 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (**NEMA**). However, it can also be used to inform other administrative processes that similarly require due consideration (including mitigation) of environmental impacts⁷, including, *inter alia*, 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 (Act No. 36 of 1998) and the National Forests Act, 1998 (Act No. 84 of 1998), and applications for development rights in terms of the Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2003).

This guideline is applicable in all environments. The emphasis is on mitigating negative impacts on the natural environment, namely biodiversity, ecosystems and ecosystem services (or nature's contribution to people), given its role in supporting people's lives, livelihoods, health, and wellbeing. Guidance on social and heritage considerations is given where social or heritage impacts are linked to the natural environment (e.g. where nature-based livelihoods, activities or cultural resources are affected). The guideline is intended to supplement, *inter alia*, the National Biodiversity Offset Guideline⁸, the Species Environmental Assessment Guideline⁹, and the Birds and Wind Energy Best Practice Guidelines¹⁰. It should be read in conjunction with other relevant guidance documents, as well as NEMA, the Environmental Impact Assessment Regulations, 2014 (**EIA Regulations**), the terrestrial plant and animal species protocols¹¹, avifaunal protocol for onshore wind and photovoltaic developments, and terrestrial and aquatic biodiversity protocols¹².

The guideline is intended for competent authorities (**CAs**), environmental assessment practitioners (**EAPs**), specialists in environmental assessment processes, commenting authorities, statutory conservation authorities, interested and affected parties (**I&APs**) including non-government

⁷ It is important to note in this regard that, through their inclusion in NEMA's section 2 principles, the avoidance, minimisation, and remedy of negative impacts on biodiversity are considerations applicable to the actions of all organs of state that may significantly affect the environment, and guide the application of all other environmental statutes. Where this guideline is used in the context of regulatory processes other than the EIA Regulations, any differences between those regulations and the law governing the regulatory process in question must, of course, be taken into consideration.

⁸ At time of writing, this guideline was soon to be gazetted.

⁹ SANBI 2020.

¹⁰ Jenkins *et al* 2015.

¹¹ 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.

¹² 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.

organisations (**NGOs**) and community-based organisations (**CBOs**), prospective developers, applicants for - and holders of - EAs (or other authorisations or licences), and financial institutions funding proposed projects that require EA and may have negative impacts on biodiversity and/or the environment.

2. Background

South Africa is one of the most biologically diverse countries in the world. It is also, however, a country with high levels of inequality, poverty, and unemployment, with the result that economic and social development are high priorities on the national agenda.

Conservation of the natural environment is recognised as crucial not only for satisfying South Africa's international biodiversity commitments (such as those specified in the Kunming-Montreal Global Biodiversity Framework¹³), but also for achieving the goals and objectives articulated in the United Nations' 2030 Sustainable Development Goals and the African Union's Agenda 2063. A well-functioning environment underpinned by biological diversity is fundamental to the livelihoods, health and wellbeing of people, as well as sustainable economic activity and socio-economic upliftment. According to the 2018 National Biodiversity Assessment (**NBA**)¹⁴, South Africa's biodiversity is being gradually eroded and degraded. The country's primary development plan, the National Development Plan (2012-2030)¹⁵, recognises that the maintenance of ecosystem services "*is fundamental to achieving South Africa's social and economic development objectives*", but that South Africa is currently in "ecological deficit"¹⁶. The loss of biodiversity has a wide range of negative socio-economic impacts (such as negative impacts on health, loss of livelihoods and the absence of protection against natural disasters or hazards).

The NBA states that South Africa's biodiversity assets and ecological infrastructure contribute significantly towards meeting national development priorities. It highlights that "*[t]he primary goals of reducing poverty and inequality in South Africa through stimulating the economy, improving employment figures, building an inclusive rural economy and providing affordable health care; all rely to some extent on biodiversity, healthy ecosystems, resilient ecological infrastructure and environmental sustainability.*" Ecosystem services are the flow of benefits delivered by ecological infrastructure which support lives and livelihoods, and increase our resilience to climate change. They include healthy mountain catchments, rivers and wetlands which supply life-supporting water, healthy productive soils which enable food production, grasslands for grazing, plants and animals for medicines and food, and areas of natural heritage value which underpin tourism and recreation. Ecosystem services are essential for human wellbeing and support economic activities. Loss of, or deterioration in, ecological infrastructure often necessitates expensive remediation by the State. The Global Biodiversity Framework's goals and targets explicitly recognise the need to maintain, enhance

¹³ <https://www.cbd.int/article/cop15-final-text-kunming-montreal-gbf-221222>

¹⁴ SANBI 2019.

¹⁵ National Planning Commission 2012.

¹⁶ An ecological deficit occurs when the population of a country exceeds the biocapacity of the area available to that population; i.e. its residents demand more from nature than the country's ecosystems can provide or sustain.

and, where they are declining, restore nature's contributions to people (including ecosystem functions and services), to support the achievement of sustainable development.

The concept of applying a hierarchy of mitigation effort is embedded in section 2 of NEMA¹⁷ (the national environmental management principles): impacts should be avoided, and if they cannot altogether be avoided, they should be minimised and remedied. The term 'remedy' encompasses rehabilitation/restoration and compensation/offsets. The mitigation hierarchy therefore has four distinct steps, the first two being preventative in nature (avoidance and minimisation) and the second two being used to remedy remaining impacts (rehabilitation/restoration and compensation/offsets).

In addition to being provided for in South Africa's environmental legislation, a hierarchical approach to impact mitigation is called for by several biodiversity-related treaties to which South Africa is a Contracting Party¹⁸. Moreover, many international financial institutions that subscribe to the Equator Principles¹⁹ require infrastructure projects to apply the mitigation hierarchy to qualify for funding.

Rigorous application of the mitigation hierarchy, with evidence that the sequential steps in this hierarchy have been followed, can expedite regulatory processes, simultaneously avoiding delays in EA or challenges to the EA application. Furthermore, applying the mitigation hierarchy correctly can help to reduce project costs and the duration of responsibility and liability for mitigation and management, and minimise reputational risks to the applicant/authorisation holder.

To date, the focus of mitigation in most impact assessments in South Africa has been on reducing impacts, rather than avoiding them. Also, while rehabilitation or restoration of impacted areas is often promised, the success of efforts to rehabilitate or restore ecological infrastructure and biodiversity, and associated ecosystem services, has been poor. The use of compensation and biodiversity offsets to remedy significant impacts which remain after other forms of mitigation have been applied is growing. However, their use has not always been consistent or defensible.

This guideline intends to strengthen application of the full mitigation hierarchy in impact assessment practice in South Africa, to benefit biodiversity, ecological infrastructure, and people and developments which depend on the reliable delivery of ecosystem services.

3. Legislative framework

Section 24 of the Constitution of the Republic of South Africa, 1996, gives everyone in this country the right to an environment that is not harmful to their health or wellbeing, and to have the environment protected, through reasonable legislative and other measures. Such measures must be aimed at preventing pollution and ecological degradation; promoting conservation; and securing *ecologically*

¹⁷ Section 2(4)(a) of NEMA.

¹⁸ e.g. the Convention on Biological Diversity, Ramsar Convention on Wetlands of International Importance, Convention on the Conservation of Migratory Species of Wild Animals, and Agreement on the Conservation of African-Eurasian Migratory Waterbirds.

¹⁹ e.g. International Finance Corporation (IFC)'s Performance Standards, World Bank's Environmental and Social Standards, amongst others.

sustainable development and use of natural resources, while promoting justifiable economic and social development. NEMA, and the EIA Regulations introduced thereunder, is one of the legislative measures to advance the environmental right.

A core objective of integrated environmental management in South Africa²⁰ is the identification and mitigation of negative environmental impacts. References to impact mitigation are found throughout Chapter 5 of NEMA, the EIA Regulations and associated protocols and reporting requirements.

The **national environmental management principles** ('NEMA principles') guide all environmental decision making by organs of state. They include the principle that the environment is held in public trust for the people, and the environment must be protected as the people's common heritage²¹. Application of the mitigation hierarchy is the primary tool to ensure that these principles are satisfied, with particular reference to²²:

- a) Anticipating and preventing negative impacts on the environment and on people's environmental rights and, where they cannot be altogether prevented, minimising and remedying these impacts.
- b) Avoiding, or where impacts cannot altogether be avoided, minimising, and then remedying the disturbance of ecosystems and loss of biodiversity, pollution and environmental degradation, and disturbance of sites and landscapes that constitute the nation's cultural heritage.
- c) Ensuring that development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised.
- d) Pursuing environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.
- e) Pursuing equitable access to environmental resources, benefits and services to meet basic human needs and ensure well-being.
- f) Ensuring that those responsible for harming the environment cover the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects.
- g) Applying a risk-averse and cautious approach which takes into account the limits of current knowledge about the consequences of decisions and actions.

²⁰ Section 23(2)(b) of NEMA.

²¹ Section 2(4)(o) of NEMA.

²² Sections 2(4)(a), (c), (d) and (p) of NEMA.

The EIA Regulations, promulgated in terms of NEMA, apply to activities that trigger the need for an environmental impact assessment (either a basic assessment or scoping and environmental impact assessment). The Regulations underline the importance of mitigation by referring to, or requiring:

- a) the possible mitigation measures that could be applied and an estimation of the level of residual risk;
- b) the degree to which each identified potentially significant impact and risk (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and can be avoided, managed or mitigated;
- c) an indication of the extent to which each environmental issue and risk identified during the EIA process could be avoided or addressed by the adoption of mitigation measures;
- d) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;
- e) a description of measures for the avoidance, management, mitigation, monitoring and reporting of the impacts of the activity on the environment throughout the life of the activity in addition to those contained in the approved environmental management programme (EMPr); and
- f) checks on the mitigation effectiveness by way of environmental audits²³.

The EIA Regulations currently define 'mitigation' as meaning *"to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible"*. This definition makes no explicit reference to compensation or offsets. For the purposes of this guideline, however, the term 'mitigation' is used to encompass all steps of the mitigation hierarchy, as shown on Figure 1.²⁴

²³ Regulations 26(d)(iv) and 34, and Appendices 1-3 of the EIA Regulations.

²⁴ See also the National Biodiversity Offset Guideline in this regard.

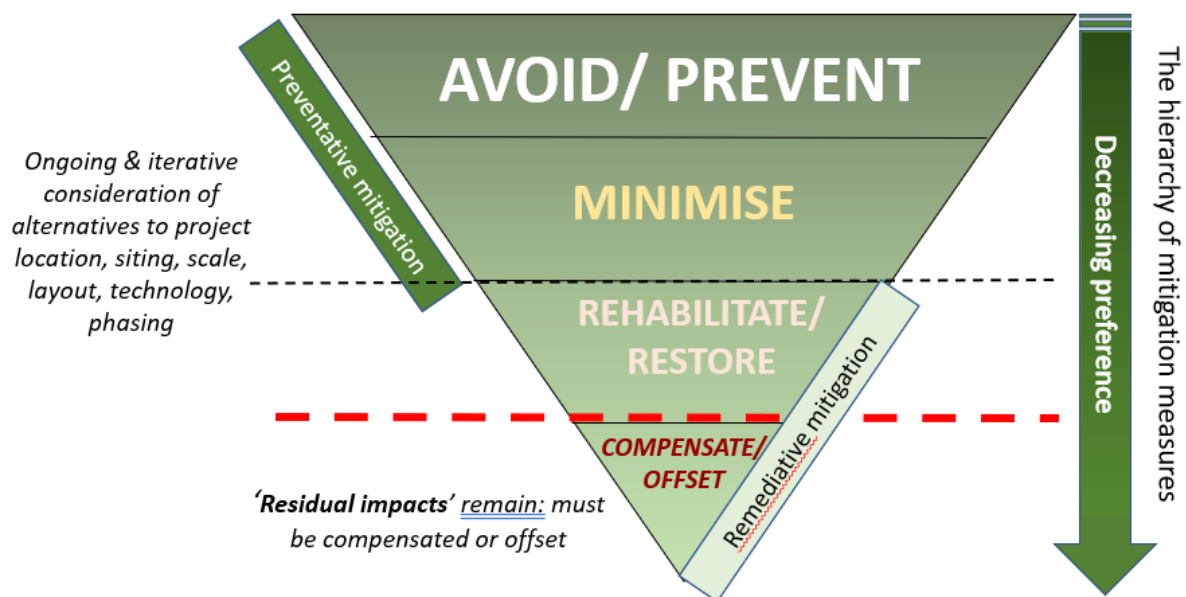


Figure 1: The mitigation hierarchy: Successive steps in the hierarchy should only be considered once the previous step has been exhausted. Avoidance of negative impacts is a priority, with compensation/offsets a ‘last resort’.

The environmental management system provided for by NEMA and the EIA Regulations provides for a CA to grant EAs subject to conditions²⁵. The proposed mitigation measures, and the applicant’s ability to implement them, are relevant considerations to be taken into account by CAs when considering applications for EA and when determining the conditions subject to which these authorisations are issued²⁶.

4. Outcome statement and principles

The outcome statement and principles in this Chapter serve as the general framework for EAPs and specialists in applying the mitigation hierarchy. They should also guide the CA in decision-making and, as relevant, stipulating the conditions regarding the level of mitigation required of an applicant.

4.1 Desired outcomes of the mitigation hierarchy

The desired outcomes of applying the mitigation hierarchy are to ensure that:

1. There is no loss of irreplaceable biodiversity or irreplaceable ecological infrastructure and associated ecosystem services.
2. Negative impacts and risks of high significance to the environment, and on ecological infrastructure which provides important ecosystem services for people, are avoided.

²⁵ See Regulation 26(d) and (i) of the EIA Regulations.

²⁶ Section 24O(1)(b)(ii)-(iii) of NEMA; Regulation 26(d)(iv) of the EIA Regulations.

3. Additional mitigation is applied to residual negative impacts of greater than 'low' significance, to reduce impact significance to 'low' or preferably 'very low'.
4. Ecosystems, the habitat for species of plants and animals, and ecological infrastructure, when unavoidably impacted by the proposed development, are rehabilitated/restored as soon as practicable, and concurrently with the proposed development where feasible.
5. Biodiversity offsets are provided in cases where every effort has been made to avoid and minimise negative impacts, and rehabilitate/restore damage, but residual negative impacts of moderate/medium or high significance remain. Biodiversity offsets should ensure that biodiversity is not incrementally eroded beyond acceptable limits, the ecological deficit is not exacerbated, and that people are left no worse off than before the proposed development.
6. Compensation is provided to ensure that people adversely affected by the proposed development are not left worse off²⁷, particularly in cases where:
 - there is a time lag between negative impacts and providing remediative mitigation (i.e. rehabilitation/restoration and biodiversity offsets), in the form of substitutes for affected ecosystem services on which there is high dependence by affected people;
 - the outcomes of rehabilitation/restoration and biodiversity offsets are not designed to/will not benefit the affected parties.
7. The cumulative impact of the authorised development, and land and resource use changes, does not:
 - result in the loss of irreplaceable biodiversity, an inability to meet biodiversity targets or increase the risk of extinction for any species; and/or
 - result in the loss of ecological infrastructure without substitute, causing an irreversible loss in ecosystem services²⁸.

4.2 Principles for applying the mitigation hierarchy

The following principles must be considered by EAPs, specialists, and the CA when taking decisions in relation to the level of mitigation required:

- a) ***Emphasis must be on the avoidance step of the mitigation hierarchy, followed by impact minimisation*** (i.e. the preventative components of the mitigation hierarchy; Figure 1) – Avoidance is the most effective form of mitigation, followed by minimisation. Rehabilitation/restoration and compensation/offsets (the remediative components) involve

²⁷ e.g. Bull *et al* 2018.

²⁸ The loss of ecosystem services can sometimes be compensated by a replacement or substitute service (e.g. water treatment works in place of natural wetlands). This guideline focuses on 'in kind', nature-based compensation, through provision of the same ecological infrastructure as that impacted, to be provided through rehabilitation/restoration or offsets.

greater uncertainty about mitigation outcomes, require greater costs, and involve longer commitments, responsibilities, and liabilities.

- b) ***There are some negative impacts on valued environmental components (VECs) which cannot be compensated or offset; such impacts should be considered as a probable ‘fatal flaw’*** – The loss of biodiversity and ecological infrastructure which cannot be replaced, the loss of a core population of a threatened species, destruction of national heritage, or destruction of a crucial source of freshwater on which a human community relies, should not be permitted as it contradicts the objectives of sustainable development, as reflected in the NEMA principles.
- c) ***Thresholds of Concern (ToC) and Limits of Acceptable Change (LAC) must be given due consideration*** – ToC and LAC (Box 1) indicate whether or not affected human communities or society as a whole would be prepared to tolerate or accept the anticipated negative impacts on the environment in a particular context. As impacts move from the lowest thresholds (negligible/low concern) through thresholds of concern and of major concern, to limits of acceptable change, their significance increases. At the same time, the need for preventative mitigation increases, until avoidance remains as the only form of acceptable mitigation as the Limit of Acceptable Change is approached. Due consideration of feasible and reasonable alternatives to the proposed development which could meet its stated need and purpose, but which would reduce impact significance, plays a crucial role in impact mitigation.

Box 1: Thresholds of Concern and Limits of Acceptable Change

ToC are upper and lower limits of acceptability along a continuum of change in specific environmental indicators, used in monitoring and management. They include changes in VECs, such as change in the ecosystem or species extinction risk (e.g. change in threat status as per the IUCN Red Listing categories²⁹), modification or loss of areas recognised as playing an important ecological role (e.g. Ecological Support Areas and Protected Area Expansion Strategy focus areas delineated in biodiversity plans) or change in ecosystem condition (e.g. categories of Present Ecological State).

LAC define the ‘ceiling’ for changes in environmental quality or a receptor which are considered to be acceptable, or which affected human communities or society as a whole (whichever is most conservative) would be prepared to tolerate, in a particular context. They are defined in law/regulations for some resources; e.g. Receiving Water Quality Standards, ‘the reserve’ (including the ecological reserve) in terms of the National Water Act, 1998, and ambient air quality/emission standards in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004). LAC are also set in norms and standards (e.g. SANS noise levels for different areas), and as a guide to decision making in strategic plans (e.g. biodiversity spatial plans with targets and priorities for retention in the landscape, such as

²⁹ Threatened birds and mammals are, on average, more ecologically distinct. These species have potentially irreplaceable ecological roles and their loss could undermine the integrity of ecological processes and functions (Cooke *et al* 2020).

Critical Biodiversity Areas; delineation of Strategic Water Source Areas and National Freshwater Ecosystem Priority Areas).

ToC and LAC can be defined in guidelines or protocols (e.g. in the National Biodiversity Offset Guideline). These ToC or LAC provide an early warning where negative impacts on the environment would be of concern, or indicate 'fatal flaws' where predicted impacts would be unacceptable to society or noncompliant with standards, targets or limits.

- d) **Mitigation must be applied to all potentially significant negative impacts** – It is essential to apply mitigation measures to any negative impacts and/or risks that could be significant, namely direct, indirect (including induced), and cumulative impacts. The scope of assessment must include consideration of impacts on priority biodiversity areas and their biodiversity components, impacts on ecosystems and resources on which there is high dependence for health, livelihoods, safety and wellbeing, cultural values and heritage.
- e) **The purpose of applying mitigation is to reduce the significance of potential impacts and risks to 'low' or 'very low', and/or to beneath a ToC** – That is, residual negative impacts of higher than 'low' significance require additional mitigation.
- f) **Application of the mitigation hierarchy must take a risk averse and cautious approach** – Various types of uncertainty are often encountered in the EIA process, including gaps in knowledge, uncertainties about the consequences of impacts, uncertainties about the feasibility and/or effectiveness of planned measures to avoid, minimise and rehabilitate impacts, uncertainties about the future state of affected resources due to climate change, uncertainties related to unprecedented activities proposed by the developer, and inherent uncertainties in the behaviour of ecosystems. Such uncertainties emphasize the need for caution in predictions where potentially significant impacts and risks are anticipated. Without evidence that mitigation would be effective in achieving required outcomes, a 'without mitigation' residual impact measure must be adopted.
- g) **Compensation and/or biodiversity offsets are the final option in the mitigation hierarchy** – Compensation and/or offsets must only be considered once all the preceding steps in the mitigation hierarchy have been considered to their full and feasible extent. Assurance must be provided that they would be additional to ('over and above') legally required or planned mitigation measures. All biodiversity offsets must be consistent with the National Biodiversity Offset Guideline. Other compensation measures must ensure that no person would be left worse off as a consequence of development through adequate provision of substitute resources or services, equivalent to those damaged or lost.
- h) **Residual negative impacts must be considered in decisions involving compensation and/or biodiversity offsetting** – When considering the residual negative impact to be counterbalanced by compensation or offsets, the severity of the impact, the vulnerability of affected parties and their level of dependence on the impacted resource, the social or cultural

importance of the affected resource to affected parties, and ease of access to substitute or alternative resources to support lives and livelihoods, must be taken into account at least.

- i) ***Compensation and/or offsets must be defensible*** – The measure of the size and significance of the residual negative impacts caused by the proposed activities should be based on the best available information, namely sound science and traditional and conventional knowledge and values as appropriate.
- j) ***The design and implementation of mitigation measures must be open and transparent*** – Final measures proposed in mitigation should take due consideration of I&AP views through engagement, respecting recognised rights, and seeking positive outcomes for affected parties.
- k) ***Mitigation measures must be receptor- and impact/risk-specific*** – All mitigation measures must be tailored to the particular context and specific vulnerabilities/sensitivities of the receptor to the anticipated impact.
- l) ***Application of the mitigation hierarchy must avoid unacceptable trade-offs*** – Mitigation should not result in loss of important biodiversity and ecological infrastructure, with associated ecosystem services, in exchange for other positive outcomes (Box 2).
- m) ***Mitigation measures must be reasonable and feasible, and confirmed as acceptable by the applicant*** – Applicants should confirm with the EAP and specialists that measures proposed for incorporation in the EMPr, closure plan, biodiversity offset plan or other mitigation implementation plans could and would be implemented, and that they have the necessary resources to implement them³⁰.
- n) ***Mitigation measures must be measurable, auditable, and enforceable*** – The required outcomes of mitigation measures must be practically measurable and attainable within defined timeframes, and clearly set out in EA conditions, an EMPr or equivalent plans to enable the EA holder to assess performance and the CA to check and enforce compliance. Once the development commences, impacts should be monitored and measured using appropriate indicators to assess whether they are delivering these outcomes, and to enable adaptive or corrective measures where the originally prescribed mitigation is inadequate.
- o) ***Mitigation measures must be responsive to mitigation performance*** – Monitoring should track the effects of mitigation measures and evaluate them against required results. Where the monitoring results indicate that performance is inadequate, corrective and adaptive measures must be applied and incorporated into an EMPr or equivalent plans, in order to ensure that the required outcomes are achieved timeously.

³⁰ Section 24O(1)(b)(iii) of NEMA.

- p) ***The implementation and performance of mitigation measures should be recorded and made public*** – Monitoring and evaluation results, and audit reports³¹, should be made available to interested and affected parties on request.

Box 2: The mitigation hierarchy, biodiversity offsets, compensation and trade-offs

Mitigation of negative impacts from a proposed development on biodiversity and ecosystem services is crucial to ecologically sustainable development and use of natural resources, while promoting ‘*justifiable economic and social development*’, as required by the South African Constitution³².

EIAs facilitate development trade-offs; however, most trade-offs involve loss of biodiversity and ecological infrastructure for gain in some socioeconomic attributes, without explicitly setting out the basis for these trade-offs or giving due consideration to people’s dependence on ecosystem services.

Compensation involves making up or recompensing for loss, damage or injury, by provision of substitute resources or forms of capital to remedy loss. Biodiversity offsets, as a form of compensation, require recompensing with the same type of biodiversity as that impacted, thus limiting substitution of resources and undesirable trade-offs.

The mitigation hierarchy is used to prioritise preventative measures over remediative measures, focusing on significant negative impacts, and to limit trade-offs. However, in many cases negative impacts on biodiversity and ecological infrastructure, and thus on ecosystem services, remain, and until recently were accepted as legitimate trade-offs.

Even with biodiversity offsets to remediate residual negative impacts, there would be an overall reduction at scale of biodiversity; i.e. unless impacts are avoided, loss of biodiversity is effectively traded off for other forms of benefit. The ongoing trading off of our biodiversity undermines ecologically sustainable development and underlines the need to avoid negative impacts on valued or important resources.

5. Applying the mitigation hierarchy in the environmental authorisation application process

This guideline is intended for application in the context of EA applications under NEMA and the EIA Regulations. For the purposes of this guideline, ‘EIA’ means both ‘basic assessment’ and ‘scoping and environmental impact assessment’ as contemplated in the EIA Regulations.

In this Chapter, a broad overview of the main steps of applying the mitigation hierarchy is given within the context of:

³¹ Regulation 34(6) of the EIA Regulations.

³² Section 24(b)(iii) of the Constitution of the Republic of South Africa, 1996; the ‘environmental right’.

- a) the EA application process provided for in NEMA and the EIA Regulations, which comprises
- a **pre-application phase**, before the formal process for an EA application is commenced, and
 - the **formal EIA phase**. The EIA phase comprises preparing an EIA Report and an EMPr, closure plan, biodiversity offset plan or other required mitigation implementation plan, as relevant (hereinafter collectively referred to as a 'mitigation plan'). It culminates in the submission of required documentation to the CA for decision making; and
- b) meeting conditions of an EA and implementing the required mitigation plan(s) after a decision has been taken on the application and when an EA has been issued.

Figure 2 illustrates application of the mitigation hierarchy in different phases of the EA process and the iterative nature of applying mitigation at each step.

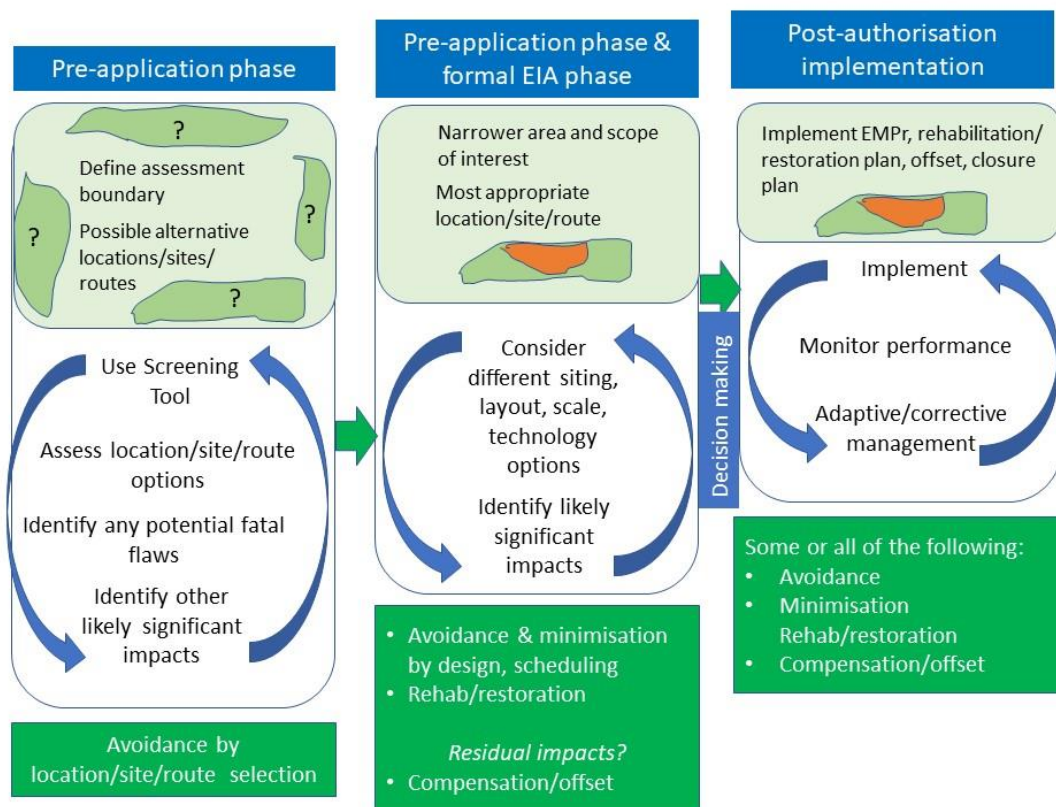


Figure 2: Applying different steps in the mitigation hierarchy at different phases of the EA process (adapted from CSBI 2015)

This Chapter focuses on the EA application process. The decision-making and post-authorisation/implementation phases of the EA process are covered in **Chapters 9 to 11** of this guideline.

5.1 Applying the mitigation hierarchy in the EA application process

As part of an EIA, an EAP or a specialist is required to predict the potential negative impacts of a proposed development on the environment. Impacts include direct impacts, indirect (and induced) impacts, and cumulative impacts.

Having identified these impacts, the EAP or specialists must investigate alternative project locations, sites, layouts, designs and technologies, as appropriate, to determine if and how potentially significant negative impacts could be avoided or minimised, and project-affected areas rehabilitated and restored. Finally, where residual negative impacts are likely to remain of moderate to high significance, biodiversity offsets must be addressed.

Applying the mitigation hierarchy from the pre-application phase has a number of advantages (Box 3).

Box 3: Applying the mitigation hierarchy from the pre-application stage

It is recommended that certain steps are taken before the EA application process is started. The rationale for this recommendation is to ensure that there is sufficient time to apply the different steps in the mitigation hierarchy adequately and allow for lower-impact options to be explored. The EIA phase duration is 90 days (for a basic assessment) or 150 days (for a scoping and environmental impact assessment) following submission of the application to the CA. It is therefore best to pursue most of the steps involved in impact mitigation prior to submitting an application, to enable key issues to be resolved and avoid major obstacles causing delays during the formal application period. Early identification of LAC and ToC would enable due consideration to be given to the likelihood of success in the application, the probable costs for the applicant associated with mitigation requirements, and the need to revise the proposal in response to any major risks and/or potential fatal flaws identified.

The implications of different steps in the mitigation hierarchy are shown in Figure 3.

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.

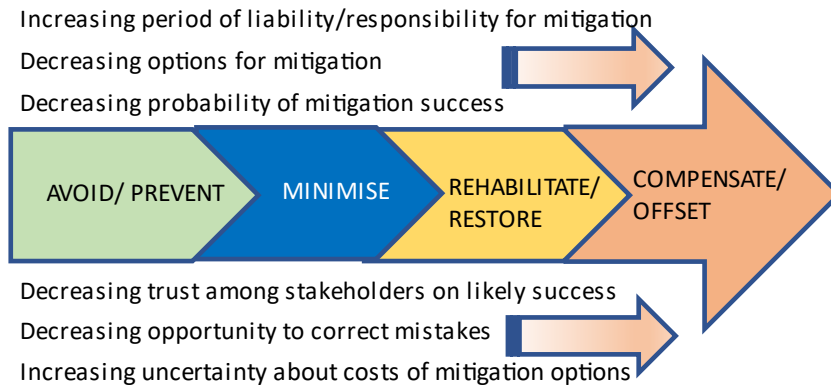


Figure 3: Implications of different steps in the mitigation hierarchy (adapted from CSBI 2015)

The desired outcome of applying the mitigation hierarchy throughout the EA application process is to refine a proposed development so that it does not involve any unacceptable impacts or loss of irreplaceable resources, and for which the proposed mitigation measures are deemed appropriate, acceptable and attainable from a sustainable development perspective.

Applying the mitigation hierarchy broadly consists of the following steps:

- a) Defining the Project Area of Influence (PAOI)³³ (i.e. an assessment boundary for the proposed development).
- b) Assessing the likelihood of significant negative impacts which could result in loss of irreplaceable resources or unacceptable adverse consequences.
- c) Seeking alternative locations/sites/routes for the proposed activity, and/or reasonable and feasible ways to revise, modify or adjust the proposed development in order to avoid these significant impacts.
- d) Undertaking a detailed assessment of potential direct and indirect impacts of the proposed development, and wider cumulative impacts.
- e) Identifying additional measures to avoid potentially significant impacts, and confirming that their implementation is feasible.
- f) Where it can be clearly demonstrated that additional measures to avoid sensitive areas and/or significant impacts are not feasible, making every effort to minimise negative impacts.
- g) When all reasonable and feasible ways to avoid and minimise impacts have been exhausted, assessing the scope to rehabilitate – and preferably restore – the impacted ecosystem.
- h) Obtaining a reliable measure of the impacts remaining after avoiding and minimising impacts, and rehabilitating project-affected areas (i.e. of residual negative impacts), taking into account the feasibility of the proposed mitigation measures and uncertainties with regard to their effectiveness or outcomes.

³³ Please refer to the Species Environmental Assessment Guideline (SANBI 2020) for further information on determining the PAOI.

- i) Ensuring that all impact management outcomes and mitigation measures are incorporated into the EMPr for the applicable phase of development, and/or the closure plan, as appropriate.
- j) Designing and planning for the implementation of compensation or offsets to counterbalance the residual negative impacts.

These steps are summarised in **Chapters 5.1.1 to 5.1.10** below. Mitigation measures arising from the above steps must be clearly captured in the EIA and specialist reports, and comprehensively described in mitigation plans (**Chapters 7 and 8** of this guideline).

5.1.1 Defining the Project Area of Influence

In this step, the applicant and EAP, with specialist input where relevant, define a broad boundary for assessing the proposed development, also referred to as the PAOI³⁴. This boundary must take into account the proposed development and probable direct and indirect (including induced) impacts in a wider landscape context. All associated infrastructure, structures and facilities must be taken into consideration, as well as resettlement areas and/or areas likely to be impacted by project-displaced livelihood activities.

This step is carried out in the pre-application phase, and may need to be refined during the EIA phase based on additional information suggesting that potential impacts would be more or less extensive.

An assessment boundary should be defined which can reasonably be expected to encompass the area in which there are VECs and an impact may be significant. A development often has impacts which extend beyond the 'footprint' or site of that development, e.g. having downstream effects on water resources, reducing landscape connectivity, polluting an airshed, and influencing socioeconomic patterns. Assessing impacts on a project site alone is not sufficient; the role of that site in the wider landscape must be taken into account.

5.1.2 Early identification of valued environmental components and determining the likelihood of significant or unacceptable negative impacts

In this step, undertaken in the pre-application phase, the EAP assesses whether it is likely that the proposed project could cause highly significant or unacceptable negative impacts on VECs (Box 4).

Box 4: Valued environmental components (VECs)

³⁴ Para 1.9 of the terrestrial plant and animal species protocols explicitly requires that the study area include the PAOI and that this be determined in accordance with the Species Environmental Assessment Guideline (SANBI 2020).

VECs are defined as elements of the natural and human environment which are identified as having scientific, social, cultural, heritage, economic, archaeological, palaeontological or aesthetic importance. They include life- and livelihood-support systems, and the things people care about.

Identification of VECs helps to focus on the most important and valued resources. VECs, which reflect the values and priorities of government, affected parties, and the wider public, are identified through use of the National Web-based Environmental Screening Tool, review of available information, and scoping and engagement with key I&APs.

The National Web-based Environmental Screening Tool (Screening Tool) must be used as one of the key steps in identifying environmental sensitivities and VECs. Reference must be made to relevant and up-to-date laws, policies, plans, strategies, norms and standards, guidelines, protocols and online information identifying and/or providing information on probable VECs.

The appointed EAP should engage with relevant authorities to clarify any potential fatal flaws or potentially unacceptable impacts at this stage. The CA should be asked for guidance on any relevant LAC and TOC, to ensure that they are applied in the EIA process, to enable an understanding of the risk of the application being refused, the scale of mitigation required (if impacts were possible to mitigate), and likely scope of associated costs, responsibilities and liabilities.

5.1.3 Early avoidance of likely unacceptable negative impacts or 'fatal flaws'

In this step, the EAP works with the applicant/proponent, planning team, engineers, and relevant specialists to find ways to avoid impacts on highly sensitive areas, on environmental components known to be irreplaceable, unique and/or of high value or importance, and/or which could exceed a LAC. Proposed developments as a whole should be considered to be fatally flawed if impacts are deemed likely to exceed LAC, and there are no feasible or reasonable alternatives which would avoid exceeding LAC. This step should be carried out in the pre-application phase.

Alternative locations, sites and/or routes should be considered as a priority, as the optimum way to ensure early avoidance of unacceptable impacts and risks. As required in terms of the EIA Regulations³⁵, the preferred location and site must be selected through a "detailed site selection process" which includes identifying impacts (including cumulative impacts) and risks, and ranking the suitability of all options in terms of biological, physical, social, economic and cultural aspects of the environment.

Depending on the particular context, it may be appropriate to engage with local community representatives, local authorities, NGOs and/or CBOs, on any VECs, LAC and ToC, and on the most appropriate measures to avoid negative impacts of high significance which could be unacceptable.

Please see **Chapter 6.2** of this guideline for more information on this step.

³⁵ Appendices to EIA Regulations, as amended.

5.1.4 Detailed assessment of impacts of a proposed project and evaluation of impact significance

In this step the EAP works with the specialists to carry out a detailed assessment of potential direct and indirect impacts of the proposed development, and of wider cumulative impacts.

All relevant laws, policies, plans, strategies, norms and standards, protocols (e.g. the biodiversity and species protocols), including any associated guidelines, must be used by the EAP and/or specialists to inform the assessment and evaluation of negative impacts.

Scoping and the public participation process will supplement and expand on the findings of the Screening Tool, and can result in the identification of additional VECs which will need to be explicitly included in the EIA process. It is essential to engage with relevant commenting authorities, including municipalities and conservation authorities at this stage.

This step is best carried out in the pre-application phase to 'iron out' potentially serious issues before needing to complete the EIA within set timeframes. The assessment is refined during the EIA phase based on additional information and review. Review and feedback on draft EIA reports will indicate the acceptability of proposed mitigation measures.

Please see **Chapter 6.1** of this guideline for more information on this step.

5.1.5 Avoiding potentially significant negative impacts

In this step, the EAP works with the planning team, engineers, and specialists to find additional ways to avoid potentially significant impacts, taking VECs and ToC into account, by modifying or adjusting the scale, layout, technology and/or phasing of the proposed development.

It would be beneficial to engage with the main I&APs (e.g. local community representatives, local authorities, NGOs and/or CBOs) on the most appropriate measures to avoid negative impacts.

This step is best carried out in the pre-application phase to avoid time constraints and optimise the proposed development, but may need to be refined during the EIA phase.

Please see **Chapter 6.2** of this guideline for more information on this step.

5.1.6 Minimising negative impacts

This step involves the EAP and specialists, in collaboration with the planning team, engineers and other I&APs, determining ways to minimise negative impacts in cases where they do not constitute a fatal flaw, and it can be clearly demonstrated that additional measures to avoid sensitive areas and/or significant impacts are not feasible.

As with the previous steps, this step is best carried out in the pre-application phase to avoid time constraints and optimise the proposed development, but may need to be refined during the EIA phase.

Please see **Chapter 6.3** of this guideline for more information on this step.

5.1.7 *Rehabilitating areas which are negatively affected by development*

This step involves the EAP and relevant specialists assessing the potential to rehabilitate, and preferably restore, the environment disturbed, modified or destroyed by the proposed development. It is taken when all reasonable and feasible ways to avoid and minimise impacts have been exhausted.

This step could be initiated in the pre-application phase but must be completed during the EIA phase, with the preparation of a rehabilitation plan/programme.

Please see **Chapter 6.4** of this guideline for more information on this step.

5.1.8 *Determining and measuring residual negative impacts*

This step requires specialists to provide a reliable measure of negative impacts remaining after avoiding and minimising impacts and taking into account rehabilitation/restoration of areas negatively affected by development (i.e. residual negative impacts).

The step is best carried out in the pre-application phase, as it will indicate the necessity for biodiversity offsets and/or compensation, which can require considerable time and cost commitments (i.e. there is a high risk of failing to meet timeframes if left to the EIA phase). The measure of residual impacts should be refined during the EIA phase. When the likelihood of requiring an offset is high at the pre-application phase, the applicant/proponent and EAP should revisit alternatives to the proposed development and apply earlier steps of the mitigation hierarchy, preferably to avoid the need for these 'last resort' measures applied during the EIA phase.

Please see **Chapter 6.5** of this guideline for more information on this step.

5.1.9 *Incorporating mitigation measures into the EMPr and/or closure plan*

This step requires the EAP, with input from specialists as needed, to incorporate all mitigation measures into the EMPr for the construction and/or operational phases of the project, and into a closure plan for decommissioning/closure, where applicable. These mitigation measures must be translated into easily understandable impact management actions (to be taken by the EA holder and contractors) and impact management outcomes (to be assessed by specialists during monitoring). Where a biodiversity offset is required, offset actions could be incorporated into the EMPr (if an on-site offset) or a separate biodiversity offset plan, as detailed in the National Biodiversity Offset Guideline. The step is best carried out near the end of the EIA phase.

Please see **Chapter 8** of this guideline for more information on this step.

5.1.10 Designing and planning implementation of biodiversity offsets and compensation

This step requires the EAP to work with specialists with appropriate expertise to design appropriate biodiversity offsets and other compensation measures for loss of ecological infrastructure if required to counterbalance residual negative impacts.

Where the need for a biodiversity offset is unavoidable (i.e. it is clearly demonstrated that no further avoidance, minimisation or rehabilitation/restoration is feasible), and the proposed development is not fatally flawed, the design and planning for the offset should be initiated in the pre-application phase, to allow sufficient time for evaluation by CAs and I&APs to ensure that this mitigation measure would be feasible. Offset planning should preferably be completed during the EIA phase, although in some cases, additional agreements would need to be finalised prior to commencement of the authorised activities.

Please see **Chapter 6.6** of this guideline, as well as the National Biodiversity Offset Guideline, for more information on this step.

5.2 Engaging with authorities and other interested and affected parties in the EIA process

Engagement with relevant authorities in the pre-application phase is essential for identifying VECs, any relevant LAC and ToC, and thus the potential significance and likely acceptability of negative impacts to I&APs.

Engagement with other key I&APs (outside of the required public participation process), particularly the affected communities, and NGOs and CBOs with a direct interest in the proposed development or affected area, also plays an important role in refining the identification of VECs, ToC and likely acceptability of impacts.

Engagement with I&APs is crucial for determining and planning acceptable mitigation. Applying the mitigation hierarchy and inviting input from I&APs provides an opportunity for trust and transparency between all parties. Engagement should be undertaken as early as possible in the EIA process (preferably starting in the pre-application phase) when proposals are relatively flexible, and modifications are more likely to be considered by the applicant/proponent. The sooner potentially significant and unacceptable impacts (or other concerns) are identified, the greater the opportunities to address and resolve them through appropriate mitigation measures.

Comments from I&APs' review of draft EIA documentation provides valuable feedback on whether or not the proposed mitigation is sufficient. The EIA report should contain minutes or a record of outcomes of all meetings held with authorities, organs of state and other I&APs, including their comments submitted on the mitigation proposals.

Provision can be made for I&APs to participate in implementing mitigation and management measures, if appropriate, and/or helping to monitor performance.

5.3 The responsibilities of the different role-players in applying the mitigation hierarchy

- a) **The proponent/applicant** must appoint an independent and professionally registered EAP³⁶ to manage an EIA process on their behalf. The proponent must, *inter alia*:
- allocate enough time and budget for relevant professionally registered specialists to provide input to the EIA process under the guidance of the EAP;
 - respect the requirement for the EAP and specialists to identify potentially significant impacts, risks and fatal flaws, and to make recommendations with regard to reasonable and feasible mitigation measures and alternatives consistent with the mitigation hierarchy;
 - check, and confirm, that the mitigation measures proposed by specialists and the EAP are reasonable and feasible, and could and would be implemented; and
 - ensure that mitigation measures are implemented in accordance with conditions of the EA and mitigation plans, and are adhered to by contractors implementing the proposed development.
- b) **The environmental assessment practitioner (EAP)** is responsible for coordinating and managing the EIA process, developing Terms of Reference (ToR) for specialists, and synthesising specialists' inputs. The EAP must, amongst others:
- recognise that early involvement of specialists in the EIA process, particularly in the pre-application phase, can expedite the identification of VECs, LAC, ToC and potential fatal flaws, and consideration of more acceptable alternatives to the proposed development;
 - ensure that the ToR for specialists require application of the mitigation hierarchy, with the emphasis on avoidance being proportional to the potential significance of impacts;
 - make explicit for specialists the approach to be used in evaluating the significance of impacts (refer to **Chapter 6.1** of this guideline). Each specialist must state clearly any assumptions, limitations, gaps in knowledge and uncertainties in their work, with the implications for impact and risk assessment, and the outcome of proposed mitigation;
 - integrate the recommendations for mitigation from specialists across disciplines in a balanced and objective manner, seeking synergies and optimum outcomes; and
 - ensure that all relevant I&APs have been given an opportunity to engage in the EIA process, including with regard to the significance of impacts, and envisaged mitigation measures.

(Please also refer to **Chapter 7** in this regard.)

³⁶ Registered with the Environmental Assessment Practitioners Association of South Africa, at minimum; and the South African Council for Natural Science Professions if the EAP has a natural science background.

- c) **Specialists** provide context-specific information for the PAOI, assess and evaluate the significance of potential impacts and risks of the proposed development on the environment within their discipline, and recommend measures based on published reports and literature, and including reasonable and feasible alternatives, to mitigate negative impacts. (Please also refer to **Chapter 7** in this regard.)
- d) **National and provincial commenting authorities** play a lead role in advising the CA on any ToC or LAC in the ambit of their mandates, as well as key policies, plans, strategies, norms and standards, protocols and guidelines which should be taken into account.
- e) **The competent authority** is responsible for evaluating, and taking decisions on, EA applications. CAs should:
- advise the proponent or applicant of any matter that may prejudice the success of an application, such as unacceptable negative impacts and potential fatal flaws;
 - give due consideration to the significance of impacts and risks, and appropriate application of the mitigation hierarchy and reasonable and feasible alternatives, in reaching a decision.
- (Please also refer to **Chapter 9.2** in this respect.)
- f) **Local authorities** are primarily responsible for taking land use decisions in their respective municipal areas. Municipalities therefore often need to be engaged on potentially significant impacts in their areas, LAC and ToC (as reflected e.g. in Integrated Development Plans, Spatial Development Frameworks, Environmental Management Frameworks) and on the acceptability of proposed mitigation.
- g) **Organs of State responsible for processing applications for other applicable regulatory approvals** should also be consulted during the impact assessment process. 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, and development rights in terms of the Spatial Planning and Land Use Management Act, 2013 and applicable municipal by-laws.

6. The mitigation hierarchy and impact significance

As part of the EIA process an EAP or a specialist is required to predict the negative impacts from a proposed development on the environment, including direct impacts, indirect impacts, and cumulative impacts. The mitigation hierarchy, as set out in section 2(4)(a)(i) of NEMA, and applicable guidelines, should be followed to determine if and to what extent potentially significant negative impacts could be avoided, then minimised, and finally remedied by rehabilitating/restoring affected areas or by biodiversity offsets and/or other forms of compensation.

Impact significance is determined by rating the effects on the environment using explicit criteria. Impacts are broadly regarded as being 'significant' when they have negative effects on VECs, including important biodiversity and ecological processes, ecological infrastructure (e.g. wetlands) and related ecosystem services (e.g. provision of clean water, natural heritage resources, and access to ecosystems which sustain livelihoods, health and/or guard against natural disasters).

The significance of an impact depends on the nature of the proposed development and the sensitivity of the receiving environment. 'Significance' is in part determined by scientific and technical considerations, and in part by societal values (i.e. this determination is made within the socio-cultural, legal, economic, and political context). Evaluating the significance of impacts involves determining the amount of change to the environment perceived to be acceptable to I&APs³⁷.

Where residual negative impacts are rated to be of medium or high significance, biodiversity offsets and/or other forms of compensation would be required. These forms of mitigation are not appropriate when a development is predicted to have residual impacts of very high significance,³⁸ including when residual negative impacts would result in loss of irreplaceable VECs. In these cases it is essential to investigate reasonable and feasible alternatives to avoid or further reduce impacts.

Where the significance ratings for impacts are contentious or contested, leading to uncertainty about the acceptability of these ratings and thus the associated mitigation measures, the CA should call for independent peer review of specialist study(ies)³⁹.

Impact significance in EIA is evaluated both before and after incorporating planned mitigation actions. A critical aspect of the EIA and its significance ratings, therefore, is the level of certainty and confidence in predictions, and thus their reliability. Where uncertainty is high and/or confidence in predictions of either impacts or mitigation outcomes is low, and severe consequences are possible, mitigation should assume a 'worst case' and be designed to err on the side of caution (precautionary approach). Where, in the informed view of the CA, too much uncertainty exists or insufficient information is placed before it, the CA has the discretion to issue a negative authorisation (refusal).

The combination of irreplaceability, uncertainty and penalty (i.e. severe consequence where an incorrect decision is made) summarises the challenge to decision making with regard to the sustainable use and development of natural systems⁴⁰. For this reason, where significant impacts and/or risks are likely, emphasis must be placed on the earliest steps in the mitigation hierarchy. The

³⁷ DEAT 2002.

³⁸ See also Chapter 6 of the National Biodiversity Offset Guideline in this regard.

³⁹ Section 241 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.

⁴⁰ Sadler 1996

need to avoid a negative impact, instead of relying on impact minimisation and remediative forms of mitigation, increases in proportion to its significance.

6.1 Impact significance

There are numerous ways to evaluate the significance of impacts and risks. Criteria such as extent, duration, and magnitude (or intensity) typically contribute to arriving at a 'consequence' measure, further qualified in terms of the likelihood of the impact occurring, and levels of certainty or confidence in predictions.

The significance of impacts can be evaluated in two main ways, namely

- a) in relation to ToC or LAC (**Chapter 6.1.1**), and/or
- b) according to a set of defined criteria (**Chapter 6.1.2**).

These two approaches are described in separate sections below.

For the purposes of this guideline, the first step in both cases is to determine the sensitivity of the receiving environment, using the Screening Tool, and to identify VECs which are anticipated to be negatively affected. It is critical to draw on the public participation process to help determine VECs, particularly when vulnerable/previously disadvantaged people will be affected.

Specialists from different disciplines will differ in their identification of VECs; e.g. a botanist may evaluate loss of vegetation as having 'low' significance; whereas a social specialist may give it 'high' significance due to high dependence on the area for livestock grazing, medicinal plants (etc.), flagging it as a VEC. All VECs must be given due consideration in the EIA.

Direct and indirect (including induced) impacts and risks must be assessed, as well as cumulative impacts (Box 5).

Box 5: Cumulative impacts

Cumulative impacts, namely the combined negative impacts over time or in space of the proposed development on the same environmental receptor as current and foreseeable future developments, are of particular importance in EIA.

Without effective mitigation at scale, they can lead to 'death by a thousand cuts'. These impacts can be additive, synergistic, time or space crowding⁴¹.

The assessment of cumulative impacts must clearly define the spatial boundaries of the affected VEC, e.g. a catchment area, an airshed, the distribution of a particular vegetation type or ecosystem, the known habitat of a species of conservation concern. The assessment must consider the strategic context: the vision for an area/region as set out in Integrated Development Plans, Spatial

⁴¹ See DEA (2017) at p14 for a description of 'cumulative impacts'.

Development Frameworks, Environmental Management Frameworks or Strategic Environmental Assessments, or desired environmental quality of the affected resource/VEC (e.g. Receiving Water Quality standards for a particular catchment). It is essential to know the expected future state of the affected VEC based on known trends (e.g. as captured in State of the Environment reports), and to evaluate how the proposed development will change its vulnerability and irreplaceability, and whether the predicted impacts will lead to exceedance of a ToC or LAC.

The EAP should request information from the CA and applicable municipality on projects in the affected region which have been authorised but not yet commenced, or are currently being considered. The focus of the cumulative impact assessment should be on those VECs which will be affected by multiple proposed developments, and which are most at risk of exceeding a ToC and/or LAC. Guidance from the CA should be sought on the scope of the proposed assessment of cumulative impacts. Where major negative impacts are anticipated but where there is considerable uncertainty about the number of additional projects which will be implemented, a strict risk-averse and cautious approach to predicting cumulative impacts must be taken.

6.1.1 Evaluating significance against Thresholds of Concern and Limits of Acceptable Change

The thresholds given in Table 1 contain broad guiding factors for the evaluation of impact significance and mitigation implications. The significance thresholds take into account the extent to which impacts would be reversible and/or would lead to irreplaceable loss of resources.

Table 1: Thresholds of Concern, impact significance, and the mitigation hierarchy⁴²

Description of impacts above Thresholds of Concern, and Limit of Acceptable Change	Impact Significance	Implications for mitigation
<p>Negative impacts in this category cannot be remedied because of the irreplaceability of affected resources. Impacts in this category are of the highest magnitude, duration and/or extent, and would generally be unacceptable.</p> <p>Examples include impacts on Irreplaceable Critical Biodiversity Areas (CBA 1)⁴³ or formal protected areas (particularly, the natural or near-natural parts⁴⁴ of protected areas); impacts on confirmed habitats of Critically Endangered Species where those areas have not been included in CBA 1s; irreversible pollution or destruction of priority water resources and/or ecological infrastructure at national or provincial scale where there is a high level of dependence on associated ecosystem services and no feasible substitute; high probability or risk of extinction of a plant or animal species or of impacts on Critically Endangered ecosystems; impacts on range-restricted species which are nationally listed as Rare or Extremely Rare⁴⁵ (also referred to in some Red Lists as Critically Rare⁴⁶); impacts to areas evaluated as Very High Site Ecological Importance (SEI⁴⁷, see Box 6); loss of key ecological corridors recognised as important for evolutionary processes and climate change adaptation where no spatial options to safeguard these processes exist; noncompliance with laws, policies, standards, targets or thresholds, including contraventions of applicable international commitments (e.g. impacts on Ramsar sites where these negatively affect the site’s ecological character).</p>	<p>Very High</p>	<p>These impacts constitute a fatal flaw to the proposed development. The activity(ies) should not be authorised unless highly exceptional circumstances can be demonstrated (Chapter 9.7 of this guideline).</p> <p>These negative impacts must be avoided or prevented, as they cannot be remedied; compensation or offsets would not be feasible.</p>
Limit of Acceptable Change		
<p>Negative impacts (including the proposed development’s contribution to cumulative impacts) would result in environmental quality and/or VECs approaching the Limit of Acceptable Change, and/or would be long term, of major concern, and/or be large scale/affect a large area.</p> <p>Examples include impacts on biodiversity priority areas (e.g. protected area expansion zones defined in protected area management plans; buffer zones around protected areas; impacts on ‘optimal’ CBAs (CBA 2); loss of natural forest areas; loss of coastal protection zone; areas seawards of development setback lines and, where development</p>	<p>High</p>	<p>Effort should be prioritised to avoid negative impacts by exploring spatial alternatives (location, siting, layout, routing options) and temporal avoidance.</p> <p>Minimisation of impacts is essential when further avoidance is demonstrably not feasible.</p>

⁴² This table has incorporated, *inter alia*, the biodiversity/ecological infrastructure identified by Table 1 of the National Biodiversity Guideline as irreplaceable, of major potential concern, of potential concern, of low concern, and of negligible concern.

⁴³ In particular, where the feature(s) driving the designation as a CBA 1 is significantly negatively affected or will be compromised beyond its biodiversity target.

⁴⁴ 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 aligned with the management plan for a specific protected area as well as the reasons for declaration of the relevant protected area.

⁴⁵ This is a highly range-restricted butterfly taxon, known from one site only, and therefore no loss of habitat must be permitted as it may lead to extinction of the taxon. The Threatened Species Programme is not aware of any current threats to this taxon (Armstrong *et al* 2013).

⁴⁶ A species is Critically Rare when it is known to occur at a single site, but is not exposed to any direct or plausible potential threat and does not otherwise qualify for a category of threat according to one of the five IUCN criteria (Raimondo *et al* 2009).

⁴⁷ SANBI 2020.

<p>setback lines have not been determined, within 1 km of the High Water Mark; loss or erosion Freshwater Ecosystem Priority Areas); impacts on Endangered ecosystems or species, or impacts leading to an increase in their threat status; impacts on range-restricted endemic species which are not nationally listed as Rare, Extremely Rare or Critically Rare; impacts on listed Critically Endangered species; impacts to areas evaluated as High SEI⁴⁸; removal of access rights to resources which are essential in supporting local livelihoods, a negative change in category of Present Ecological State of an aquatic ecosystem; loss of areas within 100m of a watercourse; loss of highly productive agricultural land, and/or a risk of noncompliance with laws and their guidelines, policies, standards, targets, thresholds, and applicable international commitments.</p>		<p>Restoration of areas disturbed or degraded by the proposed development must be undertaken.</p> <p>Where residual negative impacts of ‘high’ significance remain, biodiversity offsets/compensation must be provided.</p>
Threshold of major concern		
<p>Negative impacts in this category could mean a deterioration in environmental quality or VECs. Negative impacts are of some concern, could <i>endure in the medium to long term, and/or affect a considerable area.</i></p> <p>Examples include a deterioration in air or water quality; erosion of Ecological Support Areas; irreversible impacts on Strategic Water Source Areas, Priority Focus Areas in the National Protected Areas Expansion Strategy, or areas within 32 meters of a watercourse; degradation of ecological infrastructure providing highly valued or important ecosystem services; impacts to areas evaluated as Medium SEI⁴⁹; loss of, or reduction in important ecological process areas or landscape corridors; loss of, or reduction in conservation areas; restrictions on access to important land, water or marine resources for dependent parties; deterioration in water quality or the Present Ecological State of an aquatic ecosystem; impacts on Vulnerable ecosystems and/or species, on endemic (but not range-restricted) or protected species, or impacts on ecosystems or species which would result in them being listed as threatened.</p>	Medium	<p>Effort should be made to avoid negative impacts by exploring spatial alternatives, design, technology, temporal and operational alternatives.</p> <p>Minimisation of impacts is essential, when further is demonstrably not feasible.</p> <p>Restoration of areas disturbed or degraded by the proposed development must be undertaken.</p> <p>Where residual negative impacts of ‘medium’ significance remain, biodiversity offsets/compensation must be provided.</p>
Threshold of potential concern		
<p>Negative impacts in this category could lead to some <i>localised and minor deterioration in environmental quality in the short term</i>, but affected components are not considered to be VECs.</p> <p>Impacts could include loss of vegetation or biodiversity of least concern (i.e. in Other Natural Areas, not supporting protected or threatened ecosystems or species, and not constituting important ecological process areas or corridors, <i>or providing important ecosystem services</i>); minor or temporary changes to air or water quality; impacts to areas evaluated as Low SEI⁵⁰; minimal changes to ecological infrastructure affecting ecosystem services and livelihoods.</p>	Low	<p>The focus is on avoidance and minimisation of impacts as far as possible. Rehabilitation/restoration would minimise residual negative impacts.</p> <p>Biodiversity offsets or compensation would not be required.</p>
Threshold of Low concern		

⁴⁸ SANBI 2020.

⁴⁹ SANBI 2020.

⁵⁰ SANBI 2020.

<p>Negative impacts in this category affect highly modified areas not considered to be VECs, typically areas evaluated as Very Low SEI⁵¹.</p>	<p>Very Low</p>	<p>The focus would be on seeking opportunities to rehabilitate/restore degraded areas and improve ecological infrastructure (as an enhancement measure, rather than to mitigate negative impacts). Biodiversity offsets or compensation would not be required.</p>
<p>Threshold of negligible concern</p>		

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⁵¹ SANBI 2020.

Box 6: Mitigation requirements in relation to Site Ecological Importance

The **Species Environmental Assessment Guideline**⁵² assigns the level of mitigation required to likely impacts on the receiving environment's values. The 'Site Ecological Importance' (SEI) is determined by evaluating the importance of biodiversity affected (its conservation importance or status, and its functional integrity), and the resilience of the receptors to anticipated impacts. The level of mitigation required is directly related to the SEI of the receptor, as shown in the following table⁵³.

Site ecological importance	Interpretation in relation to proposed development activities
Very high	Avoidance mitigation – no destructive development activities should be considered. Offset mitigation not acceptable/not possible (i.e. last remaining populations of species, last remaining good condition patches of ecosystems/ unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains.
High	Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted; limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.
Medium	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Low	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Very low	Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.

6.1.2 Evaluating significance using set criteria

In the absence of clear ToC or LAC against which to evaluate the likely significance of impacts and risks, use of a risk-based approach is recommended (Figure 4), moderated by consideration of the potential for irreplaceable loss of resources and the need for a precautionary approach where consequences could be major and there is high uncertainty about impact predictions.

⁵² SANBI 2020.

⁵³ Table 8.4 in SANBI 2020.

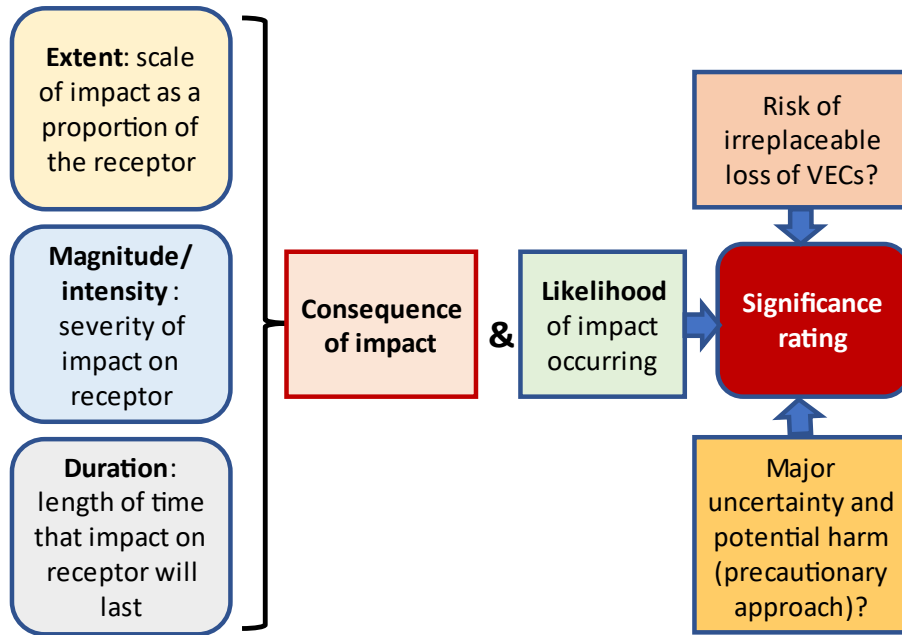


Figure 4: Determining the significance of impacts in the absence of ToC and LAC

The ‘consequence’ adopts a proxy measure of the largest/highest rating from the assessment of likely magnitude against extent (i.e. at what spatial scale would an impact be measurable), and magnitude against duration (i.e. over what time period would an impact last). Ratings of magnitude, extent and duration should be scaled to reflect categories of seriousness, from the maximum of ‘very high’ (e.g. an extent which includes most or all of the spatial distribution of a threatened ecosystem or species, severe magnitude, and permanent duration) to ‘very low’ (e.g. very small area, negligible magnitude and ephemeral). Please refer to Table 2.

Table 2: Determining the Consequence rating of an impact (the higher of the magnitude/extent, or magnitude/duration scores)

		The higher of Duration or Extent score				
Magnitude	Very High	Very High	Very High	Very High	Very High	Very High
	High	High	High	Very High	Very High	Very High
	Moderate	Mod	Mod	High	High	Very High
	Low	Low	Mod	Mod	High	Very High
	Very Low	Very Low	Low	Mod	High	Very High

The **likelihood** of the impact occurring would range from ‘definite’ to ‘highly unlikely’, drawing on experience from similar developments and activities in comparable environments. The combination of consequence and likelihood is used to determine a significance rating (Table 3), which is then modified to take into account uncertainty/confidence levels, and potential for irreplaceable loss of resources as described below. Once the impact significance rating has been determined, refer to the relevant implications for mitigation as outlined in Table 1.

Table 3: Using Consequence and Likelihood to determine significance ratings

		Likelihood				
		Very High	High	Moderate	Low	Very Low
Consequence	Very High	Moderate	High	Very High	Very High	Very High
	High	Low	Moderate	High	Very High	Very High
	Moderate	Very Low	Low	Moderate	High	High
	Low	Very Low	Very Low	Low	Low	Low
	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
		Highly unlikely	Unlikely but possible	Likely	Highly likely	Definite

Modifications to the significance rating should be made:

- a) Where there is a risk of **irreplaceable loss** of resources identified as VECs and high uncertainty in impact predictions, rating of significance should be set at ‘very high’, taking a risk-averse and cautious approach.
- b) Where there is **high uncertainty** in impact predictions (e.g. with unprecedented type of development, or where there are major gaps in baseline data) and a threat of significant negative impacts (e.g. major loss of ecological infrastructure and associated ecosystem services should a ‘worst case’ scenario develop), significance ratings should be increased, similarly taking a risk-averse and cautious approach.

Arithmetical formulae should be avoided in rating the significance of impacts and risks: they often lead to spurious and indefensible results.

6.2 Avoiding highly sensitive, unique or irreplaceable resources

The emphasis on avoidance in the mitigation hierarchy must be proportional to the values attached to the receptors. Avoidance of impacts is the only means to prevent the loss of unique or irreplaceable resources, highly valued or indispensable environmental components. A proposed development which would negatively affect an area with these attributes would have a ‘fatal flaw’, and impacts would be of ‘very high’ significance; the activity should not be authorised.

Avoidance measures should be embedded in layout plans, detailed designs and contracts with implementers for the proposed development, with penalties for transgressions or deviations.

Box 7: Irreplaceable loss of resources and irreversible impacts

An impact causes irreplaceable loss when it results in the loss of a resource which constitutes a VEC, without substitute, and which cannot be replaced, compensated or offset. An impact which would contribute to the extinction of a species, loss of a national (natural) heritage site, or indispensable ecological infrastructure, would constitute irreplaceable loss, as would the loss through permanent development of a key ecological corridors recognised as critically important for evolutionary processes and climate change adaptation. Irreplaceable loss is, by definition, irreversible.

An irreversible impact is one that cannot be reversed in time (e.g. permanent decrease in area of a specific vegetation type, loss of genetic diversity through reduction in size of populations of a particular species). Some irreversible impacts lead to irreplaceable loss of biodiversity: e.g. irreversible reduction in ecosystems below biodiversity targets, irreversible reduction in the size of a population below its 'minimum viable population' level, leading to an extinction spiral.

There are three main ways to avoid negative impacts to VECs: spatial avoidance, temporal avoidance and design-based avoidance. Each is discussed below, with provision of examples⁵⁴.

6.2.1 Spatial avoidance

Spatial avoidance through early consideration of alternatives at landscape level is the priority step in mitigation. To satisfy the need and desirability of a proposed development, it is essential to show that it is 'in the right place'⁵⁵. The use of the Screening Tool, due consideration to strategic plans and policies, and early engagement with conservation authorities and other key I&APs, to inform appropriate site selection, is the principal way to prevent negative impacts on important or sensitive areas. Avoidance of potentially significant impacts and risks is thus of paramount importance in ranking alternatives in terms of biophysical and socioeconomic/cultural VECs and selecting an appropriate location and site for a proposed development, as required in terms of the EIA Regulations.

Spatial avoidance on the development site itself can prevent negative impacts at a local scale, and should be informed by specialist findings (e.g. modifying infrastructure layouts and siting to avoid impacts on wetlands or known habitat of a threatened species).

⁵⁴ CSBI 2015.

⁵⁵ The national Guideline on Need and Desirability (DEA 2017), section 3.

6.2.2 Temporal avoidance

Temporal avoidance can be effective. For example, restricting construction during particular seasons or times (e.g. breeding seasons of threatened species, migration periods, stopping work at night, etc.).

6.2.3 Design-based avoidance

Alternative technologies and engineering approaches can also be useful (e.g. using helicopters to erect infrastructure rather than having to build an access road, burying powerlines to avoid bird collisions, using a pipeline to transport materials in place of a road to avoid the risk of induced impacts, using horizontal/directional drilling to avoid sensitive areas, building a suspension bridge instead of piers).

6.3 Minimising impacts

Potentially significant impacts can be minimised using physical, operational and/or abatement controls. Each approach is described below, with provision of examples⁵⁶.

The consequences of minimisation measures must be considered; some can have impacts (e.g. wildlife crossing structures concentrate wildlife in specific areas, making them more susceptible to poaching).

Minimisation of impacts, as well as rehabilitation and restoration actions, often have uncertain outcomes. Measures to manage uncertainty are given in Box 8.

Box 8: Reducing uncertainty

Measures to minimise negative impacts reduce their effects, but the outcomes of minimisation measures are difficult to predict. Similarly, the outcomes of rehabilitation/restoration actions are often uncertain.

Where there is a risk of major negative impact, and uncertainty about that impact, then the burden of proof to demonstrate that the risk is acceptable lies with the applicant/proponent. It follows that it is the EAP's and specialists' responsibilities to assess uncertainties associated with potentially significant impacts and risks, and to design appropriate mitigation.

To reduce uncertainty when impacts of very high and/or high significance are anticipated, only those methods which have been tried, tested and proven to avoid and minimise, respectively, the specific impacts in practice should be adopted. To lower the risks of failure, rehabilitation/restoration methods used in the past in the same/comparable ecosystems with successful results should be applied.

⁵⁶ CSBI 2015.

The intended outcomes of impact minimisation and rehabilitation/restoration must be explicitly defined in the EMPr and closure plan. Provision must be made for regular monitoring and evaluation, using indicators which would be most sensitive to the targeted ecological changes. Monitoring of the implementation of actions (e.g. compliance with EMPr) and outcomes must be undertaken, to compare the intended and achieved results, and ensure that adaptive or corrective management is applied timeously where needed. Importantly, while monitoring is an essential tool to enable appropriate management, it does not constitute mitigation.

Design additional safeguards to provide a 'margin of error' weighted to protect the environment, to reduce risks of potentially significant negative impacts (e.g. increase buffers or setbacks from sources of possible pollution).

Any assumptions made, as well as gaps in information and other uncertainties must be clearly stated in the EIA report, and a risk-averse and cautious approach taken to predicting the 'after mitigation' significance of minimisation and rehabilitation/restoration measures.

6.3.1 Physical controls

Impacts can be minimised by careful project design and siting of structures; e.g. installing culverts to minimise flooding and erosion along roads, providing ecological corridors or 'stepping stones' of natural habitat to sustain connectivity in the landscape, or installing bird flight diverters on transmission lines. Clearly delineating sensitive areas on the development site as 'out of bounds' (e.g. to limit loss of vegetation, encroachment into drainage lines, wetlands or floodplains), and demarcating appropriate areas for stockpiling materials, access (etc.) during site establishment and construction, can reduce the significance of negative impacts.

6.3.2 Operational controls

Careful attention to methods of site establishment and construction, and restricting timing of construction or operation to specific seasons, times and periods to minimise negative impacts on ecosystems and species, is important.

Negative impacts can be minimised by controlling the actions of people undertaking the development (e.g. contractors, staff) to reduce poaching and illegal activities. Employment practices, awareness raising, and access checks can help curb an influx of work seekers to project areas, and thus limit induced impacts.

Adverse effects on local affected parties can be minimised by providing specific times for access to, and harvest of, important resources needed for livelihoods, cultural activities, amongst others.

Box 9: Search, rescue and translocation

'Search and rescue' and translocation of impacted plants and animals is generally not supported as a minimisation measure, as it can result in the erosion of the inherent genetic diversity and

characteristics of the species, and introduce deleterious genes, parasites and pathogens, all of which increase its extinction risk in the wild. The receiving habitat may already be at carrying capacity to support species and communities, making translocation a failure due to excessive competition for resources. Translocation is expensive and seldom successful, and may harm other species in the receiving environment^{57,58}. However, where an activity has been authorised, these actions can be used prior to the clearing of vegetation to provide 'seed' populations for use in rehabilitating/restoring damage caused by the development.

6.3.3 Abatement controls

The choice of pollution abatement measures (e.g. dust suppression, scrubbers and emission controls, drainage systems, erosion and sedimentation controls, lighting and noise reduction, visual screening) can help minimise impacts. These abatement controls may in turn have material negative impacts (e.g. use of water) which must be assessed and mitigated.

Careful management of waste disposal, including organic matter which can attract feral animals and/or endanger threatened animal species, is important.

It is essential to set in place appropriate measures to respond swiftly and effectively to emergency or upset conditions, where there is a high risk of considerable pollution (e.g. accidental spillage of toxic materials) or harm.

6.4 Rehabilitation and restoration

Rehabilitation and restoration actions only begin after impacts have occurred. However, research and planning should begin early in the EIA process, preferably during the pre-application phase, to optimise the outcomes of these interventions, maximise efficiency, and reduce the risks associated with uncertain outcomes (Box 8).

Successful restoration, namely the re-establishment of vegetation types, habitats, species, and ecological infrastructure, can considerably reduce the liabilities of residual negative impacts of a development, since it aims to reverse the impact damage on both biodiversity and ecosystem services.

Rehabilitation which aims to repair the ecological functioning of an impacted ecosystem and return it to productive use can reduce residual impacts on ecosystem services. However, it achieves little reduction in residual negative impacts on biodiversity. For this reason, preference should be given to strive for restoration as the intended outcome of measures to repair damage, rather than rehabilitation.

Explicit and measurable targets for rehabilitation/restoration must be defined, over specific timeframes. The intended outcomes must be realistic and attainable, and informed by reliable

⁵⁷ SANBI, Guidelines for EIAs: <http://redlist.sanbi.org/eiaguidelines.php>.

⁵⁸ See section 4.1 of SANBI 2020.

baseline studies, an understanding of ecological processes operating in the affected area, and an analysis of expected constraints to achieving outcomes which must be specifically addressed. Where there is uncertainty with regard to rehabilitation/restoration outcomes, a conservative result should be assumed.

Rehabilitation/restoration actions should be planned to start as soon as practicable after disturbance has ended, to minimise the duration of negative impacts and time lags to recovery or repair. To improve the likelihood of success, field trials could be carried out to refine a proposed approach and the selection of appropriate soil preparation, species to use, and related methods. Reference or benchmark sites against which to assess performance can be used. Appropriate methods to strip and store topsoil, to protect areas against erosion, collect local indigenous seeds and establish seed banks and nurseries, can be valuable in planning rehabilitation/restoration.

As with all mitigation measures, tracking of performance against intended outcomes must be undertaken, to enable appropriate corrective or adaptive management where rehabilitation/restoration progress is inadequate.

Ecological recovery can be extremely slow in many of South Africa's semi-arid ecosystems. Where restoration is not feasible and impacts are anticipated to be significant, consideration should be given to better avoidance and stronger minimisation measures, instead of moving to biodiversity offsets or compensation as a form of mitigation.

6.5 Measuring residual negative impacts

In accordance with the NEMA section 2 principles, a risk-averse and cautious approach must be used, taking into account limits of current knowledge, uncertainties, and gaps in knowledge which relate to the assessment of impacts and mitigation measures proposed, and assumptions made in predicting impacts and the outcomes of planned avoidance, minimisation and rehabilitation/restoration.

The likely outcomes of impact avoidance, minimisation and rehabilitation/restoration measures, taking into account these limits and uncertainties, as well as risks of their failure due to insufficient technical capacity and/or financial or other resources to implement successfully, must be clearly considered.

A reliable measure of the remaining impacts must be determined, as they provide the basis for designing and planning the implementation of biodiversity offsets and/or other forms of compensation. The offset or compensation must deliver equivalent benefits to counterbalance the residual negative impacts. The level of confidence in predictions, the timing of implementing mitigation measures relative to impacts (particularly where risks of significant impacts are high), and assurance of outcomes of measures in the mitigation hierarchy is thus of the utmost importance.

Where restoration is not intended, pre-mitigation residual negative impacts on biodiversity (and potentially on ecological infrastructure and ecosystem services) will not be reduced by rehabilitation

actions. Where planned restoration will only be achieved in the long term (taken as after 30 years), residual negative impacts should be taken as those remaining after avoidance and impact minimisation.

In some contexts, planned rehabilitation/restoration and/or biodiversity offset will provide the same ecological infrastructure and ecosystem services as those impacted. Where a time lag is predicted for rehabilitation/restoration to repair or recover lost or reduced ecosystem services, and where there would be material reduction in the ability of affected parties to maintain livelihoods or obtain customary benefits as a consequence, compensation must provide adequate substitutes for these ecosystem services until such time as rehabilitation/restoration is complete.

6.6 Designing adequate biodiversity offsets or compensation

For biodiversity offsets, reference must be made to the National Biodiversity Offset Guideline.

Monetary payment, often proposed as compensation for physical or economic displacement, does not guarantee the restoration of livelihoods, health and welfare of people whose VECs have been impacted. 'In kind' compensation is best for impacts on livelihoods resulting from loss of productive land and living resources (including medicinal plants, hunting and gathering grounds, grazing and cropping areas), marine and/or freshwater resources, and/or natural heritage/cultural resources. In-kind compensation should be provided in the same place as the affected resource/VEC and/or to the same affected parties, so that it remedies the residual impacts.

Where planned rehabilitation/restoration and/or a biodiversity offset will not deliver benefits to the same parties as those adversely affected by a development, compensation must be provided to those parties. Compensation should be acceptable, affordable and accessible to affected parties, and endure in the long term. It should preferably be provided before the negative impacts occur, or as impacts occur, to avoid increasing the vulnerability of affected parties.

It is important when designing a biodiversity offset to assess the potential consequences of protecting an area and managing it for biodiversity conservation on current users of the area, who may have high dependence on the targeted offset resources. In some cases additional measures to mitigate/compensate affected parties may be required. Similarly, where compensation is planned for loss of ecosystem services as a result of development, and involves conversion of natural areas to restore affected livelihoods (e.g. for agriculture), impacts on biodiversity may be exacerbated and would in turn need to be mitigated.

6.7 Making trade-offs within the mitigation hierarchy

In South Africa, all development must be ecologically sustainable, while economic and social development must be justifiable.⁵⁹ There are therefore specific trade-off rules that apply:

⁵⁹ Section 24 of the Constitution.

environmental integrity may never be compromised, and social and economic development must take a certain form and meet certain specific objectives in order for it to be considered justifiable⁶⁰.

Trade-offs between steps of the mitigation hierarchy which allow significant negative impacts on VECs cannot be justified (please refer to Box 2). No further decline or risk of decline in the environment should be acceptable in areas of existing concern and/or where considerable problems are evident, even if other forms of compensation are offered. No enhancement in one area should be permissible to compensate for incomplete mitigation of significant negative impacts in another area where stronger mitigation measures are feasible.

With reference to the NEMA principles, which provide the basis for achieving sustainable development, any deterioration of important ecological infrastructure, loss of essential resources to sustain livelihoods and maintain life-support systems, and/or which aggravate the vulnerability of affected parties, should not be permitted. Residual negative impacts which cannot be offset or compensated should only be considered in *highly exceptional circumstances*, when it has been demonstrated that there are no reasonable and feasible alternatives, that there are imperative reasons of overriding public interest⁶¹, and that these reasons for the proposed development outweigh its impact on the ecological sustainability objective. Due consideration must also be given in this regard to international agreements; developments deemed to be of overriding public interest in South Africa may be incompatible with these commitments and may adversely affect South Africa's position and reputation in international fora.

Proposals for stronger rehabilitation/restoration efforts in place of avoiding or minimising significant harm, or of biodiversity offsets to compensate for the loss of irreplaceable biodiversity areas in the landscape (CBA 1), should be rejected; the emphasis must be on the earlier preventative stages of the mitigation hierarchy (Figure 1).

Trade-offs involving substitutions in kind through compensation (e.g. permitting loss of forest in exchange for the construction of a new school, or conserving grassland instead of forest⁶²) should be avoided as they would aggravate South Africa's 'ecological deficit'.⁶³

7. Mitigation measures in the EIA report

In this step, the EAP must ensure that mitigation at every level of the mitigation hierarchy is clearly described in the EIA report, incorporating specialists' recommendations, and applying the approach set out in these guidelines and reflected in Figures 2 and 3.

⁶⁰ DEA 2017.

⁶¹ Text taken from article 6(4) of the European Commission's Habitats Directive, Directive 92/43/EEC of 21 May 1992.

⁶² There are exceptional cases where compensation for loss of one ecosystem type by protecting a different type but with higher conservation priority may be acceptable; refer to Biodiversity Offset Guideline.

⁶³ See also footnote 78.

The need and desirability of the development in its location must be defensible and demonstrate rigorous application of the mitigation hierarchy: a full description of the process followed to reach the proposed development, in the proposed location, and the siting of the development footprint within the proposed site, must be provided. In so doing, evidence must be given of due consideration of all feasible and reasonable alternatives to the development and/or changes to the development and its activities to mitigate negative impacts; the rejection of lower-impact options must be explicitly motivated and substantiated.

With regard specifically to rigorous application of the mitigation hierarchy, every specialist must:

- a) make explicit the criteria, ToC and/or LAC used to evaluate the significance of impacts, drawing on Table 1 in this guideline and Chapter 6.1;
- b) give a reasoned opinion⁶⁴ and/or a substantiated statement⁶⁵ on whether or not the proposed development should be authorised, stating clearly if it is fatally flawed, and/or where there would be loss of irreplaceable VECs;
- c) demonstrate how the steps in the mitigation hierarchy were applied proportionately to the potential significance of impacts and risks, emphasising avoidance and minimisation;
- d) identify reasonable and feasible alternatives to mitigate significant impacts and risks;
- e) provide clear recommendations regarding required mitigation actions and outcomes, monitoring and adaptive/corrective management measures if in the specialist's view, the proposed development should be authorised; and
- f) state clearly any assumptions, limitations, gaps in knowledge and uncertainties, together with the implications for impact prediction, assessment, and mitigation outcomes.

The EAP must synthesise specialists' findings in the EIA Report and, for the proposed development as a whole:

- a) give a reasoned opinion⁶⁶ on whether the proposed development should be authorised, clearly stating any 'fatal flaws' associated with it, as identified by specialists;
- b) state any assumptions and limitations, uncertainties and their implications for the impact assessment, as well as the expected outcomes of proposed mitigation measures;
- c) state the degree to which significant impacts can be avoided, minimised, and damaged areas rehabilitated/restored, and provide a measure of impacts remaining after these steps have been taken which may need to be offset or compensated;
- d) state the degree to which significant impacts can be reversed, as well as the risk of irreplaceable loss of resources which constitute VECs; and
- e) describe the trade-offs with regard to impact significance and associated mitigation measures, and how they are justified (i.e. demonstrate that more effective mitigation is not feasible). Please refer to **Chapter 6.7** for more information on trade-offs.

⁶⁴ Appendix 6 of the EIA Regulations with regard to specialist reports; terrestrial plant and animal species protocols (which supersede Appendix 6).

⁶⁵ Protocols for avifauna (onshore wind and photovoltaic development), and terrestrial and aquatic biodiversity (which supersede Appendix 6 requirements for these specific themes).

⁶⁶ Appendices 1 and 3 of the EIA Regulations with regard to EIA Reports.

All specialist recommendations for mitigation actions and outcomes, and monitoring and adaptive/corrective management, must be incorporated into the applicable mitigation plan.

8. Capturing mitigation measures in plans and programmes

In this step the EAP and specialists must incorporate all the necessary actions arising from the mitigation measures recommended by specialists into an EMPr or other mitigation plan. It is essential to link proposed mitigation measures to implementable management actions.

Mitigation measures to avoid impacts are best embedded in the final plans, spatial layouts and designs for a proposed development. Management actions to minimise impacts, and rehabilitate/restore damage must be incorporated in the EMPr. Where required, a closure plan to incorporate all recommended measures to avoid and minimise impacts of closure, to rehabilitate/restore degraded areas, and remedy pollution must be prepared⁶⁷. Measures to compensate or offset must be captured in a suitable plan/programme; if not in the EMPr, in an equivalent plan/programme such as a Biodiversity Offset Plan and Management Plan (refer to the National Biodiversity Offset Guideline). Compensation measures for residual impacts on ecosystem services not accounted for in biodiversity offsets must either be captured in the EMPr in the applicable phases of the project, or in other relevant plans or programmes (e.g. Livelihood Restoration Programme or Resettlement Action Plan).

Mitigation plans must stipulate the intended outcomes or 'on the ground' results of impact management. They must also capture all actions which must be undertaken to deliver those outcomes in each and every phase of the development: i.e. to avoid and minimise negative impacts during site establishment and construction, to manage operational impacts, and to rehabilitate/restore areas disturbed or damaged by the project⁶⁸.

Mitigation plans must set out clear roles and responsibilities for implementing the actions, indicators for checking both the implementation of these actions and their effect in relation to required outcomes through monitoring and auditing, and reporting requirements. Moreover, they should provide information on appropriate response actions to be taken should monitoring and evaluation highlight failure to achieve required outcomes.

Mitigation outcomes should be specific, measurable, achievable and time-bound, and give explicit timelines for the evaluation and assessment of outcomes. The frequency, periodicity and scope of monitoring and auditing must be tailored in accordance with the level of certainty in mitigation outcomes: the higher the uncertainty about the effectiveness of mitigation actions, the greater the need for regular checks.

The involvement of local communities, NGOs and CBOs either in helping to implement mitigation and management measures (e.g. employment in restoration/rehabilitation work, or in managing a

⁶⁷ Appendix 5 of the EIA Regulations.

⁶⁸ Appendix 3 of the EIA Regulations.

biodiversity offset site), and/or in tracking and reporting on performance, can be effective and help deliver socioeconomic benefits.

Financial provision to implement rehabilitation⁶⁹/restoration, and for biodiversity offsets⁷⁰ and any other compensation for loss of ecosystem services must be made by the applicant/proponent (refer to **Chapter 10.3**). Please refer to **Chapter 11** for details on implementation, monitoring and auditing.

9. Decision making

The CA is required to consider all relevant factors to reach a decision on an EA application. It is crucial, therefore, that relevant and reliable information on impacts and risks, their significance and mitigation is included in the EIA Report (**Chapter 7**) along with the reasoned opinion of the EAP and specialists and/or substantiated statements from specialists⁷¹.

This Chapter covers both the EAP's recommendations and decision making by the CA.

9.1 Recommendations for decision making

The EAP and specialists must provide a reasoned opinion⁷² and/or a substantiated statement⁷³ on whether the proposed development should or should not be authorised, and recommend associated conditions (refer to **Chapter 7**).

As a priority, the EIA Report must state clearly whether the proposed development is fatally flawed, in which case it should not be authorised.

The burden of proof that the proposed development would be consistent with the NEMA principles and Constitution's environmental right lies with applicants and their representatives. Where a proposed development is not fatally flawed, and in the opinion of the EAP and specialists would be acceptable provided that mitigation measures were implemented, the EIA report should provide evidence that:

- a) all feasible and reasonable alternatives that could preferably avoid, and/or minimise, potentially significant impacts and risks to the environment have been prioritised and given due consideration;
- b) provision has been made for biodiversity offsets and other appropriate compensation only as a 'last resort' and with strong assurance of successful outcomes;

⁶⁹ As envisaged in section 24P of NEMA and the Regulations pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations, 2015 (Financial Provisioning Regulations) (currently undergoing amendment).

⁷⁰ Refer to the National Biodiversity Offset Guideline.

⁷¹ Section 24O of NEMA. See also Promotion of Administrative Justice Act, 2000 (Act No. 3 of 2000), section 6.

⁷² Appendices 1, 3 and 6 of the EIA Regulations, terrestrial plant and animal species protocols.

⁷³ Protocols for avifauna (onshore wind and photovoltaic development), and terrestrial and aquatic biodiversity.

- c) key uncertainties in relation to exceeding LAC and/or crossing thresholds of major concern have been avoided or reduced respectively through the use of proven mitigation measures (Box 8); and
- d) no unacceptable trade-offs within the mitigation hierarchy have been proposed in arriving at the mitigation measures set out in the EIA report (**Chapter 6.7**).

The recommendations of the EAP and specialists for actions in different phases of the proposed development should form the basis for the CA's conditions in respect of that authorisation.

9.2 Decision making by the Competent Authority

The CA, in reaching a decision, must ensure that the NEMA principles are satisfied. For the specific purposes of this guideline, the CA should pay particular attention to the principles for applying the mitigation hierarchy set out in this guideline (**Chapter 4.2**) and the desired outcomes (**Chapter 4.1**) and, amongst others:

- a) ensure that the mitigation hierarchy has been rigorously applied in the EIA process to avoid fatal flaws, through the systematic consideration of reasonable and feasible alternatives;
- b) ensure that the mitigation hierarchy has been applied proportionately to the potential significance of impacts and risks, prioritising preventative measures;
- c) give explicit consideration to uncertainties and risks of irreplaceable loss of VECs and transgressing LAC, and ensure that proven methods of reducing impacts and risks, including due consideration of alternatives, have been applied where thresholds of major concern are breached; and
- d) evaluate carefully any trade-offs made in applying the mitigation hierarchy, to ensure that they do not compromise the environmental right or ecologically sustainable development.

Conditions in an EA must specify the environmental outcomes that must be achieved by mitigation as a consequence of meeting these conditions. **Chapter 10** gives more information on this step.

10. Drafting mitigation 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 monitoring and enforcement.

The principles of administrative justice⁷⁴ apply when deciding on appropriate conditions. The key principles for mitigation conditions are that they 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.

Trade-offs within the mitigation hierarchy involving loss of biodiversity, ecological infrastructure and ecosystem services (**Chapter 6.7**) should be approached with extreme caution in the context of EA applications given that South African law demands a rational link between impacts on the environment and conditions of EAs directed at addressing those impacts⁷⁵.

In **Chapters 10.1 to 10.4** below, guidance is given for particular elements of mitigation conditions. The various elements given in these Chapters are not necessarily the only elements of an effective mitigation condition: CAs are encouraged to apply their minds to each application to ensure that all appropriate conditions for mitigation, from avoidance through to biodiversity offsets and compensation, are covered.

10.1 The outcomes that must be achieved by particular mitigation measures

The most important components of mitigation conditions are ones setting out the specific and measurable outcomes that must be achieved.

Avoidance measures are best embedded in the layout plan, detailed designs and contracts for the proposed development. Conditions should include no permissible deviation from these plans and designs, and stipulate setbacks and/or buffers within which no disturbance or development is allowed.

Measures to minimise impacts and rehabilitate/restore project damage are generally incorporated in mitigation plans. Conditions must refer to the relevant plan(s), requiring their implementation and stipulating measurable outcomes to be achieved within specified timeframes, and add any measures required over and above the plan(s).

Requirements to provide a biodiversity offset or other compensation must be included in conditions, with the prescribed biodiversity and/ or ecosystem services outcomes and timeframes specified⁷⁶.

10.2 Suspensive or resolute conditions

A suspensive condition would provide that the activity authorised in an EA may not commence until specified actions, considered to be crucial to the outcome of mitigation, have been completed. Those actions may, for example, necessitate that the EA holder submits proof of a financial guarantee of

⁷⁴ See the Promotion of Administrative Justice Act, 2000.

⁷⁵ SLC Property Group (Pty) Ltd and Another v The Minister of Environmental Affairs and Economic Development (Western Cape) and Another (5542/2007) [2007] ZAWCHC 58; [2008] 1 All SA 627 (C) (26 October 2007).

⁷⁶ Biodiversity Offset Guideline.

adequate financial resources to comply with the planned remediative measures, depending on the circumstances.

A resolute condition would provide that the EA would lapse if specified actions have not been taken by a specific time, meaning that the development would no longer be authorised. Resolute conditions must be used with due regard to realistic timeframes within which the remediative mitigation actions can be completed.

10.3 Financial provision and assurance for mitigation

The CA must satisfy itself that the applicant is able to implement the proposed mitigation measures⁷⁷. Upfront financial provision for mine rehabilitation/restoration, covering ongoing rehabilitation costs, closure costs and latent (post-closure) environmental impacts, is required⁷⁸ by way of financial guarantees or similar vehicles. However, NEMA does not currently cover financial provision in other sectors⁷⁹.

Assurance should be provided by applicants prior to commencement of a development that they have sufficient financial resources to complete proposed operational phase monitoring and mitigation for the duration of the impacts, rehabilitation/restoration measures, remediation of latent impacts, and/or cover the costs associated with biodiversity offsets for at least 30 years⁸⁰, and to provide other forms of compensation where appropriate. The sufficiency of financial provision must be reviewed at regular intervals to accommodate any changes in adaptive management, and adjustments made to that provision as necessary.

10.4 The period of validity of the environmental authorisation

The EIA Regulations⁸¹ provide that the CA must specify in the EA when that EA lapses. The date on which it lapses is determined by when the authorised development is completed, or when all of the mitigation measures have been completed, whichever comes last.

11. Implementation, monitoring and auditing

Mitigation measures must be implemented in accordance with condition(s) in the EA, read with a relevant mitigation plan (**Chapter 8**).

The EA holder or contracted implementing agent (as applicable) must conduct regular monitoring and evaluation of the development's performance against stated outcomes specified in EA conditions, the

⁷⁷ Section 24O(1)(b)(iii) of NEMA.

⁷⁸ As envisaged in section 24P of NEMA and the Financial Provisioning Regulations, and as currently being amended.

⁷⁹ Once the National Environmental Management Laws Amendment Act (Act 2 of 2022) commences, section 24P of NEMA will mandate the Minister to require financial provisioning in other sectors.

⁸⁰ Refer to the National Biodiversity Offset Guideline.

⁸¹ See regulation 26 of the EIA Regulations.

outcomes stipulated in applicable mitigation plans, and any other requirements (e.g. loan conditions) throughout the development's lifecycle. In addition, where the intended outcomes are not being met and/or performance is inadequate, monitoring indicates that adaptive and corrective actions are needed.

Mitigation plans must be revised periodically during the implementation phase to respond to the findings of monitoring and evaluation, and the auditing process, to accommodate the need for additional adaptive or corrective management, or supplementary mitigation actions. The independent auditor appointed by the EA holder must undertake audits on the implementation of the mitigation measures at intervals that may be prescribed in an EA, or other applicable mitigation plan. Audit reports must be made available to I&APs on request to ensure transparency and public accountability⁸².

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

The responsibilities of EA holders for implementing mitigation measures are specified in the EA. Failure to comply with a condition of an EA is 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 condition in terms of section 31L of NEMA.

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⁸² Regulation 34(6) of the EIA Regulations.

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