THE COAL MINING COMPONENT OF THE GRASSLANDS BIODIVERSITY PROGRAMME

LITERATURE AND LEGISLATIVE REVIEW

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Prepared By: Oryx Environmental

For more information:
Anthea Stephens
Grasslands Programme Manager
stephens@sanbi.org, 012 843 5000

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The coal mining component of the Grasslands Biodiversity Programme

Literature and legislative review

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Prepared by

Oryx Environmental
1st Floor North Entrance
26 Baker Street
Rosebank
Johannesburg
PO Box 521112
Saxonwold
2132
Tel: (011) 880 5204
Fax: (011) 880 5219
Email: greg@oryxenviro.co.za
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1) BACKGROUND

1.1 Introduction

The grassland biome, which covers an area of approximately 350,000 km², is the second largest biome in South Africa and includes the country’s main economic centre, the Witwatersrand, which is its most populous, rapidly urbanising and industrialising region. Due to this, and other pressures such as crop production and the operations of several key industries including forestry and mining, approximately 40% of it has been irreversibly transformed. Levels of transformation and the intense and growing pressures are of particular concern because it comprises a centre of diversity with an estimated 3,788 plant species (Gibbs Russell 1987) and less than 2% of it is formally conserved (Low and Rebelo 1996; O’Connor and Bredenkamp 1997).

In response to the pressures on the biome, the South African National Biodiversity Institute (SANBI) has instituted the Grasslands Biodiversity Programme, the purpose of which is to mainstream biodiversity into the following key areas: agriculture, forestry, coal mining and the urban economy in Gauteng. The programme has approved funding of US$8.3 million from the Global Environment Facility (GEF) through the United Nations Development Programme (UNDP) for its implementation over a five year period beginning in 2008. The primary objective of the programme is:

Major production sectors are directly contributing to the achievement of biodiversity conservation priorities within the grassland biome.

This objective will be achieved though five programme outcomes, including:

Outcome 5: Biodiversity management secured in the coal mining sector.

1.2 The coal mining context

Coal is the second largest earner of foreign exchange in South Africa and contributes 4% of GDP. The industry employs 450,000 people directly and another 200,000 in associated industries. More than 40% of the coal mined in South Africa is utilised by Eskom for power generation and major mining houses account for approximately 91% of the coal mined in the country. The industry is thus an integral part of the economy, and through employment and economic development, has an important role to play in the socio-economic fabric of the country. Despite this, the industry has a chequered history of environmental performance and historically has paid little or no attention to issues related to biodiversity protection. This is particularly relevant, as the Highveld region, comprising high altitude grassland, in which most coal mining occurs, plays a key role in the supply of a range of essential ecological services to the country including water and food supply.

Coal mining results in significant direct and indirect impacts on water resources through the preference of accessing ore bodies at the points closest to the surface, which are usually in wetlands and waterways, and through the polluting effects of acid mine drainage, which have impacted on large parts of the catchments in which the mining occurs. The areas in which open cast mining is undertaken are irreversibly transformed, the focus on rehabilitation generally being the stabilisation of areas but not rehabilitation to restore agricultural potential. Although some progress has been made to re-introduce agricultural viability to rehabilitated areas, the usual process involves the establishment of a mono-specific pasture rather than the re-
establishment of a wide range of veld grass species under soil fertility conditions similar to local undisturbed areas. As a result these systems are not usually self-sustaining and require a significant degree of ongoing management.

1.3 The Grasslands Programme

On the basis of the recent rapid expansion of the coal mining sector and the negative impacts associated with its activities on biodiversity, particularly wetlands, the Grasslands Programme has identified the need to develop and implement interventions. As most of the major coal mining houses in South Africa are international conglomerates that subscribe to the principles of environmental best practice, opportunities exist to affect meaningful outcomes in the conservation of grasslands impacted upon by their mining practices.

SANBI has identified two streams in which to undertake interventions in its effort to improve grassland biodiversity conservation in the coal mining sector:

- The development of a biodiversity offset scheme, in particular a wetland mitigation bank.
- The use of biodiversity information in planning for the further expansion of coal mining.

It is intended that the wetland mitigation bank scheme will be developed as a pilot project, based on a model in which an appropriate government department, such as SANBI, will fulfil the role of the banker, taking responsibility for the planning, implementation and operation of the bank. This project will be undertaken in cooperation with the Department of Water Affairs and Forestry (DWAF), the Department of Minerals and Energy (DME), the Water Research Commission and provincial authorities including the Mpumalanga Department of Agriculture and Land Administration (MDALA) and the Mpumalanga Tourism and Parks Agency (MTPA).

Tools such as the Mpumalanga Biodiversity Conservation Plan will be used to identify conflicts between biodiversity and coal mine expansion priorities in an effort to develop effective mitigation measures, including options such as offsets. This stream of work will be undertaken in conjunction with DME and provincial authorities responsible for environmental impact assessment (EIA) such as MDALA.
2) LEGISLATIVE REVIEW

2.1 The legal framework for biodiversity protection

The conservation of biodiversity in South Africa is enshrined in the Constitution (Section 24 of the Bill of Rights) and in a number of international legal instruments, to which South Africa is a party, notably Agenda 21 and the Convention on Biological Diversity (Rio de Janeiro 1992). The rights set out in the Constitution and South Africa’s international legal commitments are implemented through a series of national and provincial statutes, the most relevant of which are:

National law:

- The National Environmental Management Act (No.107 of 1998 - NEMA)
- The National Environmental Management: Biodiversity Act (No.10 of 2004).
- The National Environmental Management: Protected Areas Act (No.57 of 2003).
- The Conservation of Agricultural Resources Act (No.43 of 1983 - CARA).

In addition to the national legislation, a number of provincial statutes are relevant, in the areas of the grassland biome in which coal mining takes place:

Provincial law:

- The Mpumalanga Parks and Tourism Agency Act (No.5 of 2005).

CARA addresses particular aspects of biodiversity, specifically soil conservation and the control of alien weeds and invasive plants. The NWA addresses particular aspects of biodiversity, specifically water resource protection, which is considered in section 2.1 below. NEMA is an enabling or framework act that sets the overarching principles that guide the formulation of subsequent laws and regulations. Within this framework, the Biodiversity and Protected Areas Acts have been promulgated.

2.1.1 The Biodiversity Act

South Africa’s international legal obligations in terms of the Convention on Biological Diversity are addressed through the Biodiversity Act, the primary objective of which is to provide for the management, conservation and sustainable use of the country’s biodiversity.

Chapter 3 of the Act sets out the requirements for biodiversity planning. It includes provisions for the creation of a national biodiversity framework, which must provide for an integrated approach to biodiversity management in South Africa and must set the norms and standards for provincial and municipal environmental conservation plans. The Act also makes provision for the creation of bioregional plans, which must contain measures for the effective management of biodiversity within a region. Bioregional plans may be prepared at the initiative of the Minister or MEC, or at the request of a province or municipality. Any person or organisation may also prepare and submit a draft biodiversity management plan, for approval to the Minister, for a significant ecosystem or species. The Minister may then enter into a biodiversity management agreement with the person or organisation that prepared the management plan, regarding its implementation.
Chapter 4 of the Act provides for the protection of ecosystems or species and enables the Minister or MEC to publish national or provincial lists respectively of ecosystems that are threatened and in need of protection. This includes the following categories:

- Critically endangered ecosystems – ecosystems that have undergone severe degradation and are at an extremely high risk of irreversible transformation.
- Endangered ecosystems – ecosystems that have undergone significant degradation.
- Vulnerable ecosystems – ecosystems that are under a high risk of undergoing significant degradation.
- Protected ecosystems – ecosystems that are of high conservation value or high national or provincial importance.

Similar designations are given to threatened and endangered species.

Chapter 5 of the Act sets out the requirements for the management and control of species and organisms posing potential threats to biodiversity. To a large extent, these requirements mirror those related to the control of alien species in CARA. They address alien and invasive species and include requirements for landowners to take steps in controlling and eradicating any listed invasive species that occur on their property (s.73(2)(b)). Any person may request a competent authority to issue a directive to take the necessary steps to control any listed invasive species.

2.1.2 The Protected Areas Act

The Protected Areas Act provides the statutory basis for the declaration and management of protected areas. The Act sets out the purpose of protected areas, which includes:

- The management of the interrelationship between natural environmental biodiversity, human settlement and economic development.
- The rehabilitation and restoration of degraded ecosystems and promotion of the recovery of endangered and vulnerable species.

It makes provision for a number of different types of protected areas, including nature reserves and protected environments. The Act allows for the designation of nature reserves on private land, provided that the owner of the land has consented by way of written agreement (s23(3)). Protected environments enable owners of land to take collective action to conserve biodiversity on their land and to seek legal recognition thereof (s28(2)(b)). The Act also allows for co-management of protected areas that allows a management authority to enter into an agreement with organs of state, local communities or other parties, with the purpose of regulating human activities that affect the environment in the area (s42(1)).

The Act sets out restrictions on prospecting and mining activities in protected areas (s48), which stipulate that no person may conduct commercial prospecting or mining activities within a nature reserve, or within a protected environment without the written permission of the Minister of Minerals and Energy Affairs. This effectively excludes mining from nature reserves and restricts it within protected environments.

2.1.3 Mpumalanga Provincial legislation

The Mpumalanga Nature Conservation Act sets the provisions for the protection of rare and endangered species and the protection of sensitive natural sites from damage or transformation.

The Mpumalanga Tourism and Parks Agency Act establishes the Mpumalanga Tourism and Parks Agency (MTPA) with the objective of promoting sustainable tourism and providing for the sustainable utilisation of natural resources. In pursuing its objective, the agency is required to
provide for the effective management and conservation of biodiversity and ecosystems within the province and to develop and ensure effective management of protected areas. The specific powers and functions of the MTPA include (s4(14)):

- The protection of natural resources in the province, including natural systems, biodiversity and ecological functions and processes.
- Administration of the Mpumalanga Nature Conservation Act so as to:
  - Determine and enforce limits of sustainable utilisation of natural resources.
  - Design and implement appropriate management and harvesting techniques and strategies.
  - Ensure the protection and survival of rare and endangered species.
  - Manage and control the spread and numbers of invasive alien species, as well as the spread, numbers and activities of problem animals.
  - Establish and develop a representative network of protected areas.
  - Ensure that natural systems, bio-diversity and ecological functions and processes in the Province are maintained.
- Cooperation with responsible government authorities in order to assist in land use planning and the evaluation of development proposals.

In performing its powers and functions the MTPA may enter into agreements, and in consultation with the Members of Executive Council, enter into public private partnerships.

### 2.2 The legal framework for water resource management

Water resource protection and management in South Africa is broadly addressed in the general environmental provisions in Section 24 of the Bill of Rights of the Constitution as well as in Section 27 which establishes a right to have access to sufficient water. In addition to this, South Africa is a party to a number of international conventions and bilateral agreements that are relevant to the protection and management of particular water resources. South Africa’s constitutional and international legal obligations are primarily implemented through the National Water Act (No.36 of 1998 - NWA), which is the principal legal instrument for water resource protection and management in South Africa.

#### 2.2.1 The National Water Act

The purpose of the NWA is to promote the efficient, sustainable and beneficial use of water in the public interest, the protection of aquatic and associated ecosystems and their biological diversity, and to meet international obligations. It establishes the Minister and the Department of Water Affairs and Forestry (DWAF) as the public trustees of South Africa’s water resources.

Chapter 2 of the NWA includes provisions for the establishment of a National Water Resource Strategy and Catchment Management Strategies for individual catchments. Catchment Management Strategies, which are to be developed by Catchment Management Agencies, must be established for the conservation, management and control of water resources within a catchment management area and they must take into account the class of water resources, resource quality objectives, the requirements of the Reserve and international obligations.

The protection and use of water resources is undertaken under the Act through a twofold process – source directed controls and resource directed measures. Source directed controls, which are set out under Chapter 4 of the Act, relate to licensing processes for activities that use or impact upon water resources, which are assessed prior to granting a license through the environmental impact assessment (EIA) process. Resource directed measures, which are set
out under Chapter 3 of the Act, relate to the classification of water resources and the
establishment of a Reserve and Resource Quality Objectives aimed at sustainably maintaining
the resource. The Reserve is defined as the quality and quantity of water necessary to satisfy
basic human needs and to protect the ecology of aquatic ecosystems. Its purpose is to protect
the capability of water resources to support utilisation and the provision of ecological goods and
services in perpetuity. The Reserve concept is depicted in Figure 2.1 below.

![Figure 2.1: Graphic representation of the Reserve concept (DWAF 1998)](image)

**2.3 The legal framework for the administration of mining**

The control and administration of prospecting and mining activities is undertaken through the

**2.3.1 The Minerals Act**

Under the Act, the state is the custodian of the country’s mineral and petroleum resources and
has the right to prospecting or mining rights (s3(2)(a)). The Act stipulates that prospecting
activities may only be undertaken once an environmental management plan is in place. Similarly, mining activities may only be undertaken once an approved environmental
management programme is in place.

The Act sets out the requirements for environmental assessment that is required prior to the
granting of a mining right (s39), which stipulates that an environmental impact assessment must
be undertaken and an environmental management programme prepared once an application
has been submitted for a mining right. As part of this process, the Act sets out the requirements
for public consultation that must be undertaken. In implementing the environmental
requirements of the Act, it stipulates that the environmental principles set out in section 2 of
NEMA should serve as guidelines for their interpretation and implementation (s37).

Section 41 of the Act includes requirements for financial provisions for the remediation of
environmental damage. Before an environmental management programme can be approved, a
financial provision must be made for the rehabilitation or management of negative environmental impacts (s41(1)). This money is intended to act as a guarantee that the rehabilitation or environmental impacts management requirements set out in the environmental management programme will be implemented. This financial provision must be retained until a mine closure certificate is issued in terms of section 43 of the Act.

Section 49 of the Act enables the minister to prohibit or restrict prospecting or mining activities in respect of land identified by the minister for periods and on terms and conditions that the minister may determine. Such prohibitions or restrictions may be lifted or amended by the minister through a notice in the government gazette.
4) WETLAND MITIGATION BANKING

4.1 Origins of wetland banking

A wetland mitigation bank is defined as an area of wetland that has been restored, created, or in some circumstances, conserved, which is then set aside to compensate for impacts on wetlands in the future. The concept of wetland mitigation banking was developed in the United States through a policy of no-net-loss of wetlands that was adopted in 1988. It arose as a market mechanism in which a developer could purchase credits in a wetland mitigation bank to offset unavoidable impacts associated with particular developments. The value of a wetland mitigation bank, or its number of credits, is determined by quantifying the wetland functions restored or created. In general, wetland mitigation banking may only be considered as an option if it is not possible or feasible to avoid impacts and if mitigation banking is an acceptable form of compensatory mitigation. The following summary is taken from an assessment of the potential to utilise wetland banking in South Africa by the Institute of Natural Resources for SANBI.

4.2 Wetland banking in the United States

The US Environmental Protection Agency (EPA) defines four methods for generating compensatory credits:

- **Establishment (creation)** – defined as “the development of a wetland or other aquatic resource through manipulation of the physical, chemical or biological characteristics where a wetland did not previously exist”.

- **Restoration** – defined as “the re-establishment or rehabilitation of a wetland or aquatic resource with the goal of returning natural or historic functions and characteristics to a former or degraded wetland”. Credits are determined on the basis of a baseline condition so more seriously degraded sites provide the greatest opportunity for credit production.

- **Enhancement** – defined as “the heightening, intensification or improvement” of wetland functions such as flood water retention, natural filtration, biodiversity of a region etc.

- **Protection/conservation** – which involves the establishment of appropriate legal mechanisms (e.g. transfer of land title, conservation easements, restrictive covenants) to protect wetlands, accompanied by changes in land use such as cessation of grazing, cultivation and other incompatible activities.

Several types of banks are also recognised, ranging from single-client banks in which the bank sponsor is usually also the principal credit user or client, through to banks that are sponsored by private entrepreneurs with the purpose of making compensatory credits available for sale on the open market.

In 1995, the Federal Guidance for the Establishment, Use and Operation of Mitigation Banks was adopted in the US. The guidelines set out the various steps required to establish, implement and operate a mitigation bank in the US, which is described in greater detail below.

4.2.1 Bank planning

- Sponsor submits a prospectus that identifies the bank’s goals and operational objectives and outlines the credit production methods (creation, restoration, protection).

- The bank is required to establish goals and to strategically site banks based on an analysis of needs and opportunities.
The mitigation site should be selected based on the following aims:

- The development or enhancement of specific wetland functions in critical areas through the strategic restoration, creation or enhancement of wetlands (e.g. improving water quality by the action of fringe or riparian wetlands; providing flood control by intercepting runoff).
- The synergistic enhancement of the value of existing wetland and non-wetland areas (e.g. existing public or private park and recreational areas, wildlife management areas, etc.) through proximal location.
- The provision of an opportunity to improve land use patterns within a watershed or other designated area (e.g. providing open space and environmental corridors; providing buffers between and among residential, commercial and industrial developments).

4.2.2 Success criteria and monitoring

- Success criteria are a set of standards that are employed in order to evaluate the status of a bank’s physical and functional development.

  Success criteria should:

  - Include multiple parameters that are geared to the diverse physical and functional attributes of wetlands.
  - Be determined by the bank sponsor using monitoring techniques that have been agreed to and documented in the banking instrument.
  - Include performance “thresholds” that can be explicitly linked by the authorising agency to certification of credits.

4.2.3 Determination of credits and debits

- Baseline documentation is undertaken to determine the initial state of a bank site.
- The US guidelines include 14 aspects that should be addressed in baseline documentation reports.
- The US guidelines do not prescribe whether area or functional units can be specified as the correct measure for credits or debits, this is evaluated on a case-by-case basis.
- Compensation ratios, which are the number of units of credit (acreage or functional units) that need to be debited from a bank to compensate for one unit of wetland lost, are also determined on a case-by-case basis.
- The US guidelines state that “the number of credits available for withdrawal (i.e. debiting) should generally be commensurate with the level of aquatic functions attained at a bank at the time of debiting”.

4.3 Compensatory mitigation for wetlands in other countries

A number of countries have developed alternative compensatory wetland mitigation schemes that are not based on a banking concept. Canada have not adopted a wetland banking approach, as the North American Wetlands Conservation Council (Canada) considers that it encourages a commodity approach to conservation wherein wetlands are traded for cash and it places an emphasis on compensation rather than conservation, which enables the circumvention of processes that seek to avoid or minimise impacts. Instead, Canada has adopted a straight off-site mitigation approach in which a wetland restoration (government) agency identifies rehabilitation sites, identifies the costs of rehabilitation and undertakes ongoing monitoring.
Australia is considering adopting the concepts of wetland banking within the context of a framework for biodiversity offsets. The purpose of the framework will be to provide a systematic and consistent method for offsets in order to address the cumulative loss of habitat associated with new development and to complement existing initiatives for biodiversity conservation. Although mitigation banking has not as yet been adopted, the New South Wales Department of Environment and Conservation considers it to be an option that should be explored in the development of their proposed offsets scheme.

4.4 **Summary of key issues and options in South Africa**

Analysis of the situation and lessons learned from the USA enables:

- The identification of the technical tools, legislation and any other requirements necessary to implement mitigation banking (summarised in Table 4.1).
- The identification of the technical and institutional/legal issues that have drawn criticism of the concept in the USA, and consideration of how these may addressed in South Africa given the local context (institutional structure, tools). The key technical and institutional/legislative issues discussed in this section and the possible options for addressing these are summarised in Table 4.2.

### Table 4.1 Key requirements for the application of mitigation banking in South Africa

<table>
<thead>
<tr>
<th>Key requirements</th>
<th>Application within South Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Statutory requirements</strong></td>
<td></td>
</tr>
<tr>
<td>Legislation supporting the concept of “avoid, minimise and mitigate”, and accountability and compliance with Records of Decision.</td>
<td>Legislation exists, principally within NEMA and the NWA.</td>
</tr>
</tbody>
</table>
| Legislation accounting for the specific requirements of wetlands (including a legal definition of wetlands). | Legislation and guidelines exist, although perhaps requiring some refinement:  
- Definition of a wetland – NWA.  
| Legislation specifically tailored to enable the effective administration of mitigation banks. | Several legal mechanisms are available within existing structures that could be applied to address certain requirements of establishing and operating a bank.  
The Biodiversity Act provides for management agreements to conserve threatened ecosystems, which could be used to secure rehabilitation sites. The NWA provides for the establishment of bodies necessary for administering integrated water resource management. Specific policy and legislation for other aspects of developing and operating a bank need to be developed – such as guidelines developed in the Western Cape to govern biodiversity offsets in general. Such an instrument should cover issues such as bank size, service area etc. Capacity is also lacking to administer such a mechanism. |
<p>| <strong>Institutional requirements</strong> | |
| Effective enforcement of the relevant legislation. | Inadequate resources and limited capacity are recognised as important limitations of the current situation. |</p>
<table>
<thead>
<tr>
<th>Key requirements</th>
<th>Application within South Africa</th>
</tr>
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<tbody>
<tr>
<td>A lead organisation to oversee the mitigation banking process at a national level.</td>
<td>There are several government departments that could take on this role. For example, Working for Wetlands, a division within SANBI, has stated that it intends to “encourage wetland rehabilitation efforts beyond the Working for Wetlands projects by, for example, providing tools, guidelines and standards, quality control criteria and planning techniques to support other rehabilitation efforts, and advocate the wider use of off-site mitigation, where appropriate.” and “provide a service as a third party verifier for off-site mitigation projects”.</td>
</tr>
<tr>
<td>Institutions for multi-stakeholder coordination and collaboration.</td>
<td>Useful entities exist at a national level in the form of the National Wetland Indaba and the wetland list server, and at a provincial level in the form of the Provincial Wetland for a. As CMAs and their associated institutions form, they are also likely to become useful. A specific MOU that defines the roles and responsibilities of organs of state and other stakeholders specific to a province or region that would have a role to play in overseeing the establishment and operation of a mitigation bank needs to be developed. Such an MOU will:</td>
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<tr>
<td></td>
<td>• Require a strong lead organisation.</td>
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<td></td>
<td>• Require adequate capacity to operate and maintain participation by members.</td>
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<td></td>
<td>• Need to be structured in a way that ensures that participation by members assists in them meeting their mandate i.e. there is incentive for involvement.</td>
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<thead>
<tr>
<th>Technical requirements</th>
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<tr>
<td><strong>Technical tools:</strong></td>
<td>Most of the required tools already exist:</td>
</tr>
<tr>
<td>• Guidelines/tools for assessing health and functionality.</td>
<td>• (WET-Health (Macfarlane et al., 2006) and WET-Ecoservices (Kotze et al., 2005)).</td>
</tr>
<tr>
<td>• Guidelines/tools for determining credits/replacement ratios.</td>
<td>• Need to be developed.</td>
</tr>
<tr>
<td>• Guidelines for rehabilitation planning.</td>
<td>• WET-RehabPlan (Marneweck et al., 2005).</td>
</tr>
<tr>
<td>• Guidelines for rehabilitation (construction).</td>
<td>• WET-RehabMethods (Russell et al., 2005).</td>
</tr>
<tr>
<td>• Guidelines/tools for monitoring success (structural and biological - vegetation and others).</td>
<td>• WET-RehabEvaluate (Cowden et al., 2005).</td>
</tr>
<tr>
<td>Knowledge and expertise of those planning and overseeing the process.</td>
<td>Reasonable existing knowledge and expertise on wetland rehabilitation resides within a network of organisations, notably WfWetlands and Mondi Wetlands Project, consultants and universities, and this continues to be enhanced through experience and the WRC/WfWetlands wetland rehabilitation research programme. Specific expertise in administering mitigation banks and monitoring and evaluating mitigation is, however, limited but is being developed.</td>
</tr>
<tr>
<td>Knowledge and expertise of those implementing the mitigation measures.</td>
<td>Numerous Section 21 companies have been established to implement wetland rehabilitation on behalf of Working for Wetlands. Although specific areas require improvement (e.g. re-vegetation techniques), a significant pool of knowledge and expertise has been built through their years of experience and the training, mentoring and monitoring and evaluation provided to these companies by WfWetlands and its partners (e.g. Mondi Wetlands Project).</td>
</tr>
</tbody>
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## Table 4.2 Issues associated with mitigation banking and options for addressing them in South Africa

<table>
<thead>
<tr>
<th>Technical issues</th>
<th>Recommendations to address them in South Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland definition and guidelines for delineation.</td>
<td>The existing NWA wetland delineation and DWAF guidelines for wetland delineation should be used.</td>
</tr>
<tr>
<td>On-site vs. off-site and in-kind vs. out-of-kind.</td>
<td>The principle of on-site and in-kind should be applied as far as is practically possible. However, off-site mitigation could be considered acceptable where impacts are unavoidable, the impacted wetland is not considered irreplaceable and no opportunities exist for on-site mitigation. For off-site mitigation, replacement should be in-kind unless data exists to demonstrate that the site chosen is of a kind that is rarer and/or more threatened than that being lost. The provincial biodiversity conservation agency and provincial biodiversity conservation plan should be referred to for guidance in identifying rare/threatened wetland types.</td>
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<tr>
<td>Size of mitigation banks.</td>
<td>As far as is practically possible, banks should be relatively large but with due consideration taken of the existing size distribution of wetlands in the region.</td>
</tr>
<tr>
<td>Geographic service area.</td>
<td>The principal means of designating the geographical service area should be based on a joint consideration of catchments and bioregions as specified in regional conservation planning and catchment management plans where they exist.</td>
</tr>
<tr>
<td>Transfer of ecosystem services from one area to another.</td>
<td>This issue has particular relevance to South Africa, which has a history of inequality. As would be the case around the issue of magnitude of impact and avoidability, any offsite mitigation would need to be preceded by a full assessment of impacts (i.e. offsite mitigation should never become a means of avoiding the standard regulatory requirements facing any development).</td>
</tr>
<tr>
<td>Different types of compensatory mitigation.</td>
<td>Rehabilitation should be the principal means of carrying out mitigation although judicious application of enhancement, protection and creation are also considered acceptable. However, it must be stressed that there is very limited experience in wetland creation in South Africa.</td>
</tr>
<tr>
<td>Determining credits and debits.</td>
<td>WET-Health and WET-Ecoservices can be used for determining credits and debits.</td>
</tr>
<tr>
<td>Replacement ratios.</td>
<td>Replacement ratios must ensure that in any mitigation project, credits must exceed debits, and that due consideration is taken of other relevant factors (e.g. if risks of failure are high then the replacement ratio should be increased accordingly). A tool needs to be developed to assist in the systematic determination of replacement ratios based on these multiple considerations.</td>
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<tr>
<td>Dealing with the risks of failure.</td>
<td>Rehabilitation credits should only be withdrawn when they are fairly advanced in terms of re-instatement of functions, and rehabilitation methods should be chosen that are largely self-sustaining rather than requiring frequent maintenance. In addition, banks should be well protected (in perpetuity) through legal means.</td>
</tr>
<tr>
<td>Legal and institutional issues</td>
<td>Recommendations to address them in South Africa</td>
</tr>
<tr>
<td>Appropriate policy and legislation.</td>
<td>While SA does not have policy or legislation specific to wetland management and conservation, the existing legislation is considered adequate to require and enforce mitigation of unavoidable impacts. Additional legislation is therefore not considered necessary. Guidelines are required to determine when particular legislation should be applied in establishing and implementing a mitigation bank. This relates to the co-ordination between relevant departments, which is elaborated on in the proposed model for mitigation banking discussed below.</td>
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<tr>
<td>Legal and institutional issues</td>
<td>Recommendations to address them in South Africa</td>
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<tr>
<td>Regulatory and other responsibilities.</td>
<td>There are a range of departments and agencies with a mandate to protect and manage wetlands. This situation can be beneficial if clear roles and responsibilities for implementing mechanisms such as mitigation banks are established. The mechanism should be one that will assist in the various departments meeting their mandates. Similarly, the role they play in administering such a mechanism should also be within their mandates.</td>
</tr>
<tr>
<td>Accessing and securing wetlands in perpetuity.</td>
<td>Mechanisms exist for securing wetlands in perpetuity. Of these, conservation agreements provided for under the Biodiversity Act appear the most appropriate. They provide flexibility to landowners and considerable security at various levels through different legal mechanisms. Financial incentives necessary to access priority mitigation sites are lacking where the landowner requires compensation for foregone income or potential income from unutilised development rights. Various innovative ideas are being explored, but presently a direct payment would appear necessary.</td>
</tr>
</tbody>
</table>
| Timing of credit withdrawal and bank failure. | Various suggestions and factors in SA will reduce the risk of failure:  
   - Applying a conservative mitigation ratio as a minimum ratio e.g. 1:2 or greater (this requires consideration by relevant government departments and agencies).  
   - Applying rehabilitation only, as opposed to wetland creation and protection as the primary mechanism for mitigation.  
   - Using an implementing agency with accepted and proven consultants, which reduces the risks associated with many different bankers who may use different consultants of varying levels of expertise.  
   - Planning of wetland mitigation by government agencies mandated with conservation and who can draw on necessary expertise avoids the risk of site selection and compensation methods being influenced by financial gain (as is the case in USA).  

Ideally any banking model in SA should be designed to mitigate in advance of anticipated impacts – thereby allowing time for credits to be established and verified. |
| Capacity and enforcement. | Training and accreditation of wetland ecologists and managers in the application of tools and techniques required to delineate, assess impacts, and plan and implement rehabilitation, is required. Various universities and other organisations such as the Mondi Wetlands Project provide courses worthy of accreditation that should be recognised by government.  

The WfW programme uses a range of specialist consultants in the different steps of the rehabilitation project cycle. They have proven skills and experience.  

Financial and technical resources are required to develop wetland inventories in priority catchments – this information forms the basis for detailed planning and identification of thresholds for protection and key mitigation sites. This information is necessary for an effective banking model to be instituted and establishing it is one of the first steps in planning banks. The collection and development of this information falls within the mandate of several government departments. The example of the Upper Olifants River Catchment illustrates how relevant public (government departments and agencies) and private role-players (coal industry) have effectively combined to address this requirement. |
Many of the legal requirements and much of the technical ability necessary for developing mitigation banks exist in South Africa. The key challenges are:

- Establishing finance for various outputs.
- Arriving at a suitable institutional arrangement.
- Coordinating the relevant institutions.
- Administering the process.

### 4.5 Proposed mitigation banking model for South Africa

Options for a model for wetland mitigation banking in South Africa have been developed around existing institutional structures, available capacities and existing programmes. Furthermore, efforts have been made to circumvent the shortcoming identified in the US model through incorporating elements of the Canadian model, in which the state plays a central role in planning and implementing off-site mitigation activities. The Canadian model is not a bank *per se* however because credits are not generated in advance of anticipated losses.

The model proposed for South Africa envisages an appropriate government body with expertise and existing operations in wetland rehabilitation playing a central role. Such expertise exists within several government departments, notably within SANBI through the Working for Wetlands programme. The government agency will generate credits in undertaking wetland rehabilitation and will thus act as the banker. As the banker, it will also be responsible for the maintenance of the credits in the long-term. Other government departments will have key responsibilities at various stages in the model to ensure that such banks are established and operated within legal frameworks. A memorandum of understanding will be required to define the roles and responsibilities of the various government departments who will form a Wetland Bank Mitigation Unit (Table 4.3). The proposed roles and responsibilities set out in Table 4.3 have yet to be fully defined and agreed upon but provide an indication of how such a model may operate in South Africa.

#### Table 4.3 Summary of role players in the proposed mitigation banking model

<table>
<thead>
<tr>
<th>Organisation/institution</th>
<th>Potential roles and responsibilities</th>
</tr>
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</table>
| SANBI/Working for Wetlands | Implementing/lead agent:  
- Identifying rehabilitation sites.  
- Negotiating with landowners.  
- Planning rehabilitation.  
- Implementing rehabilitation.  
- Monitoring rehabilitation. |
| Government departments/agencies:  
- DWAF.  
- Catchment Management Agencies (CMAs).  
- DME.  
- Provincial Conservation Agencies.  
- DEAT.  
- National Department of Agriculture (NDA). | Mitigation Bank Management Unit – technical and financial assistance:  
- Prioritising catchments.  
- Support to WW through provision of technical, financial, institutional or legal support to facilitate functioning of the bank.  
- Responsibilities and involvement defined in inter-agency agreement (memorandum of understanding). Application of relevant legislation at points identified in process to ensure that:  
- Impacts are avoided through EIA and other licensing processes.  
- Mitigation measures are entrenched in conditions for approval of unavoidable impacts.  
- Implementation of conditions (mitigation) is enforced. |
In planning for the establishment and operation of mitigation banks a number of steps must be implemented.

4.5.1 Bank planning

Prioritise catchments

It is important to prioritise the catchments in which banks are to be established in an effort to effectively offset impacts where the demand to develop in wetland areas is high. Prioritisation of catchments also enables strategic planning for sensitive or vulnerable environments that may not be possible in the project specific approach that it is taken through environmental impact assessments. Priority for the establishment of a bank should be allocated to catchments where:

- Development pressure on resources in the catchment is high.
- Water resources are degraded and stressed.

The tools that may be used to prioritise catchments include:

- The national wetland inventory.
- Indicators of demand for credits (pressure on wetlands), as indicated by the number of development applications for environmental authorisation.
- State of the catchment, identified through DWAF internal strategic perspectives, present ecological state and ecological management categories.
- Provincial conservation plans – used to identify catchments with high conservation value.

Responsibility for identifying priority catchments:

- DWAF – water resource management and catchment planning processes.
- DEAT (relevant provincial department).
- DME – mining license applications, particularly those that affect areas of wetland.
- Provincial conservation agencies – identification of threatened catchments with regard to biodiversity.
Determine ecological reserve for priority catchments

The Ecological Reserve is determined according to the requirements of Section 3 of the NWA. Determining the Ecological Reserve for a water resource (river or wetland) involves defining the Present Ecological State (PES), the Ecological Importance and Sensitivity and the Recommended Ecological Category of a water resource. The Recommended Ecological Category effectively acts as target that guides management actions for the resource. Resource quality objectives need to be set that must be adhered to in order for the Recommended Ecological Category for a resource to be achieved. Whilst the methodology for establishing the reserve for rivers has been developed and applied, it is not as well developed for wetlands. Ideally, the Recommended Ecological Category for rivers in a catchment should be established as this will inform the establishment of management objectives for wetlands in a catchment. Setting the Recommended Ecological Category is therefore a necessary element in the process of establishing a mitigation bank.

Determination of the Recommended Ecological Category and reserve is undertaken using tools developed by DWAF and is the responsibility of DWAF.

Establish a wetland inventory for priority catchments

The recently completed national wetland inventory provides a broad overview of the distribution of wetlands at a national level but is not at a resolution that allows for detailed analysis of wetland type, function and status at a catchment or sub-catchment level. More detailed inventories have been undertaken at more localised scales in response to different needs across the country. The approach to and methods undertaken for these specific inventories are however not standard. Consequently the resolution of the spatial data and type and detail of the attribute information varies significantly. In order to relate the status of wetlands in a catchment to the ecological reserve, it is necessary to establish a wetland inventory at a resolution that allows for:

- Classification of wetland type according to standard/national classification system (under development).
- Establishes the PES of wetlands by applying the available tools (WET Health & WET Ecoservices) at a minimum of a desktop level.
- The existing contribution or potential of each wetland in the catchment to contribute to meeting the requirements of the ecological reserve.

The tools that may be used to develop wetland inventories include:

- Aerial photography.
- Wetland classification system (under development by SANBI).
- WET-Ecoservices, WET-Health – used to determine PES.
- Conservation planning data.

Set management priorities for wetlands in priority catchments

There is a concern that mitigation banks provide an easy solution to overcome challenging decisions associated with development applications and may result in the ‘avoid, minimise/mitigate’ decision making hierarchy being short circuited to the ‘mitigate’ option. To avoid this, it is essential to have set catchments priorities prior to considering development applications.
Such priorities need to establish:

- Those wetlands systems or types considered irreplaceable – due to their conservation and/or functional value they should not be developed at all.

- The sites needed to attain targets for conservation identified through systematic conservation plans.

- Management actions for wetlands – whether a wetland must be conserved or rehabilitated to meet the Recommended Ecological Category and biodiversity targets for the province.

Linking the catchment priorities to the resource directed measures of the NWA and including them in a catchment management strategy gives them legal standing that will support decisions associated with applications under the NEMA EIA regulations, water use license applications under Section 21 of the NWA, or mining activities under the MPRDA.

The result of this step will be management objectives for:

- Specific wetland types. For example where a particular wetland with high biodiversity value has been degraded below targets e.g. less than the minimum percentage necessary to retain a representative sample of that habitat, then the objective would be to prevent any further development of this wetland type.

- Specific quaternary catchments. For example, where the PES of a quaternary catchment was determined to be an E and the Recommended Ecological Category a C, then wetlands in the catchment need to be managed to work towards that target, i.e. degraded systems to be rehabilitated and pristine wetlands protected.

- Specific systems. This would be based on the existing contribution of the wetland to the ecological reserve, or its potential to contribute to the reserve i.e. where a wetland is degraded but is a wetland type particularly suited to performing a certain function e.g. water purification, in a catchment where water quality is poor and needs to be improved to achieve the requirements of the reserve.

The full suite of resource directed measures including those for determining the Recommended Ecological Category for wetlands are yet to be finalised. Until such time as they are, the prioritisation of wetland management actions should be based on the contribution that the wetlands make towards the achievement of the ecological specifications and the overall Recommended Ecological Category of the sub-catchment (Oryx Environmental, 2007).

As wetland management priorities need to be entrenched in catchment management strategies and developed to meet the requirements of the reserve, the responsibility for managing this process and ensuring adherence to the outcomes lies with DWAF (or where in place the CMA) with support from the Wetland Mitigation Bank Unit. Other role players in the catchment such as municipalities, wetland forums and key sectors or land-use which impact on water resources (agriculture, industry, tourism, mining etc) and rural communities should also be involved in the process. Their involvement will create an understanding of the status of water resources in the catchment, the legal requirements that need to be met for the catchment, and the implications of the management objectives that are set. Where the reserve requirements potentially impact a sector by precluding development in a certain sub-catchment, it can encourage/force them to consider alternative/less harmful methods of production or sites that cause less impact to water resources.

The agreed priorities, targets and methods for attaining these should be signed off by DWAF/CMA and be included in catchment management strategies.
Identify bank sites and secure landowner agreement

Consideration of information such as the ecological reserve in conjunction with cadastral information and other criteria applied by Working for Wetlands in their planning process will allow them to identify and prioritise specific bank sites within a catchment. Once such sites are identified, Working for Wetlands will engage landowners as per their current modus operandi to determine:

- Whether a landowner will agree to rehabilitation of wetlands on their property, and the basis for agreement. Landowners may voluntarily make the wetland available, or they may require financial compensation if the wetland is generating income e.g. where it has been drained and converted to pastures.
- The legal instrument that would be appropriate in each case for securing the mitigation site in the long term. The following instruments would be appropriate:
  - Protected area – the rehabilitated wetland will need to be of sufficient size and potential conservation importance to warrant the relevant provincial conservation agency applying this mechanism.
  - Biodiversity management agreement – the mitigation site and buffer area would need to hold a level of biodiversity value that warranted this mechanism being applied.
  - Contract between government and the landowner – the security provided by such a contract would be enhanced by linking the conditions of the contract to the property rather than the owner at the time so that it is binding on successive owners. An option would be to survey the wetland and register it as a conservation servitude, or have the conditions of the agreement attached to or written into the title deed of the property.

Additional investigation needs to be undertaken to broaden the scope of financial incentives available for securing landowner agreement to rehabilitation on private property, such as the concept of payment for ecological services, which provides an innovative way for establishing incentives for landowners.

The government body responsible for fulfilling the role of the banker in the proposed model, will be responsible for financial compensation where required by the landowner to access priority wetland sites. It is proposed that a fund be set up to finance such transactions. An initial amount would need to be provided by the programme to finance compensation payments in the first bank service area (catchment) that is set up. It is proposed that when credits are sold that the price of the credit amounts to the full costs of generating and maintaining it. This would include the following costs:

- Financial compensation to landowners where required.
- Identification and surveying of the wetland.
- Rehabilitation planning.
- Establishment of legal agreements and establishing management plans in the case of biodiversity management agreements.
- Implementing rehabilitation measures.
- Costs of monitoring and auditing.
- Maintenance requirements.

Working for Wetlands currently fund the planning, implementation, monitoring and auditing of rehabilitation efforts. As the bank client will pay the full costs of the credit, not only those which are additional to costs normally covered, this has the potential to increase the value of the fund.
This is an important benefit, as there will be catchments where rehabilitation of previously degraded wetlands is required to meet objectives of the catchment management strategy, but where insufficient funds are available. The proposed ‘mitigation’ fund aims to address this requirement.

The sale of credits not only provides access to priority wetlands, but funds the process of establishing the legal instruments necessary to secure rehabilitated wetlands in the long term. Negotiations with landowners regarding appropriate financial compensation will require new skills and capacity.

**Detailed planning and approval of mitigation**

Obtaining landowner commitment would provide Working for Wetlands with the security to invest in rehabilitation planning. This would be undertaken as per their current process which involves surveying the wetland based on which rehabilitation measures (structures etc) would be designed. Neither wetland creation, nor wetland protection are considered appropriate forms of mitigation in South Africa.

Establishing rehabilitation structures in wetlands requires authorisation in terms of the NEMA EIA regulations and also constitutes a water use in terms of section 21 of the National Water Act. Authorisation is therefore required from DWAF and the provincial department responsible for administering NEMA. DWAF may also provide input and support regarding the technical aspects and design of rehabilitation structures. Working for Wetlands have been working with DEAT and DWAF to establish processes for such support and securing the necessary authorisation. These processes should be entrenched in the MOU established between the members of the Wetland Bank Mitigation Unit.

The rehabilitation planning process involves the development of a schedule for monitoring, auditing and maintaining the rehabilitated wetland for a period considered necessary for the system to return to somewhere near its natural level of functioning. All costs associated with the post construction phase need to be documented and included in the price of the credit. These funds will then be available to Working for Wetlands to maintain the wetland over the required monitoring and maintenance period.

### 4.5.2 Bank implementation

**Implement mitigation measures and establish credits**

Once approved, the planned rehabilitation can be implemented as per the current Working for Wetlands project process. Establishing the number of credits available in the bank would require the application of the WET-Health tool. This will need to be undertaken by experienced consultants with the necessary expertise and experience. This step will result in the generation and valuation of credits for each site (wetland) in the bank. The price of credits will vary across bank sites depending on various factors. For instance the price of a credit (1ha of wetland) on property A may be more than on property B because the landowner on property A required financial compensation while landowner B volunteered the site on their property.

At this point the bank ledger can be finalised. The ledger documents the number of credits within the bank and the different price of these credits per property.
Approval of bank balance

Before credits can be purchased from the bank, it is necessary for the bank balance to be ‘reviewed’ or audited and thereby check that the rehabilitation works required to generate the anticipated credits have been completed according to specifications.

It is proposed that the following members of the Wetland Bank Mitigation Unit sign off on the ‘bank balance’:

- DWAF – to review structural aspects of rehabilitation measures and to ensure that the rehabilitation works have met requirements of the Environmental Management Plan that would accompany the developer’s water use license issued in terms of the NWA.
- Provincial conservation agency – to ensure that all biodiversity related objectives have been implemented in rehabilitation.
- DEAT (relevant provincial department) – to ensure that the rehabilitation works have met requirements of the Environmental Management Plan that would accompany the Record of Decision issued in terms of the EIA regulations.

4.5.3 Bank operation

Purchase of credits

The majority of bank clients will be developers who are required to offset residual impacts as a condition of one or more authorisations or licenses granted by the following departments:

- DWAF – in terms of a water use license issued under the NWA.
- DME – in terms of the MPRDA.
- DEAT (relevant provincial department) – in terms of the NEMA EIA regulations.

NEMA stipulates that where authorisation for an activity is required in terms multiple Acts, that the relevant decision making authorities co-ordinate investigations and decision making to avoid duplication or contrasting conditions of approval. The MOU between Wetland Bank Mitigation Unit members must clearly define how the various legal processes will be aligned, at what point the various departments will be involved and what role they will play. In the case of determining wetland impacts and the necessary mitigation measures, co-ordination is particularly important with regard to:

- Ensuring that any impact assessment is undertaken by qualified and experienced wetland ecologists who have the skills to apply recently developed tools (WET-Health and WET-Ecoservices).
- Ensuring that all possible on site mitigation options are considered and made a requirement of the EMP before resorting to off-site mitigation options.
- That there is agreement regarding the nature of the mitigation that is required and mitigation ratio to be applied in setting the offset (a tool for developing mitigation ratios still needs to be developed).
- There is clarity on which department or agency will be responsible for monitoring and enforcing the implementation of agreed conditions.

Once consensus has been reached on the number and the nature of credits (type of wetlands that need to offset the impact) by the relevant authorities, the client may purchase the credits from the bank. The bank ledger is amended accordingly and the record of decision can be attached as a reference.
Monitoring, auditing and maintenance of credits

Monitoring is required to ensure that the projected credits are established and that they are maintained. Monitoring and auditing needs to take place according to the action and schedules set out in the mitigation planning process. Monitoring and auditing will be undertaken by specialist/accredited consultants using available tools. Working for Wetlands cannot take responsibility for the mitigation site indefinitely or in ‘perpetuity’. Responsibility for the mitigation works should be transferred to the landowner after a period considered necessary for the wetland to reach a point where further restoration is a self sustaining process i.e. the wetland has stabilised to a point where it is no longer reliant on the rehabilitation structures.

In the case where a biodiversity management agreement is established between the landowner and the provincial conservation agency, the conservation agency would be responsible for monitoring compliance with a management plan. In such cases, Working for Wetlands would be responsible for monitoring and auditing the wetland rehabilitation during the set period before responsibility is transferred to the landowner.

Monitoring and auditing reports should be submitted to the Wetland Bank Mitigation Unit for review and where considered necessary, it would need to approve the proposed remedial measures.

Other key points to note about the model are:

- The property and mitigation site remains in the hands of the existing landowner who continues with existing land uses within the conditions as set out in the contract or management agreement entered into with the provincial conservation agency.
- Payment by the bank client provides a mechanism to address the residual impacts of their development or activity by placing it in the hands of the responsible government body. The funds provided will enable the necessary wetland rehabilitation measures to be undertaken and the objectives set for a mitigation banking site to be met.

Where projected improvements are not being realised despite remedial efforts the bank balance would need to be adjusted accordingly.

Bank closure

The bank would be closed once all credits had been sold. The ledger and all documentation related to landowner agreements could be lodged with DWAF/CMA to inform future decisions regarding development applications on properties with bank sites or on adjacent properties where the activity may impact the bank sites.

4.6 Motivation for the structure of the proposed model

The proposed model that has been adopted has been designed to overcome the limitations identified in the US system and to embrace the benefits associated with an efficient and effectively functioning system.

4.6.1 Avoiding the influence of financial gain as an overriding imperative

In the case of third party bankers who don’t always have conservation as their primary goal, the ability to generate profit can create an incentive to cut corners in setting up and establishing a bank. This is one of the key criticisms of the concept and the primary reason for Canada not adopting it to offset wetland losses in that country. In the proposed model, this issue is avoided by a government body fulfilling the role of the banker. Furthermore, a recognised benefit of the
model is that setting banks goals and selecting the bank site will be undertaken by a multi
stakeholder group including government agencies, NGOs and the scientific community. The
combination of skills and importantly the drive by such organisations i.e. to achieve their
mandate and concern for the environment rather than to make money, invariably leads to
effective bank planning. The Working for Wetlands project prioritisation and planning process is
designed to include input from such role-players such as wetland fora and conservation
agencies.

4.6.2 Ensuring the process of avoiding, minimising and mitigating impacts is
implemented

It is argued that setting up single client banks to mitigate anticipated loss from development
projects creates an expectation on the part of the applicant that new development will be
authorised i.e. it places the department or agency responsible for decision making within the EIA
process under pressure to grant a decision in favour of the applicant. There is already
significant pressure on the EIA process in South Africa and any mechanism or concept that adds
to this pressure should be avoided. Through the role of the Wetland Bank Mitigation Unit it is
intended that such pressures will be avoided.

4.6.3 Consistency in planning, design and implementation

The role of Working for Wetlands and the manner in which they plan, design and implement
wetland rehabilitation projects will ensure consistency in the mitigation banking programme and
will enable the continued development of expertise and experience in implementing such
projects.

4.6.4 Reducing administrative burden

Through the role of Working for Wetlands, the need to regulate a wide range of third parties with
varying levels of skill and experience is avoided. Furthermore, in many cases landowners will
not want to sell their properties or be bound by stringent conditions that significantly alter their
existing land-use practices. Similarly, the state will not want to take on the administrative burden
and costs associated with owning property or sections thereof. The model therefore proposes
utilising a range of mechanisms which avoid the sale of land, and allow for securing mitigation
sites in productive landscapes under existing ownership. The level of control will depend on the
circumstances and the mechanism considered appropriate to the specific property or situation.

4.6.5 Improved decision-making

The model recommends that the establishment of the resource directed measures and wetland
inventory actions be a pre-requisite to and inform the catchment management priorities, along
with the provincial conservation plans. Targets and guidelines set at a strategic (catchment
level) will allow for informed decision making at a project specific (EIA) level where it is not
possible to address issues such as the cumulative effects of individual developments within a
catchment. The cumulative effects are critical in the case of catchments because each
component forms part of a single hydrological system. For example, due to the conservation
significance and status of a sub-catchment, the management objective may be to conserve all
remaining wetlands and rehabilitate degraded systems. Ideally such a catchment may then
effectively be closed to development activities that would compromise this management goal, as
in the case of catchments which are closed to further irrigation and afforestation by DWAF.

Advertising the strategic objectives and targets for a catchment also allows developers to plan in
an informed context, by advising them where an application for development is more likely to be
accepted than not.
4.6.6 Improved cooperative governance

The mitigation banking concept has the potential to assist various government departments in meeting their mandates. The proposed memorandum of understanding will need to clearly define relationships and responsibilities and provide a basis for monitoring participation of the various role-players and cooperation between them.

In acknowledgement of the limited capacity available within certain government departments, a further objective has been to limit the resources required by government departments. In this regard there is recognition that consultants will need to be used at several points in the model to undertake much of the technical work. The financial model is designed so that the cost for employing consultants is borne by the bank clients, thereby also avoiding unnecessary financial burden being placed on government departments.

4.6.7 Summary of benefits to role players

The model has attempted to maximise the potential benefits for the various role-players and thereby establish an incentive for effective participation and involvement by each.

SANBI/Working for Wetlands

- The development of a wetland inventory via set procedures and methods at a standard level of detail will assist in planning and management at a catchment level and support the further development, accuracy and usefulness of the national wetland coverage.
- Support from other agencies will assist in various activities throughout the phases of the banking process. This will improve the technical and ecological sustainability of rehabilitation measures.
- The sale of credits provides the finance necessary to access sites where landowners require financial compensation, and to pay for the development of the legal mechanisms to secure such. Furthermore, this mechanism provides a way to give effect to the ‘polluter pays principle’. To date the state has financed wetland rehabilitation thereby paying for environmental degradation caused largely by the private sector. The opportunity exists through credit sales for developers to contribute to these costs.

DWAF/CMA

- Catchment management objectives, based on the requirements of resource directed measures are met through informed decision making and active management actions i.e. rehabilitation.
- The model supports decision making both at a strategic and project specific, EIA level by applying the ecological reserve, inventory and conservation plan data to set catchment management priorities, and at a project specific by providing an effective mechanism to offset residual, unavoidable impacts.

DEAT (national and provincial offices)

- Giving effect to the cooperative governance requirements of NEMA is a DEAT mandate which will be met through the establishment and implementation of the memorandum of understanding.
- The model supports decision making both at a strategic and project specific, EIA level by applying the ecological reserve, inventory and conservation plan data to set catchment management priorities, and at a project specific by providing an effective mechanism to offset residual, unavoidable impacts.
The process will assist DME in meeting their responsibilities in terms of adherence to the principles of NEMA and facilitating more environmentally responsible mining.

Provincial Conservation Agencies

- The model provides an opportunity to include conservation planning in the process of setting strategic goals and objectives i.e. catchment management strategy.
- Conservation agencies represent biodiversity in the EIA process and are therefore key interested and affected parties. Having input to the establishment of the bank provides a mitigation measure informed by strategic planning.
- The state has set targets for increasing the percentage of the country under formal protected area status. Securing mitigation sites as either protected environments or in terms of a biodiversity management agreement, will aid in meeting this mandate. This will enable the protection of habitats with high conservation value or corridors between such areas that are located outside of protected areas within ‘working landscapes’.
- The development of a wetland inventory into which they would have had input in the standard design will better inform conservation planning efforts.

Bank Clients

- Through the setting of catchment management priorities, developers are able to plan in a more strategic manner.
- Wetland banking provides a mechanism in which developers can meet conditions of approval related to wetland impacts by paying for credits without the burden of designing, implementing and taking responsibility for mitigation sites in the long term.

Bank site landowners

- May benefit directly and immediately from compensation for loss of income and foregone development rights, and in the longer term through other benefits such as preferential attention from public working programmes, payment for ecological services (if such a system is established) and exemption from property rates and taxes on sale of properties.
- These benefits depend on the nature of the mechanism established to secure the area or property on which mitigation is undertaken, and further development of some of these ideas and concepts.
6) THE USE OF BIODIVERSITY INFORMATION IN MINE PLANNING

A number of national and provincial policies and plans are relevant to biodiversity and coal mining activities in the grassland biome, the most important of which are summarised below.

6.1 The National Biodiversity Strategy and Action Plan

The National Biodiversity Strategy and Action Plan (NBSAP) and the National Spatial Biodiversity Assessment (NSBA) form the basis of the national biodiversity framework, provided for in Chapter 3 of the National Biodiversity Act.

The goal of the NBSAP is to conserve and manage terrestrial and aquatic biodiversity. In support of this five key strategic objectives have been identified:

1) An enabling policy and legislative framework integrates biodiversity management objectives into the economy.

2) Enhanced institutional effectiveness and efficiency ensures good governance in the biodiversity sector.

3) Integrated terrestrial and aquatic management across the country minimises the impacts of threatening processes on biodiversity, enhances ecosystem services and improves social and economic security.

4) Human development and well-being is enhanced through sustainable use of biological resources and equitable sharing of the benefits.

5) A network of protected areas conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape.

Each of the objectives is accompanied by a number of outcomes and activities. The outcomes identified include the need for effective cooperative governance and the need for partnerships between governments and the private sector in an effort to encourage entrepreneurship, innovation, investment and action at the local level. Section 4 of the NBSAP presents the strategic objectives, outcomes and activities in detail.

Section 5 sets out the targets, lead agencies and implementing partners for each outcome and activity. It identifies roles for a number of different government authorities, which have responsibilities that impact on different aspects of biodiversity. This includes the need for the Department of Minerals and Energy (DME) to integrate biodiversity considerations in policy development, budgeting and planning processes, which is identified as a high priority. Furthermore it identifies the need for the DME to urgently include biodiversity guidelines and best practice codes to mitigate negative impacts on biodiversity and encourage sustainable practices.

6.2 The National Spatial Biodiversity Assessment

The NSBA represents South Africa’s first national assessment of spatial priorities for conservation and is part of the NBSAP. It has been prepared based on systematic biodiversity planning techniques, which are based on the three key principles:

- The need to conserve a representative sample of biodiversity pattern, such as species and habitats.

- The need to conserve the ecological and evolutionary processes that allow biodiversity to persist over time.
• The need to set quantitative biodiversity-based targets that inform how much of each biodiversity feature should be conserved in order to maintain functioning landscapes.

The NSBA identifies four key strategies for conserving South Africa’s biodiversity:

1) Pursue opportunities to link biodiversity and socio-economic development in priority geographic areas.
2) Focus emergency action on threatened ecosystems, to prevent further loss of ecosystem functioning.
3) Expand the protected area network.
4) Fill key information gaps.

The first strategy involves working with production sectors, private and communal landowners and resource users to protect biodiversity in the context of production landscapes.

The NSBA provides a detailed assessment of the biodiversity of the country, beginning with a description of current spatial patterns that includes a description of:

- The SANBI 2004 vegetation map.
- The biomes of South Africa.
- Irreversible loss of natural habitat, based on 1996 National Land Cover.
- The status of terrestrial ecosystems.
- The protected areas of South Africa.
- Nine broad priority areas for conservation action.
- Future pressures on terrestrial biodiversity.

Of the nine broad priority areas, three are within the regions in which coal mining occur – Wet Grasslands, North Eastern Escarpment and South Eastern Escarpment, and of these, Wet Grasslands, which are in the centre of the main coal mining regions, are considered to be facing amongst the highest pressures from development. All are also considered to be under-protected. The NSBA has identified five inter-linked sets of actions to conserve biodiversity in such priority areas:

- Work with production sectors – including mining to develop and implement sector-specific wise-practice guidelines to minimise loss of natural habitat and protect ecosystem function.
- Strengthen bioregional programmes – this would involve initiatives such as the Grassland Programme, whose focus may include fine-scale biodiversity planning initiatives in local areas of particular concern, for example where few options remain for the achievement of biodiversity targets.
- Minimise loss of habitat in threatened ecosystems – this will involve the promotion of stewardship among private landowners.
- Prevent and manage the spread of invasive alien species – by focussing efforts of organisations such as Working for Water on areas where socio-economic needs coincide with areas of high biodiversity priority.
- Expand protected areas network to achieve representation targets – in consultation with implementing agencies such as SANParks and provincial conservation agencies.

The technical reports that accompany the NSBA include a set of targets for the conservation of biodiversity. These targets have been taken up in the Mpumalanga Biodiversity Conservation Plan, the province in which most coal mining occurs.
6.3 The Mpumalanga Biodiversity Conservation Plan

The Mpumalanga Biodiversity Conservation Plan (MBCP) has also been prepared using systematic biodiversity planning techniques but it has been prepared at a finer scale than the NSBA, based on 118 hectare hexagonal planning units. Its objectives are to:

- Guide the MTPA in implementing its biodiversity mandate, including working with landowners to improve the provincial protected area network.
- Provide biodiversity information that supports land-use planning and helps to streamline and monitor environmental decision-making.

The MBCP integrates the aquatic and terrestrial analysis into a single biodiversity plan, which was achieved by first undertaking the aquatic analysis and integrating it into the terrestrial analysis. On this basis, two key maps have been produced:

- An aquatic irreplaceability map, which shows the irreplaceability values of the sub-catchments in the province.
- A terrestrial irreplaceability map, which shows the irreplaceability values of the 118 ha hexagonal planning units that have been used.

The biodiversity targets used in the terrestrial analysis are taken from the NSBA targets for vegetation types except for forests, which were taken from the Department of Water Affairs and Forestry (DWAF) national systematic conservation plan for forests. The NSBA targets are based on the species diversity within each vegetation type, which means that vegetation types with higher species diversity receive higher targets. For the vegetation types in Mpumalanga, the targets range from protection of 19% to 28% of the original area of each vegetation type.

The analysis also includes an assessment of current and future pressures on terrestrial biodiversity, in an effort to avoid, where possible, areas in which there are potential conflicts with existing land uses. Four factors were used to determine future land use pressures:

- Land of high agricultural potential (high capability land).
- Land of high mining potential.
- Land of high urban growth potential.
- Land with a high likelihood of being degraded by alien plant invasion.

The MBCP includes a set of land-use guidelines intended to inform the decisions of relevant authorities, responsible for biodiversity protection. The land-use guidelines are particular to the six terrestrial biodiversity conservation categories and the most important water sub-catchments in the province that are critical for meeting aquatic biodiversity targets.

At a provincial level, the MBCP therefore forms the basis of planning and decision-making regarding biodiversity conservation and management in Mpumalanga and is considered the key policy tool in determining the status of regional biodiversity and the priorities and actions for its protection.

Under the land-use guidelines included in the MBCP, land that is classified as Irreplaceable or Highly Significant should be maintained as natural vegetation cover and permissible land uses should be limited to those that are least harmful to biodiversity. Similarly, intensive land uses should be actively discouraged on land that is classified as Important and Necessary. The implication of this is that activities such as opencast mining will not be viewed as a suitable land use on land that is classified in these categories and mining boundaries will, in all likelihood have to be redrawn to exclude such areas with a suitable buffer. Few restrictions are placed on land that is classified as Least Concern or No Natural Habitat Remaining, meaning that most land use
types, including opencast mining would be considered acceptable, subject to the outcomes of the EIA process.

The MBCP stipulates requirements for biodiversity offsets for land that is classified as Highly Significant or Important and Necessary. Biodiversity offsets are not considered an option for land that is classified as Irreplaceable because it is considered to be vital to the achievement of the biodiversity targets for Mpumalanga and is considered a key conservation priority. The MBCP makes the following provisions for offsets:

- Highly Significant Land – biodiversity offsets should be considered at an exchange rate of at least 250%, calculated as comparable contribution to targets, and only as a last resort.
- Important and Necessary Land – biodiversity offsets may be considered at an exchange rate of at least 150%, calculated as comparable contribution to targets.

As with wetland banking, there has been much discussion and debate around the role of biodiversity offsets in mining recently, led by the initiatives of the International Council for Mining Metals (ICMM). For offsets to be effective they should be focussed on areas that are priorities for conservation, they should be effectively established and structured so that they may remain viable in the long-term and that their conservation status must be ensured in perpetuity. Offsets will not be effective if they are ecologically isolated, do not fit within existing strategic conservation frameworks and if they are not large enough to be viable both from an ecological and economic perspective in the long-term.

6.4 The Upper Olifants Catchment Wetland Management Framework

The Upper Olifants Catchment Wetland Management Framework (DWAF, 2007) was prepared as a result of the water-stressed condition of the catchment and the pressures placed on its wetlands from coal mining.

The approach to wetland management set out in the framework is based on the Resource Directed Measures set out in Chapter 3 of the NWA, which provides for the classification of water resources to allow for different levels of protection, ranging from a class that is largely unmodified and requires a high level of protection through to classes that are considered moderately to highly modified. These measures include the establishment of an Ecological Reserve, the purpose of which is to protect the capability of water resources to support utilisation and the provision of ecological goods and services in perpetuity. The Reserve for a particular water resource is established by determining its Recommended Ecological Category, which represents a permissible but different balance between on-site and off-site use of the water resource. This provides a tool to assist resource users in reaching agreement on the suite of goods and services they would like the resource to deliver in a sustainable way. The framework thus identifies that the Reserve, and its accompanying Recommended Ecological Categories, provides the strategic basis for the protection and management of all water resources, including wetlands in a catchment. It does this by laying out a clear set of goals for the management of the resource to achieve a defined ecological performance intended to ensure the ongoing provision of ecological services whilst maintaining the sustainability and integrity of a catchment. As the framework states:

“The resource directed measures that have been developed for the Upper Olifants River Catchment, characterised by the Recommended Ecological Categories, associated ecological specifications and Ecological Reserve, provide the context for the management and protection of its wetlands on a catchment-wide basis. This is the strategic basis upon which priorities should be determined for the protection and
management of the wetlands in the context of the catchment and their fundamental role as integral water resources within it. Such an approach is consistent with the Resource Directed Measures that are set out for the protection of water resources in Chapter 3 of the National Water Act, which includes wetlands within the definition of water resources. Furthermore this approach will be further strengthened once wetland specific Resource Directed Measures have been developed and can be implemented.”

In addition, to the use of the NWA Resource Directed Measures, the framework utilises the MBCP, which integrates terrestrial and aquatic ecosystems, as the basis for biodiversity planning related to wetlands in the upper Olifants catchment. The aquatic analysis in the MBCP was undertaken using small sub-catchments as the planning units and was based on the premise that wetlands are ecologically and functionally linked to rivers and that the two need to be treated as inter-dependent.

Utilising the Resource Directed Measures and the biodiversity information contained in the MBCP, the framework sets out a strategic basis for wetland management and a decision-making tool for water use license and EIA processes.

6.4.1 Strategic planning

The Recommended Ecological Categories for the quaternary catchments and the present ecological state (PES) that has been determined for the wetlands provide a mechanism to assist spatial planning processes, as they provide an indication of areas that are more likely to be sensitive to development and other areas in which assimilative capacity may exist, enabling certain levels of development or particular activities. The framework advocates the use of such information together with the land-use guidelines included in the MBCP, which provide a further tool for spatial planning, based on biodiversity information.

The framework identifies that these tools will enable government authorities to develop their spatial plans around the sensitivities of the upper catchment so that land use types with high potential impacts can be located in areas of the upper catchment that are less ecologically or hydrologically sensitive. It states that permissible land uses in sensitive quaternary catchments should be limited to those with a low potential impact in an effort to protect the ecological and hydrological integrity of the sub-catchment and its wetlands.

On this basis, the framework provides a structure for wetland conservation and management in which protection of the remaining wetlands that are in an A or B PES should be a priority in sub-catchments with an A or B Recommended Ecological Category, whilst resources should be directed towards the rehabilitation of the wetlands in a PES of C or lower in such sub-catchments. Similarly all wetlands in a PES of A or B should be protected and excluded from development or activities that may negatively impact upon them, whilst efforts towards the rehabilitation of those wetlands in PES categories of C or lower should be made. Some form of sustainable utilisation may then be considered for wetlands that have been rehabilitated to a PES of C or D in quaternary catchments that are in Recommended Ecological Categories of C or D. The matrix depicted in Table 6.1 provides a graphical illustration of this.
Table 6.1 Matrix of wetland priorities based on the Recommended Ecological Category of their quaternary catchment

<table>
<thead>
<tr>
<th>Recommended Ecological Category of quaternary catchment</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>C</td>
<td>C</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>B</td>
<td>C</td>
<td>C</td>
<td>R</td>
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<td>R</td>
<td>R</td>
</tr>
<tr>
<td>C</td>
<td>C</td>
<td>C</td>
<td>S/U</td>
<td>R</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>D</td>
<td>C</td>
<td>C</td>
<td>S/U</td>
<td>S/U</td>
<td>R</td>
<td>R</td>
</tr>
</tbody>
</table>

Key:  
C: Active protection/conservation  
R: Rehabilitation  
S/U: Appropriate form of sustainable utilisation

This provides a basis for the identification of priorities for wetland banking in the upper Olifants catchment, if it is to be the location for the initial pilot project proposed by SANBI.

6.4.2 A decision-making tool

In order to properly assess the cumulative impacts of individual developments, the framework states that all proposed developments and activities that impact directly on the wetlands in the upper catchment must be assessed in the context of their regional significance, using the Mpumalanga Biodiversity Conservation Plan and the Recommended Ecological Categories of the sub-catchments in which they exist. This means that the PES and the Ecological Importance and Sensitivity of the wetland must be determined and the role that it plays towards the achievement of the Recommended Ecological Category must be assessed. This will enable informed decision-making regarding the likely impact of a proposed development or activity on the wetland, and more broadly on the catchment.

The framework establishes a process in which the significance of a wetland is determined in terms of its ecological, functional and social importance. At the same time the significance of the wetland will be determined on the basis of the contribution it makes towards the achievement of the Recommended Ecological Category and the associated ecological specifications of the sub-catchment in which it occurs. This is intended to remove potentially arbitrary and subjective conclusions about the significance of a wetland and establish a process wherein it is directly determined on the basis of the role that it plays in the broader catchment. An assessment of a wetland as part of an environmental impact assessment will therefore involve:

- Determination of its Present Ecological State and Ecological Importance and Sensitivity.
- Identification of the Recommended Ecological Category that has been set for the sub-catchment in which it occurs.
- Identification of the role that it plays in achieving the biodiversity targets set out in the Mpumalanga Biodiversity Conservation Plan.
- A review of the specific ecological specifications or resource quality objectives set for the sub-catchment and the contribution the wetland makes towards their achievement.
- The likely impacts of the proposed development and the implications of this for the PES of the wetland.
- Determination of whether the proposed development will result in unacceptable impacts on the wetland, based on its biodiversity value, uniqueness and size.
- Determination of whether the impacts on the wetland will result in unacceptable impacts on the sub-catchment, based on its Recommended Ecological Category.
- Examination of options for mitigation, rehabilitation and offsets (wetland banking), in the event that the proposed development is unlikely to result in unacceptable impacts.

This process is depicted in Figure 6.1 below.

Figure 6.1 Application of the framework wetland management strategy in decision-making processes in terms of NWA, NEMA and MPRDA
The Upper Olifants Catchment Wetland Management Framework thus provides a spatial planning tool that, in addition to the MBCP, may be utilised to inform strategic planning and decision-making processes regarding future coal mining proposals. Furthermore, it provides a tool for the identification of wetland mitigation bank sites and priorities for wetland conservation and management in the upper Olifants catchment.
7) PROGRESSING THE GRASSLANDS PROGRAMME

At this juncture, the model that has been developed for wetland mitigation banking in South Africa is in a highly conceptual state and it requires vigorous interrogation and refinement before it may feasibly be implemented. Similarly, although the Mpumalanga provincial government has developed the Mpumalanga Biodiversity Conservation Plan, it has not been formally adopted by the province and as such has no standing other than in providing information on the conservation threats and sensitivities within the province. A number of institutional and technical issues also pose significant challenges in implementing the Grasslands Programme and it is critical that these be resolved if it is to be a success.

7.1 Effective institutional structures

There are a number of key government role players with varying mandates that impact upon biodiversity conservation in the grassland biome, particularly in relation to coal mining, including:

- The South African National Biodiversity Institute.
- The Department of Water Affairs and Forestry.
- The Department of Minerals and Energy.
- Provincial departments of environmental affairs and tourism.
- Provincial conservation agencies.

At times the priorities and objectives of these government institutions appear to be in conflict within one another, which hinders effective cooperative governance and results in poor decision-making and environmental degradation. Furthermore, at times various government role players fail to recognise their responsibilities and obligations in implementing their mandates, both in terms of national policies and legislation.

Addressing these institutional issues poses the greatest challenge to the successful implementation of the Grasslands Programme. It is vital that all government role players acknowledge their obligations in terms of the conservation of biodiversity and actively participate in clarifying and addressing conflicts and in developing the solutions to fundamental questions around biodiversity protection and conservation. To this end, both in terms of the wetland banking mitigation concept and the use of biodiversity planning information, a memorandum of understanding must be developed and a sincere commitment to its implementation must be made by all relevant government agencies.

7.2 The different priorities of government and industry

It is important to acknowledge that in developing effective solutions to biodiversity conservation within the coal mining industry, government agencies responsible for biodiversity conservation have a different outlook to that of mining companies seeking to exploit coal reserves. Generally all mining companies will think of the business that they do in terms of risks and opportunities and how these affect their profits and returns to their shareholders. Accordingly, in relation to biodiversity conservation, large mining houses will think of risks in terms of breaches of legislation, financial liabilities and potentially negative impacts on their reputation. Similarly in terms of opportunities, mining houses will think of their obligations in terms of corporate responsibility, a potential competitive edge over rival companies and potentially positive impacts on their reputation.
If a potential biodiversity conservation initiative poses a potential risk to a company or it does not address a risk that the company faces it will be reluctant to implement it. Similarly if such an initiative does not provide an opportunity for a company to create a competitive edge, achieve some of its corporate responsibility objectives or enhance its reputation, it will be reluctant to implement it. It is within this context that the development of the concepts of wetland mitigation banking and the use of biodiversity planning information should be understood and further developed.

7.3 The need to ensure that national conservation targets are met

Wetland mitigation banking and other types of offset activities may not always be appropriate for every form of residual impact mitigation. Furthermore, it is vital that any form of offset only be considered as a last resort within the hierarchy of impact avoidance, minimisation and mitigation. In the instances in which such offset activities are considered appropriate, they should be undertaken with clear ecological and biodiversity objectives in mind. Offsets are only likely to be appropriate when a national biodiversity strategy or target is threatened or when ecological function may be impaired through a proposed activity. Such national biodiversity targets would include those set through the National Biodiversity Strategy and Action Plan and the National Spatial Biodiversity Assessment. The types of ecological function that are likely to be impacted upon include the types of ecological services that wetlands provide that include flood and erosion control, hydrological recharge and improved water quality.

It is important that wetland mitigation banking and other forms of offsets are clearly planned and implemented to achieve a well-defined set of objectives in an effort to mitigate the residual impacts of proposed mining activities. This will ensure that such efforts conform to national strategies and objectives for conservation and the need to maintain the provision of valuable ecological services.

7.4 Sterilisation of mining rights

In implementing the wetland mitigation banking concept, it is important that the sites selected as wetland mitigation banks are adequately protected and that they are not subsequently subject to mineral exploitation themselves. Efforts should be made to avoid areas of wetland and habitat in which important coal deposits are located but there may be instances in which the wetlands and the surrounding terrestrial areas are of such importance that they should be conserved. In this event appropriate protocols should be developed to ensure that they are not mined at a later date and these should be enshrined in the memorandums of understanding that are developed, particularly those involving the DME.

It should be noted that section 49 of the Minerals Act empowers the minister to prohibit or restrict prospecting or mining activities in respect of particular areas of land for periods and on terms and conditions that the minister may determine. In addition to any other layers of protection for areas of land set aside as offsets or as mitigation banks, this provides an obvious mechanism for government role players to work together to ensure that the achievements of the mining industry in implementing the Grasslands Programme are not undermined through future mining activities.

7.5 The concept of in-perpetuity protection

In creating wetland mitigation banks and other forms of offsets, it should be noted that differing levels of protection may be provided to such areas, depending on the nature of the area that is to be protected and the ecological and biodiversity conservation objectives that have been set for it. Large consolidated areas of biodiversity importance may be added to existing nature reserves, or new nature reserves may be created. In areas in which groups of landowners wish
to protect their properties together, protected environments may be created. In contrast within individual properties, contracts may be established between landowners and the government to secure the protection of specific wetlands and such requirements may also be written into the property’s title deeds.

Ideally the protection of all such areas should be established in perpetuity but the reality is that all such arrangements may be changed in the future. Even nature reserves, in which prospecting and mining activities are prohibited (section 48 of the Protected Areas Act), may be de-proclaimed enabling mining or other land transforming activities to be undertaken. It may be more useful therefore, rather than thinking in terms of in-perpetuity protection, to consider what the appropriate level of protection should be for a particular mitigation bank or offset area in order to achieve the ecological and biodiversity conservation goals that have been set for it.

7.6 The concept of in-kind versus out-of-kind mitigation banking

An important issue that must be debated and resolved in further developing the concepts of wetland mitigation banking is that of in-kind versus out-of-kind protection. The establishment of a wetland mitigation bank may be undertaken to protect wetlands and habitat within the same vegetation type that will be impacted upon by a particular activity or it may relate to the protection or rehabilitation of wetlands within the same quaternary catchment as that in which a particular activity is proposed. It may also relate to the protection of wetlands that are of a similar type, and function in a similar ecological manner, to those that may be impacted upon by an activity, such as floodplain or seepage wetlands. In further developing the concepts of wetland mitigation banking, it is necessary to define which of these types of mitigation banking would be considered in-kind and out-of-kind protection and to determine in which situations such types of mitigation banking may be appropriate.

7.7 The way forward

In order to resolve the key issues outlined above, a highly targeted process of stakeholder engagement is required. Such engagement should be structured to address these issues and to develop a consensus on how the Grasslands Programme should be implemented for the coal mining component. Stakeholder groups that should be consulted through such a process include:

- The mining industry:
  - Major mining houses.
  - The Chamber of Mines.
- Government:
  - The Department of Water Affairs and Forestry.
  - The Department of Minerals and Energy
  - Provincial departments of environmental affairs and tourism.
  - Provincial conservation agencies.
- NGO and interest groups

In consulting these groups, the following issues summarised from the discussion above must be addressed:

1) Institutional structures

- The responsibilities and obligations of individual government departments, as determined through legislation and policy.
The mechanisms necessary to ensure effective cooperation between government departments.

The structure and function of a Grasslands Coal Mining Tasking Team within the Grasslands Programme.

The role and responsibilities of the various government departments in implementing initiatives such as wetland mitigation banking.

The structure and function of a Wetland Mitigation Management Unit as defined in the SANBI wetland mitigation banking concept.

The mechanisms necessary to resolve conflicts of interest and disagreements between government departments.

The capacity of individual government departments to meet their obligations and responsibilities in regard to biodiversity conservation.

The resources that may be made available to address capacity needs.

The structures that need to be established to ensure an ongoing, constructive process in which government departments work together to address biodiversity conservation needs and the achievement of their individual obligations.

2) Different priorities of industry and government

The mechanisms that must be established to enable improved biodiversity stewardship and conservation within the mining industry.

A clear understanding of the potential business risks to companies within the mining industry, associated with biodiversity protection and conservation.

A clear understanding of the potential opportunities that companies within the mining industry may gain from improved biodiversity protection and conservation.

3) Meeting conservation targets

A clear understanding of what the key conservation targets are within the coal mining areas of the grassland biome and how the industry can assist in achieving them.

An understanding of the formal status of any national and provincial conservation targets within the context of relevant government legislation and policies.

Discussion on the status of the Mpumalanga Biodiversity Conservation Plan and how it may be utilised by the mining industry.

4) Sterilisation of mining rights

Discussion of how areas set aside for wetland mitigation banking or as other forms of offsets may be excluded from future mining development.

Discussion on the role of various government departments in ensuring that areas of important and significant biodiversity are adequately protected.

Development of appropriate mechanisms to ensure cooperation within government in protecting areas of important and significant biodiversity.

5) Levels of protection

Development of a hierarchy of protection for wetland mitigation banks and other offset areas, based on the ecological and conservation priorities and objectives for such sites.

Identification of appropriate mechanisms that may be implemented to ensure that such priorities and objectives are met.
5) **In-kind versus out-of-kind protection**

- Debate around what in-kind and out-of-kind protection means.
- Debate around when each form of protection may be appropriately implemented, based upon the ecological and conservation objectives that are set for a mitigation bank or offset area.

### 7.8 Conclusion

The discussion items outlined above are not considered to be an exhaustive list of the issues to be discussed during consultation, as it is likely that a number of other items will arise through the process. They are intended however to form the basis for initial consultation and to stimulate discussion around the issues that must be resolved in successfully implementing the coal mining component of the Grasslands Programme.