

PART 1
INTEGRATED MANAGEMENT PLAN

1	PURPOSE & SIGNIFICANCE
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1.2	Significance of property (biodiversity, heritage & social) (✓).....
1.3	Administrative and legal framework (✓).....
1.4	Background (brief description of landholding and context) (✓).....
1.5	Vision (✓).....
1.6	Management objectives and targets (✓).....
1.7	Threats to achievement of objectives (±).....
1.8	Zonation (✓).....
1.9	Policy framework and guiding management principles (✓).....
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PART 2
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2	SPECIFIC MANAGEMENT PROGRAMMES
2.1	Management actions to mitigate threats (✓).....
2.2	Management actions to ensure ecosystem health (✓).....
2.3	Management of infrastructure (±).....
2.4	Management actions to achieve other goals (#).....
2.5	Contingency plans (±).....
3	ANNUAL PROGRAMME (include pull-out “poster” in calendar form) (✓).....
4	STRATEGIC RESEARCH AND MONITORING (#).....
5	AUDITING (✓).....
6	APPENDICES
6.1	Maps (±).....
6.2	Other information sheets as required (#).....

Key:

- Each section that is essential to the Management Plan is marked with a tick (✓).
- Optional elements are marked with a plus-minus (±).
- Sections from which relevant subsections can be selected are marked with a hash (#).

PART 1
INTEGRATED MANAGEMENT PLAN

1. PURPOSE & SIGNIFICANCE

1.1 Purpose of the Protected Area (✓)

This should be a brief statement outlining why the PA has been set aside or proclaimed. Some examples:

- The protection and maintenance of a viable breeding population of oribi.
- The protection of Mistbelt Grassland.
- The protection and maintenance of a full suite of historically occurring herbivores and predators and the ecosystems on which they rely for their survival.
- For the protection of a landscape of unique beauty and cultural heritage resources

1.2 Significance of property (biodiversity, heritage & social) (✓)

This section will primarily be completed by stewardship staff, in consultation with EKZNW Biodiversity Section and Regional Ecologists and, where applicable, AMAFA (Heritage KZN). This will primarily be the section that describes why the property is important to the Biodiversity Stewardship Programme.

1.3 Administrative and legal framework (✓)

This section should contain a brief description of any policies, laws, etc., that may be relevant to the Protected Area (PA). Only policies/laws that are directly applicable should be included here, and not a complete exposé of every policy and law that has any vague connection with PA management.

1.4 Background (brief description of landholding and context) (✓)

This section should be compiled in consultation with the landowner/manager and should include a brief description of location, extent, ownership, context (spatial, social, political, institutional, etc). Maps can either be inserted here or as appendices.

1.5 Vision (✓)

The vision should take the form of a long-term inspirational and aspirational statement. In this section, the management philosophy should also be outlined so that it sets the tone for the Management Plan.

1.6 Management objectives and targets (✓)

In this section, the vision is translated into individual objectives. The management objectives should be listed in priority order. Care must be taken when setting management objectives that these objectives do not conflict with the vision. The objectives should be listed succinctly and in priority order.

They should:

- Be precise and specific.
- Be achievable and realistic.
- Be time-related.
- Be measurable.
- Reflect the purpose, significance and values.
- Spell out ends, not means.
- Adequately address the issues.
- Give the rationale behind them.
- Should not be written in "flowery", wordy language that is designed to impress.

The management objectives and targets can be listed in one section, or they can be divided into categories, as listed below:

1.6.1 *Specific objectives (±)*

1.6.2 *Biodiversity targets (±)*

1.6.3 *Socio-economic targets (±)*

1.6.4 *Other objectives/targets (±)*

1.7 Threats to achievement of objectives (±)

It is important that any factors that may frustrate the achievement of objectives are identified so that specific

actions may be taken to mitigate those threats. These are not the specific threats that face the PA, which are dealt with in the management programme section. They are rather larger socio-economic, political and infrastructural issues that are out of the direct control of the landowner. There may be some overlap between this section and the identification of pressures and threats in Part 2 Section 2.1, but the guideline should be that it should be possible to take specific management actions to manage the pressures and threats in Part 2 Section 2.1, whilst this section will entail a degree of "learning to live with" the threats.

Only those threats that are specific to the PA need to be included and described, some of which may include the following:

- 1.7.1 *Institutional*
- 1.7.2 *Political*
- 1.7.3 *Crime/corruption*
- 1.7.4 *Lack of leadership*

1.8 Zonation (✓)

1.9 Reserve policy framework and guiding management principles (✓)

1.9.1 Financial and Human Resources

Where is the operational funding for the Reserve going to come from?

1.9.2 Community Participation

Relationship with neighbouring communities

1.9.3 Security and safety

1.9.4 Biodiversity Conservation Management

Describe the management philosophy of the Reserve.

Fire Management

How will burns be planned, monitored and reviewed? Which stakeholders will be involved?

Alien species management

Alien plants

- Alien plant introductions
- Existing non-invasive alien plants
- Declared alien plants and invasive weeds

Alien animals

- Alien animal introductions
- Alien animals present in the reserve

Catchment management

Soil erosion and control

2. PRIORITISED PROJECTS FOR ACTION ACCORDING TO MANAGEMENT OBJECTIVES

2.1 List of projects

3. DEVELOPMENT PLAN

3.1 Management Infrastructure (±)

3.2 Visitor, tourism and recreation infrastructure (±)

4. BUSINESS PLAN

4.1 Resources (staff, budget) required (✓)

4.2 Available resources (±)

4.3 Shortfall between required expenditure and available resources (±)

4.4 Income generation opportunities (±)

5. GENERAL DESCRIPTION

This section and its subsections can range from simple descriptions, that are just enough to satisfy management requirements, to exhaustive descriptions, that can serve other purposes, such as staff training and suchlike.

5.1 Physical environment (✓)

5.1.1 *Climate*

5.1.2 *Topography and terrain morphology*

5.1.3 *Geology, geomorphology, soils and land types*

5.1.4 *Hydrology and aquatic systems*

5.2 Biological environment (✓)

5.2.1 *Vegetation*

5.2.2 *Mammals*

5.2.3 *Birds*

5.2.4 *Amphibians and reptiles*

5.2.5 *Aquatic organisms*

5.3 Socio-political context (±)

5.3.1 *History*

6. APPENDICES

6.1 Legal agreements (±)

6.1.1 *Legal agreements (±)*

6.1.2 *Stewardship agreements*

6.1.3 *Homeowner contracts*

6.1.4 *"House" rules*

6.2 Maps (±)

Maps can either be kept together in separate appendices, or they can be imbedded in the body of the text, within the relevant sections. Any of the following list can be included.

6.2.1 *Location*

6.2.2 *Surrounding land use*

6.2.3 *Geology*

6.2.4 *Soils*

- 6.2.5 *Land types*
- 6.2.6 *Rainfall distribution*
- 6.2.7 *Elevation and drainage*
- 6.2.8 *Slope classes*
- 6.2.9 *Plant communities/vegetation*
- 6.2.10 *Infrastructure*
- 6.2.11 *Zonation*
- 6.2.12 *Other*

6.3 Checklists (#)

This is an optional section that depends on the level of detail that the landowner requires.

- 6.3.1 *Plants – trees, forbs, grasses, ferns, etc.*
- 6.3.2 *Birds*
- 6.3.3 *Mammals*
- 6.3.4 *Reptiles*
- 6.3.5 *Frogs*
- 6.3.6 *Fish*
- 6.3.7 *Invertebrates*

6.4 Other information sheets as required (#)

- 6.4.1 *Protocols for clearing of alien plants*
- 6.4.2 *Wildlife-associated diseases of importance*
- 6.4.3 *Animal population dynamics*
- 6.4.4 *Concepts of carrying capacity*
- 6.4.5 *Burning guidelines*
- 6.4.6 *Characteristics of individual animal species*
- 6.4.7 *Managing for specific animal species*
- 6.4.8 *Other*

PART 2
MANAGEMENT PROGRAMMES

1. MANAGEMENT STRUCTURE – roles and responsibilities (✓)

A clear and concise description of staff roles and responsibilities, as well as “lines of command” (if they exist) should be outlined, so that some form of accountability can be enforced.

2. SPECIFIC MANAGEMENT PROGRAMMES

2.1 Management actions to mitigate threats (✓)

The following list of pressures and threats facing PA's in KwaZulu-Natal (KZN) was identified by PA managers during various workshops held throughout the Province in 2002 (see Goodman, 2003). They are listed in priority order, as perceived by all PA managers in the Province at the time. Many will be equally applicable to private land, but there may be others that are not listed and they can be added as required. Those that are not applicable should be deleted.

For each pressure or threat that is listed, specific management actions to mitigate or remove that threat must be outlined. Generic statements should be avoided and only actions that are practical and achievable within specific time frames should be listed. Consideration should also be given as to how to measure the success of each management intervention. Management decisions and actions should not be delayed “pending further research”, although if there are unknown factors at work, these do need to be identified and a plan to address those deficiencies in knowledge should be outlined. For each management action/intervention, a budget should be allocated. Examples of how to approach writing up management actions are given for two of the pressures and threats (Sections 2.2.1 and 2.2.2) listed below.

2.1.1 Alien plant invasion

- Describe (and/or) map the extent of the problem for each alien species. Refer to maps of previous clearing as well.
- Allocate a budget to the activity and describe what this budget aims to achieve (e.g., to clear # ha of *Chromolaena odorata* using # staff members, # bakkie/s, # tractor/s for # days per month; Follow-up on # ha of *Chromolaena odorata*).
- Start on isolated stands in the # area and move towards more dense infestations on the # river.
- If there is a budget surplus, move to # area, etc.

2.1.2 PA isolation

Suggestion to approach this:

- Arrange meeting with neighbours by certain date to discuss the problem and formulate action plan.
- Discuss rehabilitation of riparian areas running through properties and formulate action plan.
- Approach Department of Agriculture and Department of Water Affairs and Forestry for assistance with rehabilitation.

2.1.3 Land use change/land claims

2.1.4 Disease – exotic

2.1.5 Disease – indigenous

2.1.6 Bush encroachment

2.1.7 Extractive resource utilisation (illegal/excessive harvesting of plants)

2.1.8 Erosion (man-induced)

2.1.9 Alien/extralimital animals

2.1.10 Arson/uncontrolled fires

2.1.11 Illegal hunting (poaching)

2.1.12 Siltation of rivers, lakes and impoundments

2.1.13 Pollution (air, water, groundwater, soil, solid waste)

2.1.14 Tourism (poorly managed, uncontrolled, exceeding carrying capacity)

2.1.15 Land invasion

2.1.16 Purposeful species eradication (mosquitoes, tsetse fly, etc.)

2.1.17 Mining

2.1.18 Dam building and other upstream water abstraction

2.1.19 Management of solid waste

2.1.20 Archaeological destruction

2.1.21 Other

2.2 Management actions to ensure ecosystem health (✓)

This section refers to management actions that are not a response to a direct pressure or threat, but, if neglected, could result in some form of degradation of the system over the long term. As with the previous section, only items from the following list that can be managed practically should be included. The management prescription should list the rationale for the specific action, the potential consequences of not carrying out that action, and should have some method of either measuring the success of the intervention (if possible) or the extent of that intervention (e.g., mapping of areas burnt).

2.2.1 Aquatic systems

Including rivers and artificial impoundments.

2.2.2 Wetlands

Rehabilitation and/or management.

2.2.3 Soils

Protection against erosion, pollution, etc.

2.2.4 Vegetation

Burning, mowing, grazing, bush thinning / clearing, etc.

2.2.5 Small-medium herbivore management

Antelope, warthog, bushpig – introductions, hunting, culling, capture, monitoring, etc.

2.2.6 Mega-herbivore management

Elephant, rhino, hippo – introductions, hunting, culling, capture, monitoring, etc.

2.2.7 Large predator management

Lion, leopard, cheetah, hyaena – Introductions, hunting, culling, capture, monitoring, etc.

2.2.8 Other

2.3 Management of infrastructure (±)

2.3.1 Roads

2.3.2 Airfields/helipads

2.3.3 Fences/security

2.3.4 Other Infrastructure

2.4 Management actions to achieve other goals (#)

This section is especially relevant if the property has been set aside for specific, fairly narrow objectives, or if there is a specific outcome, other than biodiversity conservation, that the property is being managed for. As with the previous sections, management prescriptions should be specific, focussed, practical, time-bound and achievable and some method to measure success should be described. Only relevant sections need to be included.

2.4.1 Management for specific animal species (e.g., oribi, cranes, blue swallows)

In this section, one would list the habitat requirements that favour the individual species, the threats to the species, and the management interventions that will benefit the species. Some way of measuring species success should be included in this section, e.g., fledgling survival, fecundity, etc.

2.4.2 Management for specific plant species (e.g., Warburgia salutaris)

Where a PA has been set aside specifically to protect a specific species or to cultivate that species, one would list the habitat requirements that favour the individual species, the threats to the species, and the management interventions that will benefit the species. Some way of measuring species success should be included in this section, e.g., recruitment, seedling survival, growth rate, etc.

2.4.3 Management for specific plant communities (e.g., Mistbelt grassland)

Where a PA has been set aside specifically to protect a specific plant community, one would list the management actions that would favour the community, the threats to the community, and the management interventions that will benefit the community. Some way of measuring success should be included in this section, e.g., monitoring of indicator plant species, veld condition assessment, etc. There may be some overlap between this section and Section 2.3.4.

2.4.4 Game viewing

Management of a PA to ensure optimal game viewing may require a number of interventions, some of which could potentially pose a threat to biodiversity conservation goals (e.g., manipulation of water and forage resources) and others that may be benign or have some benefit (e.g., bush thinning). These should be described and potential conflicts should be identified and mitigation measures outlined. There may be a connection between this section and Section 1.6. Measuring the success of interventions to improve game viewing is quite subjective and will usually be based on feedback from guides and tourists.

2.4.5 Fishing

Management for optimal fishing may involve management of river banks, dam levels, aquatic plants, restocking, setting quotas and size limits and so on. Often fish that are stocked on properties are exotic and these could potentially pose a threat to indigenous aquatic organisms. All of these issues, where relevant, should be addressed and specific management actions prescribed for each aspect of "fisheries" management.

2.4.6 Vegetation utilisation

Many PA's either make some plant products available to surrounding communities as a public relations / good neighbour exercise, or they practice some form of commercial harvesting of plant products. Each of these should therefore be identified and the size of the resources described, with an acceptable offtake plan described. A system of measuring the effect of harvesting on the resource base should also be implemented, so that irreversible impacts on that resource does not result. It will be important to list possible impacts on other species or biodiversity components that may result from harvesting each resource, as well as mitigation measures to reduce those impacts. Vegetation utilisation may include any of the following:

2.4.6.1 Muthi (bark, roots, fruit, sap, whole plants)

2.4.6.2 Thatch

2.4.6.3 Fuel (wood, dung)

2.4.6.4 Weaving (ncema grass *Juncus kraussii*, other grasses, *Sansevieria* spp., etc)

2.4.6.5 Timber (from bush thinning, elephant damage, specific harvesting, etc)

2.4.6.6 *iLala* palm (*Hyphaene coriacea*) sap

2.4.6.7 Fruit (*marula* [*Sclerocarya birrea*], monkey apples [*Strychnos* spp.], etc).

2.4.6.8 Other

2.4.7 Meat production

Many game ranches exist purely for the purpose of maximum meat production, as opposed to game viewing or trophy offtake, whilst others attempt to do all three simultaneously. In this section it may be useful to describe the concept of carrying capacity and the difference between ecological and economic carrying capacity and thus outline the stocking rates that are required to favour maximum game numbers vs. maximum meat production. Where multiple objectives exist, some compromises need to be made and these compromises should be detailed. An annual game census may be required to detect trends, but it may also be possible to monitor effects of harvesting simply by taking note of reproductive success of target species.

2.4.8 Trophies

Some guidelines will be needed on acceptable offtakes so as not to impact on breeding males. This may include only taking males past breeding age or only a percentage of breeding males and so on. Strategies will vary from species to species and will be based on information gleaned from the literature on trophy hunting. Monitoring of effects should be relatively simple in that the quality of and number of available trophies should remain consistent year on year. If some form of "put and take" hunting is to take place, the strategy to be used should be outlined, with due regard to the social effects of introducing strange males into the population.

2.4.9 4x4 trails

Clear zonation for 4x4 trails should be given and there should be strict rules regarding keeping to tracks and other controls to prevent damage to soil and vegetation, as well as harassment of animals. A system of monitoring the effects of vehicles should be implemented so that vehicle numbers can be controlled in order to prevent irreversible damage to the environment in which the trails take place.

2.4.10 Other

This will include management actions for the achievement of other goals not listed here.

2.5 Contingency plans (±)

This is an optional section that deals with mostly emergency type situations and should describe the protocols to be followed in the case of any of these events happening. These would be protocols that each staff member would be briefed on and would know their role.

A brief example of how to deal with this is given in Section 2.6.1 below.

2.5.1 Disease outbreak

- Place guard/s near carcasses.
- Notify State Vet.
- Notify neighbours.
- Control movement in and out of PA.
- Etc.

2.5.2 Security breach (poaching)

2.5.3 Wild fire

2.5.4 Large predator breakout

2.5.5 Elephant breakout

2.5.6 Rhino breakout

2.5.7 Buffalo breakout

2.5.8 Medical emergency

2.5.9 Staff strikes/industrial action

2.5.10 Other

3. ANNUAL PROGRAMME (✓)

It will be helpful to a PA manager if an annual programme is laid out with specific management actions that need to be implemented in each month of the year. The actual details or methods of each action need not be given on the poster, but simply the timing thereof.

Some management actions cannot be tied to a specific month and so a section described as "triggered events" has been included. For example, implementation of a burning programme depends on the purpose of burning, grass sward biomass (related to both rainfall during the year and herbivore utilisation), rainfall timing, prevailing weather and other factors that cannot be tied to specific months.

The management programme can be compiled in the form of a spreadsheet or "poster" that can be put on the PA manager's office wall to serve as a reference.

3.1 January

3.2 February

3.3 March

3.4 April

3.5 May

3.6 June

- 3.7 July
- 3.8 August
- 3.9 September
- 3.10 October
- 3.11 November
- 3.12 December
- 3.13 Triggered events

4. STRATEGIC RESEARCH AND MONITORING

This refers to ongoing assessment and performance monitoring.

Many scientific monitoring activities require too much effort and are simply too costly in relation to the benefits that they offer. The issue of monitoring will, therefore, have to be dealt with on a case-by-case basis, with the proviso that the simplest, least expensive and most practical method of monitoring should be implemented for each important biodiversity asset in question, providing that the monitoring method used is scientifically and statistically rigorous and defensible. Some commonly used methods are listed below, but care must be taken not to launch into a monitoring programme that is too complex, time consuming and expensive to keep going.

- 4.1 Veld condition assessment
- 4.2 Grass biomass determination
- 4.3 Browse resource determination
- 4.4 Game census
- 4.5 Bird census
- 4.6 Bird nest surveys
- 4.7 Fixed point photos
- 4.8 Rapid Assessment and Prioritisation of PA Management (RAPPAM) Methodology
- 4.9 Other

5. AUDITING (✓)

5.1 Reporting procedure (✓)

Each PA will have to have its own auditing procedure negotiated between the Biodiversity Stewardship Programme managers and the landowner/s. This should be seen as a cooperative process of trying to improve management, rather than a way of "catching managers out".

It is suggested that the Biodiversity Stewardship team or representative spend a day with the PA manager/s and go through each action item in the Management Plan, asking the following questions:

- What was the goal of this management "prescription"?
- Was the goal achieved – completely, in part, not at all?
- What were the factors that frustrated achievement of the goal?
- What can be done to overcome that hindrance?
- What assistance can the Biodiversity Stewardships Programme offer to overcome hurdles?
- Are there any Government or statutory bodies that can assist?

There may be an instance where the PA owner/s may wish to know if their management staff are performing to the required standard and the manner in which this is conveyed by the Biodiversity Stewardship Assessment team will have to be discussed up-front with the owners so that managers do not feel threatened by the audit process.

5.2 Management Plan review (✓)

On an annual basis, this Management Plan should be reviewed and adjusted where necessary. To achieve this, the following questions (and others as needed) should be addressed:

- Did this Management Plan make a meaningful contribution to management of the PA?
- Were individual management “prescriptions” realistic and achievable? Were they written unambiguously or was there room for misunderstanding?
- Were budgets for each management activity realistic? Were the allocated budgets too much or too little?
- Were sufficient staff members of the right qualifications allocated to each management activity?

There will be some overlap between the review and the audit and they should therefore be done on the same day, by the same team.

6. APPENDICES

6.1 Maps (±)

Maps can either be kept together in separate appendices, or they can be imbedded in the body of the text, within the relevant sections. Any of the following list can be included.

- 6.1.1 *Location*
- 6.1.2 *Surrounding land use*
- 6.1.3 *Geology*
- 6.1.4 *Soils*
- 6.1.5 *Land types*
- 6.1.6 *Rainfall distribution*
- 6.1.7 *Elevation and drainage*
- 6.1.8 *Slope classes*
- 6.1.9 *Plant communities/vegetation*
- 6.1.10 *Infrastructure*
- 6.1.11 *Zonation*
- 6.1.12 *Other*

6.2 Other information sheets as required (#)

- 6.2.1 *Protocols for clearing of alien plants*
- 6.2.2 *Wildlife-associated diseases of importance*
- 6.2.3 *Animal population dynamics*
- 6.2.4 *Concepts of carrying capacity*
- 6.2.5 *Burning guidelines*
- 6.2.6 *Characteristics of individual animal species*
- 6.2.7 *Managing for specific animal species*
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