Rhino Issue Manager

FINAL REPORT

2012

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Acknowledgement

The Rhino Issue Management team (RIM) wishes to acknowledge the invaluable contribution made by everyone who participated in the RIM process. The process benefitted from some of the most informed thinking on sustainable rhino species conservation; on durable protection strategies; and, not least, on the complex issues attendant upon rhino commerce and trade. Expert information and documents were generously shared and opinions given - always with the passion and selflessness one has come to associate with nature lovers and conservationists. We gathered priceless information in workshop presentations and from debates; from authoritative papers and précis, and in one-on-one conversations conducted in different locales – all of this with people who have a deep passion for rhinos. We cannot adequately thank the individuals who sometimes had to succumb to our 'bullying' as we constantly pestered them with requests for guidance on content, and to be discussion panelists. We note with deep appreciation how all and sundry, not least Department of Environmental Affairs (DEA) officials assigned to backstop the RIM process, played their roles. At the end of it all one was left with the distinct impression that South Africa's epic feat of saving the Southern White rhinoceros from extinction some 60 years ago would not be nullified by the escalating savagery of the poacher's assault rifle.

Predictably, differing points of view were put forward regarding preferred strategies for securing the safety of South Africa's rhinoceros population. These perspectives, like alternative ones, were debated, analyzed and given utmost respect and consideration. Our job, if that needs restating, was to dispassionately collect the information to hand, synthesise it and deliver a set of recommendations for the Department of Environmental Affairs and the Minister, based on our best judgment. We are cognizant of the fact that we may not have satisfied the wishes and aspirations of all the participants in the RIM exercise. But then, that was never the objective.

This report and its annexures are a compilation of information we have been able to gather. It includes recommendations for DEA to consider and, hopefully, implement. It also provides the rationale for the recommendations. We trust that it encapsulates the broad views of RIM participants, and hope it will contribute towards the enhancement of the National Strategy for the Safety and Security of Rhinoceros Populations in South Africa, DEA's strategy document for rhino conservation. We also hope it will give the government a better understanding of the key issues among the stakeholders regarding sustainable rhino conservation. Not least, we hope it will assist in developing a solid national position as South Africa prepares for the upcoming CITES Conference of Parties, COP 16.

Mavuso Msimang

Rhino Issue Manager
South Africa, November 2012

Foreword

The Department of Environmental Affairs wishes to thank the participants in the Rhino Issue Management process for the valuable time and assistance afforded to the Rhino Issue Manager and his team. Without this expertise the final outcome of our consultation with South African stakeholders would not be of the quality we believe is demonstrated here in this report.

This report combines the knowledge and expertise of our best scientists and conservationists and rhino experts from the private sector, with the knowledge and views of South Africans from all walks of life. There is clear agreement that our rhino should be conserved for the good of all humanity, and that every effort should be made to protect this species against the current major poaching onslaught. However, due to an absence of hard data on the impact of the trade moratorium there has been considerable divergence of views on whether legal trade could address the rhino poaching problem or not. Taking these views and the data into consideration, the Rhinonomics model has developed clear "what-if" pictures of the impacts of supply and demand, and the role trade plays in this system and its findings are contained herein.

The work of the RIM and his team, and all rhino stakeholders has been of significant utility to DEA and the Minister in reviewing South African policy regarding the rhino and we take this opportunity to thank all those who participated most sincerely, and assure you of our absolute dedication to the preservation of the rhino for citizens of South Africa and the world.

Fundisile Mketeni
Deputy Director General- Biodiversity
Department of Environmental Affairs

Glossary

Acronym	Term
AfRSG	African Rhino Specialist Group
CAR	Central African Republic
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COP	Conference of the Parties
CSI	Corporate Social Investment
CSR	Corporate Social Responsibility
DEA	Department of Environmental Affairs
DRC	Democratic Republic of Congo
ETIS	Elephant Trade Information System
EU	European Union
GRAA	Game Rangers Association of Africa
IAPF	International Anti-Poaching Foundation
IFAW	International Fund for Animal Welfare
IPZ	Intensive (rhino) Protection Zone
IUCN	International Union for Conservation of Nature
KNP	Kruger National Park
MISS	Minimum Information Security Standards
NEMBA	National Environmental Management: Biodiversity Act
PA	Protected Area
POCA	Prevention of Organised Crime Act
PROA	Private Rhino Owners Association
RIM	Rhino Issue Manager
RSMP	Rural Safety Management Plan
SADC	Southern African Development Community
SARS	South African Revenue Services
SSC	Species Survival Commission
TCEI	Tax and Customs Enforcement Investigations
TOPS	Threatened or Protected Species
UAV	Unmanned Aerial Vehicle
WCC	World Conservation Congress
WESSA	Wildlife and Environment Society of South Africa
WWF-SA	World Wildlife Fund of South Africa

The Brief

Appointed on May 1, 2012 on a six-month contract, the Rhino Issue Manager (RIM) was assigned the task of conducting a series of stakeholder engagements to facilitate the development of a common understanding of key issues concerning the protection and sustainable conservation of the South African rhino population. This was to be done through the medium of workshops, roundtable discussions and other forms of engagements. It was considered important to identify the interests and concerns of rhino stakeholder constituencies and flag these for consideration when developing a rhino management strategy.

Jointly with DEA, the Rhino Issue Manager was also charged with developing a communication strategy to highlight the rhino poaching menace and inform the public about measures the government was taking to combat the scourge. Supporting the Minister, who was to remain the face of the government's anti-poaching campaign, the RIM team was to engage the media as well as groups and organizations such as LeadSA, RAGe, national and provincial wildlife management organizations, SAPS and many other organizations involved in a range of endeavours against rhino poaching.

RIM was also directed to collect and collate information and data and compile a report for presentation to DEA to augment and enrich its rhino management document, the National Strategy for the Safety and Security of Rhinoceros Populations.

Finally, RIM stakeholder engagements were intended to help DEA develop the South African position and statement in preparation for CITES COP 16.

The RIM Process

Essentially, the RIM process took the form of workshops, sixteen in total, which were held mostly in the Gauteng Province but also in KZN and the Western Cape, as venue selection influenced cost-effective access considerations. The founding all-stakeholder workshop identified three broad topical areas around which discussions on the sustainable conservation of the South African rhino populations would be best discussed. These were safety and security, sustainable conservation and trade and commerce. The high and escalating toll on rhino lives since calendar year 2008 put rhino safety and security the top of the urgent category list. However, their complementary and interwoven nature necessitated a full treatment of all the options.

Topics for discussion were generally led or introduced by specialists and established practitioners who would have prepared and forwarded their presentations in advance. A few individuals did not feel comfortable with stating their views in the open and so made special arrangements to do so privately. Many other stakeholders who either could not make it to the workshops because of time constraints, clashing schedules or a desire to amplify on their submissions held one-on-one meetings with RIM members. Approximately

four hundred one-on-one meetings were recorded in summary contact reports. Members of the Diplomatic Corps accredited to South Africa also received briefings on the RIM objectives and process.

While the workshops included public and private sector participants, a couple of sessions were arranged specifically for state agencies in the Security Cluster, viz., SARS, SAPS (the Hawks) the NPA, the Department of Correctional Services, and SASS. Senior journalists mostly specialising in environmental or biodiversity matters were briefed and given the opportunity to conduct in-depth interview with the lead RIM consultant. Radio and television were also used to explain the purpose of RIM.

RIM developed and implemented a communications system with the objective of making available all papers and other material submitted to the secretariat to all parties via email and, later, via the RIM website.

All open workshops were recorded verbatim, these records being used to ensure accuracy in the reporting of the views tabled. At the end of all workshops, documents produced during the process were disseminated to those who had attended. The information thus gathered has been used in the preparation of this report. In parallel, a review encompassing conservation, security, regulation, legislation, case studies, CITES history and the economics of commerce and trade pertaining to the rhino issues was undertaken. Where possible, all information was verified and information gaps identified.

An econometric model[1] was developed which for the first time sought to develop a baseline model of supply, demand and pricing for rhino horn. Although demand data are limited in availability, the model is able to assess different levels of demand and indicate supply requirements at various levels, offering a useful tool for assessment of possible scenarios. This model[2], as well as other resource economics inputs, has been used in the assessment and development of recommendations pertaining to trade. The submission of this report represents the final deliverable of the RIM process.

This report is divided into four sections. Section one offers an executive summary of the issues, findings and recommendations of the RIM. Section two provides an overview of the conservation status quo of the rhinoceros in the world today, and section three tables current initiatives in the provision of protection for South African rhino. Section four provides a summary of views and available data on the commerce and trade models available for consideration. The annexures provide detail on the econometric model developed to inform the recommendations as well as the references used in the compilation of this report. [3]

[1] Rhinonomics ®
[2] Refer Annexures for model overview
[3] The final report DVD provides all presentations, reports, papers, and participants in the RIM process as well as the report and annexures.

Executive Summary

The stakeholders responded magnificently to the government's invitation to discuss their concerns regarding the poachers' onslaught on the South African rhino and work together to devise strategies that could provide relief to, and rescue, the embattled iconic mammal from the threat of extinction. Meeting attendances were generally good and the level of participation in the discussions high and animated. There was agreement that focus should be on saving the rhino and therefore the importance of making proposals that were relevant to this central objective. Arguments premised exclusively on economic or financial gain were not considered sufficiently broad in their goals for acceptance.

The consultation process benefitted much from the existence of a strong body of research provided by ecologists, veterinarians, biologists and others in the conservation sciences, especially in the field of biological management. So also was the case with positions that were based only on sentimental or aesthetic considerations but that did not necessarily contribute to ensuring the survival of the rhino. Inferences drawn from data collected over years in diverse ecological conditions seemed to leave little room for challenge. On sustainable conservation prerequisites consensus was developed quickly and the stakeholders moved on to other issues. A strong case was made for the necessity of handling rhino ethically. Concerns were also strongly voiced about subjecting rhinos to treatment and circumstances that might eventually modify their behaviour and/or physiology.

Extensive discussion took place on the desperate plight of the rhino and a variety of protection measures were put on the table. There was recognition that poachers operated in well organized and highly networked and elusive international criminal syndicates. The current inadequacy of intelligence that is necessary to bolster security provided by Protected Area authorities and private rhino owners was recognized as the Achilles heel in the rhino safety strategy. Thoughtful suggestions were made around the necessity of affording communities living adjacent to wildlife areas a meaningful stake in rhino ownership, and thus the mammal's security.

The escalation in rhino poaching has amply exposed the weaknesses of current rhino protection measures. Technological developments were envisaged to offer exciting opportunities of bolstering rhino security against poachers. Unmanned Aerial Vehicles (UAVs) rated frequent mention. The astronomical cost of providing security in typical rhino habitats was thought to render reliance on option to protect rhino as inadequate by itself.

Discussions on trade and commerce as conservation tools resulted in heated debates. As would be expected, vested interests tended to look at the lifting of the ban on the trade in rhino horn as the panacea that would end poaching and save the rhino from extinction. The opposing view was that such trade would stimulate demand and exacerbate the plight of the rhino. Empirical evidence abounds that points to the ineffectiveness of the illegalization of trade in rhino horn. On the other hand, while opening up the trade as suggested would provide some relief to rhino herds, not enough is known about the workings of the faceless rhino trade operators. It is crucial that possibilities in this sphere are investigated through the development of appropriate models.

The absence of a single strategy to quell and annul rhino poaching calls for the judicious employment of several carefully thought-out interventions in a portfolio approach. In the immediate term, there can be no substitute for heightened security using the tried and tested ranger bolstered by the best available technologies. Simultaneously, biological conservation measures, including range expansion, should be investigated and implemented. Finally, as long as there is demand for rhino horn, effective means of supplying it must be worked out that would have the effect of saving the life of the rhino. These strategies must be finalised with urgency and an application duly made to the CITES Conference of Parties to legalize trade in rhino horn.

RIM RECOMMENDATIONS

Strategic Focus	Recommendation	Key Actions	Impacts
FUNDING	Develop and Implement a funding model for the Conservation of the South African rhino populations	DEA to prepare an integrated budget for enhanced rhino protection; sustainable conservation; and for the administration, monitoring and management of commerce and trade in rhino.	Consolidation of all donor funding: international, business, civil society, etc. et al into one fund which will reinforce the government's own budget for rhino conservation, to be applied as approved in the business plan
		Minister to seek Cabinet approval for increased spending on rhino protection and support for the establishment of a Global Rhino Fund to which civil society, the corporate sector and international funders may make financial and in-kind contributions to save the rhino;	Coordination of planning and implementation of funding. Reputable Fund ensures funds received are disbursed exclusively for rhino and related conservation efforts
		Minister to announce the establishment of a Global Rhino Fund	Allows for the international community to contribute to the conservation of a globally relevant species- conserving the rhino is a global issue. Allows for corporate South Africa to support
		DEA to compile a database of all NGOs and any other organizations and/ or individuals set up to raise funds for purposes of rhino protection and conservation; monitor their registration and	Genuine conservation civil society organizations must be supported in their specialized conservation, research and fundraising efforts

Strategic Focus	Recommendation	Key Actions	Impacts
		compliance with the Companies and Intellectual Property Commission (CIPC) and that their financial records are up-to-date;	

Strategic Focus	Recommendation	Key Actions	Impacts
SAFETY AND SECURITY	Develop a coordinated rhino security strategy for implementation in all Protected Areas, national and provincial, where rhino occur.	Working in conjunction with, and where necessary providing requisite support to, PA authorities, develop park-specific safety and security plans for rhino	Locally recruited personnel will secure a conservation buy-in by local populations. Alleviation of the acute unemployment situation that is characteristic of rural areas Increased number of rangers will improve coverage of areas where rhino are located
	Increase the number and capability of field rangers assigned to rhino protection.	Prepare a special rhino-focused training program. Hire rangers with an emphasis on recruits drawn from populations living adjacent to PAs	
	Carry out trials on the use of UAVs in selected PAs	PA authorities to identify potential suppliers. Train personnel to work in conjunction with UAVs	
	Build a comprehensive intelligence network aimed at	Establish coordinating structures that involve PA authorities and	Enhanced coordination of intelligence activities

Strategic Focus	Recommendation	Key Actions	Impacts
	securing the cooperation of communities living adjacent to PAs	relevant provincial and national state security agencies [See also drive for locally recruited rangers and PA personnel.]	
	Upgrade security on the South African border with Mozambique along KNP	Complement measures that are already in place by elevating to Presidential level issues pertaining to SA border with Mozambique, especially in rhino habitats. Negotiate MOU between Mozambique and South Africa that will include provisions necessary for the Protection of Rhinoceros and other wildlife species in the Greater Limpopo 0Transfrontier Conservation Areas of Kruger National Park (KNP) and Limpopo National Park. Enter into similar arrangements with the Government of Zimbabwe in due course.	Passing of legislation in Mozambique which criminalises unauthorised possession/transportation of rhino horn. This would reinforce current KNP-Mozambique discussions with both the government and community leaders Improved border patrols on both sides of the border and reduced ability to cross the border and poach Reduced incidents
	Undertake a comprehensive rhino dehorning exercise across South Africa. *Must be accompanied by* - Increased security as outlined in recommendations - Immediate implementation of improved permitting	**Priority one**- dehorn all black rhino **Priority two**- dehorn all key white rhino populations **Priority three**- dehorn all important white rhino populations	Curtailment of incentive to kill rhino; (Poaching would continue albeit at a reduced rate given time to carry out the dehorning exercise.) Provides more horn for stock

Strategic Focus	Recommendation	Key Actions	Impacts
	system; - Implementation of Drone surveillance system - Implementation of budgeted annual population counts and profiles in all Parks		Fast-tracks DNA sampling and chipping of all South African horn.
	Upgrade coordination and improve quality of inputs into joint meetings by state security agencies and others involved in rhino protection in South Africa Continuously monitor rhino criminal acts and ensure the justice system is equipped with and carries out appropriate deterrence	Assign dedicated staff to these tasks and develop KPIs manage their with specified minimum service times to be seconded to a National Coordinating Entity Time spent on this assignment will form part of each person's performance appraisal system Should be implemented in conjunction with other strategies outlined	Improvement on the already improved coordination of State institutions to protect rhino and punish criminals. Improved execution of functions Decreased poaching, increased arrests and improved intelligence sharing.
	Set up and immediately implement a centralized Permitting System and Database for live rhino sales, rhino horn sales and hunts.	Amend regulations without necessarily changing Constitutional provisions to achieve this. It must be obligatory for DNA samples to be collected and microchips inserted on all animals for which permits are requested and issued. All new born rhino must be chipped and DNA'd before permits will be issued	Significant improvements in ability to count, track, identify and manage rhino Required precursor for CITES discussions and CITES management compliance Reduced opportunity for corrupt and/or illegal hunts, sales, horn sales.

Strategic Focus	Recommendation	Key Actions	Impacts
CONSERVATION	Identify and support implementation of suitable and safe rhino ranges inside and outside South Africa with a view to optimizing species conservation and persistence in the wild. Share safety and security strategies	Use existing expertise of Specialist Rhino conservation groups already working in this area to identify ranges. Enter into appropriate arrangements for protocols that will facilitate rhino translocations to insure effective biological management of the Continental African rhino herd. Upgrade existing agreements with countries like Namibia, Botswana, Malawi and Tanzania in light of the escalating poaching onslaught threatening the survival of the rhino species Use the Global Rhino Fund to support range expansion	Extended ranges means increased genetically diverse wild populations assuming safety and security strategies are implemented Increased herds of white and black wild rhino

Strategic Focus	Recommendation	Key Actions	Impacts
COMMERCE & TRADE	Announce the government's intention to authorize commercial farming of rhinoceros.	Amend regulations to permit for intensive rhino farming Develop support plan for farming of rhino to be implemented as any other farming plan in conjunction with Land Bank and other DFI's linked to agriculture and agri-process;	Communities adjacent to parks and ranches farming rhino will experience a significant increase in the quality of their lives. Existing intensive?? ranches can convert to farming using permit system as noted above Availability of farmed horn at cheaper rates than poached horn will divert buyers to legal horn thus reducing incentives to poach Revenues earned increase SA export earnings and create jobs No lethal effects to rhino
	Minister to announce intention to lift the moratorium on domestic trade in rhino horn. Authorize sale of farmed horn through auctions or other appropriate mechanisms; Consider opening a rhino horn	Review and amendment of TOPS and other relevant legislation Authorized trade limited to the issue of paper and not entail the physical movement of horn other than first sale Horn sold with permit, issued after DNA and chipping	Will create speculative market in rhino horn domestically Will offer incentive for continued participation of the private sector in rhino management Includes extensive (semi-wild) and intensive (farmed) rhino horn.

Strategic Focus	Recommendation	Key Actions	Impacts
	trading bourse possibly linked to the JSE	Central Storage Facility identified and rhino horn from farming and/or natural deaths and/or stockpiles kept there. Board of Directors/Trust drawn from public sector, private sector and civil society to oversee the facility and the horn management issues.	Allows for income to be earned to offset costs of keeping and maintaining rhino, and increased security costs.
	DEA to announce its intention of applying for the lifting of the trade ban in rhino horn.	Begin implementation of priority actions required by CITES to demonstrate South African abilities to manage legal trade effectively Begin preparation of submission and pre discussion of submission with the Parties Increase information gathering to support econometric modelling for supply and demand in Rhino horn and options for its management. Submit alternative plan to the Parties.	Increased opposition from entities opposed to trade Increased speculation in rhino horn when domestic moratorium is lifted Ultimately, legal trade from farmed rhino horn or wild rhino horn accumulated due to natural mortality will provide some of the market demand for horn thus potentially reducing poaching of wild populations.
	Reject Kenya call for the banning of all trade in Rhino horn on the basis that there is no evidence	Communicate South African position	Rejection of Kenyan position

Strategic Focus	Recommendation	Key Actions	Impacts
	that the CITES ban has reduced poaching.	Table assessment of evidence with submission to CITES	
	DEA should request permission for two auctions in 2013 to permit sales of stockpiles to finance efforts to fight poaching and increase ranges	Prepare requirements for submission to CITES for auctions Hold auctions	Reduction in poaching pressure on wild rhino as legal (and less costly) horn enters the market Earnings for State and Private sector can fund increased protection, improved counting and improved conservation.

Section One- Conservation of the Rhinoceros

1. Species, range and population

1.1 The species

Currently five species of Rhinoceros exist. In the last decade, two rhino subspecies, the Western Black Rhinoceros (*Diceros bicornis longipes*) in Cameroon and the Indochinese Javan Rhinoceros (*Rhinoceros sondaicus annamiticus*) in Vietnam have become extinct (IUCN, 2012). In Asia there are populations of *Dicerorhinus sumatrensis, Rhinocereos uniconis* or Sumatran Rhino (220 animals and categorized as critically endangered), and *Rhinocerous unicornis*, the Indian Rhino (2 900 animals). In Africa there are two species, *Ceratotherium simum,* white rhino, (20,000 animals) and *Diceros bicornis,* black rhino (4 800 animals) which is critically endangered (Emslie 2012a). The African white rhino has two sub species, the northern white rhino, also categorized as critically endangered, and the southern white rhino. The African black rhino has three extant sub-species, the south-western *D. b. bicornis*, the eastern *D. b. michaeli* and the southern-central *D. b. minor*. The Southern white Rhino is the dominant sub-species in South Africa and the southern African range states[4] and is considered of least concern (Emslie 2012b).

Fossil records show that as many as 30 genera of rhino once inhabited the earth (Nowak & Paradiso, 1983), but currently only these five species remain. Colonial occupation of Africa saw massive hunting activities and many large mammalian species, including rhino, were hunted to the brink of extinction (Emslie & Brooks 1999). In East Africa thousands of black rhino were shot under game control acts where rhino were regarded as vermin, and hunting and land clearance were major factors for black rhino decline during the first half of the century. Black rhino had almost disappeared by the 1930's in South Africa with only 110 surviving animals in game reserves. From as late as the early 1960's to the late 1990's Africa lost over 95 per cent of its estimated black rhino population of 100,000.

The northern white rhino were slaughtered for profit by hunters in and around Lake Chad between 1927 and 1931 and by 1960 fewer than 2,230 were left in the wild, mostly in the Democratic Republic of Congo (DRC) and the Central African Republic (CAR). Southern white rhino numbers declined earlier and in the late 1800's the southern white rhino was almost rendered extinct with fewer than 50 remaining animals documented. By 1895 only 20 survived in the Hluhluwe uMfolozi Game Reserve in South Africa (Emslie 2012b). The recovery of the Southern White Rhino from near extinction is largely attributed to the protection programme initiated by Dr Ian Player, Maqubu Ntombela and other colleagues at Hluhluwe uMfolozi Park, through effective management and translocation and the transfer

[4] African range states are : Uganda, Kenya, Tanzania, Malawi, Rwanda, Zambia, Zimbabwe, Mozambique, Namibia, South Africa and Swaziland)

of animals to other potential growth areas such as Kruger National Park as well as the sale of white rhino into the private sector (Knight 2011; Mkhize, 2012).

In the 17 years between 1970 and 1987, the world's rhino population reduced from 70,000 to 11,000, a drop of 85 per cent (Martin & Vigue, 1987; Sheeline, 1987). Black rhino numbers dropped from 60,000 in 1975 to 4,500 in 2010 (Milliken & Shaw, 2012). By 1998 only 25 rhino were confirmed in the Garamba National Park in the DRC and are now largely considered extinct in the park and the wild.

South Arica has been largely responsible for the conservation of the African Rhino species. By 2012, South Africa was home to 83 per cent of Africa's rhinos, and just under 75 per cent of all rhinos world-wide (Milliken & Shaw 2012). By the end of 2010, South Africa conserved more black rhinos (1,915) in the wild than any other range State and accounted for approximately 39% of the continental total by 2010. The bulk of the black rhino in South Africa consist of the south central black rhino (*D. b. minor*) at just over 1 680 (or 76%) individuals of this subspecies (Knight, Balfour & Emslie, 2012).

The overwhelming cause of rhino decline and extinction in the last 50 years has been poaching, stimulated by demand for rhino horn used for traditional craft and traditional medicinal purposes by consumer nations in the middle-east and in Asia. Nonetheless, and although poaching is prevalent and increasing in South Africa, the number of live births still exceeded the number of deaths (including poached rhino) – populations grew at between 6.5 per cent (Knight, 2011) and 6.9 per cent) annually from 1995 to 2011, after all deaths had been deducted (Emslie, 2012).

1.2 Rhino presence

Over 90 per cent of Africa's white rhino occur in South Africa. Approximately 1 400 white rhino occur in Namibia, Botswana, Swaziland, Zimbabwe and Mozambique and small numbers are present in Kenya, Uganda and Tanzania (Mkhize, 2012). Today, game ranches in South Africa cover an area over three times as large as all the national and provincial protected State areas (Milliken & Shaw, 2012). Best estimates suggest that the national herd consists of approximately 15 000 white rhino owned by the State and approximately[5] 5 000 in the hands of private owners on some 395 private ranches and 36 state protected areas (Mkhize, 2012) on over 5 million hectares (Eustace, 2012).

[5] There is no exact number of privately owned rhino available as at October 2012.

Table One: Rhino Populations (2010)

Species	WHITE RHINO		TOTAL WHITE	BLACK RHINO			TOTAL BLACK	TOTAL ALL RHINO
Sub-Species	C.s. cottoni	C.s. simum		D.b. bicornis	D.b. michaeli	D.b. minor		
South Africa		18 796	18 796	171	60	1 684	1 915	20 711
Namibia		469	469	1 750			1 750	2 210
Kenya	4	361	365		594		594	959
Zimbabwe		290	290			431	431	721
Botswana		135	135			7	7	142
Tanzania			-		88	25	113	113
Swaziland		88	88			17	17	105
Zambia		7	7			27	27	34
Malawi			-			24	24	24
Uganda		9	9					9
Mozambique		6	6			1	1	7
Angola			-	1			1	1
TOTAL	4	20 161	20 165	1 922	742	2 216	4 880	25 045

Source: IUCN Red List of Threatened Species™, www.iucnredlist.org, provided by the IUCN SSC African Rhino Trust.

Currently, Kenya, Namibia, South Africa and Zimbabwe conserve approximately 98% of Africa's black and white rhinos.

The Ecological Carrying Capacity (ECC) is the capability of a given area to optimally hold a specific number of a species. South Africa is fast approaching the limit of the ranges available to white and black rhino on state owned land and is currently at over 80 per cent of carrying capacity (Emslie, 2012). This means that in order to continue to grow the species, new ranges or the expansion of existing ranges in other states will be required soon. Established rhino populations should be maintained at 75 per cent of Ecological Carrying Capacity (ECC) to maintain actively growing populations, and provide surplus animals (5 % and 8 % of population) for other populations & growth areas.

1.3 Key [6] and Important[7] Rhino Populations

While there are many rhino populations not all are critical to the sustainable conservation of the species. Key One populations are considered to be of continental importance and critical for rhino populations ecological function. Striving to establish larger populations serve rhino conservation more than a myriad of smaller, fragmented populations. In 2010, South Africa

[6] *Key One*= Population increasing or stable and N >100 OR N > 50% of subspecies; *Key Two*= Population increasing or stable and N = 51-100 OR N = 26-50% of subspecies*; Key Three*= Population decreasing (<25%) and N > 50 OR N > 100 even if population decreasing > 25% **(NOTE- N=Population size)**

[7] *Important One*= Population increasing or stable and N = 20-50; *Important Two*=Population trend unknown or decreasing < 25% (3-5yrs) and N = 51-100; *Important Three*= Population decreasing but N = 20-50 in breeding contact, in a protected area; *Important Four*= Population = 20+ dispersed outside or within a protected area with good potential for consolidation in an area which can take at least 20 founders

held six key and 12 important black rhino populations, and 19 key and 41 important white rhino populations, resulting in a total of 78 key and important rhino populations in the area. This is followed by Kenya, with a total of 15, Namibia with a total of 12, and Zimbabwe with a total of eight (Emslie, 2012). Any strategy for conservation of the species should take cognisance of the priority of the key and important populations in terms of resource allocation. For certain populations this will require partnership with other range states.

1.4 Kruger National Park

The largest population of white rhino in the world exists in the Kruger National Park (KNP). In 2010, estimates indicated the presence of 10,621 white rhino in the park[8] (Ferreira, Botha & Emmett, 2012). Since the late 1990's, white rhino have been translocated from the KNP for biodiversity and conservation reasons and sold to generate conservation revenue. By 2010, 1 402 had been removed, largely to other conservation areas, with no adverse effects on the population and numbers continued to increase in the park. However, the number of poached white rhino is now exceeding the number of white rhino that the SANParks white rhino management model – outlined below- requires[9] (4.4% of the standing population at any given time). At these increasing rates of poaching the number of surplus rhinos available in the next few years will reduce, and the overall population is expected to decline in 2016 (Ferreira, Botha & Emmett, 2012).

These predictions depend on white rhino population data being precise and there are some concerns in this regard as a result of potential for bias and differences in survey methodologies deployed over time. However, surveying wildlife, especially species such as black rhino, is notoriously difficult. The current KNP survey results have been published in the peer reviewed literature as confirmation of scientific accuracy & reliability and are considered to be as accurate as scientifically possible (Ferreira *et al* 2011, Ferreira *et al* 2012).

If there is significant downward variation in the current trend which assumes a continued upward linear growth in poaching, then matters could be significantly worse than they are at present. Additionally, poachers tend to target adults[10] resulting in changed population structure which could cause rapid population collapse once population thresholds are reached (Ueno, Kaji & Saito, 2012). Poaching has already impacted on the provision of live white rhino to other areas to extend the species range as well as on the funds earned which contribute towards conservation (Ferreira, Botha and Emmett, 2012).

Surveying rhino every two years offers the best option for detecting a 2 per cent change in population estimates, currently however this budget is not provided for by SANParks[11]

[8] Data generated from fixed-wing based surveys block counting (1960-61; 1964;1969-1993; 1994-1996) and sample based approaches (1998-2010) as well as databases and literature. Approaches used were a) distance sampling, b) Jolly-Seber strip transect (200 metres) and c) Jolly-Seber strip transect (400 metres)
[9] In 2012 from January to October 62 per cent of all rhino poached in South Africa were poached from the KNP
[10] This changes the standing age distribution of the population.
[11] Ref SANParks management October 2012

Surveys need to do more than just count rhino as information is needed on age, sex, fecundity, survival and landscape use to ensure optimal conservation of the species and provide alternative population information that can corroborate population estimates. Internationally accepted best practice in terms of population survey requires helicopter block count and distance sampling approaches as two reliable and precise methods (Emslie, 2012).

The KNP is also home to over 627 black rhino at last count in 2008[12] with an annual population growth rate of approximately 6.75 per cent (Ferreira, Greaver & Knight, 2011). At least eight black rhino have been poached in the KNP since 2008, but the exact number, and therefore the impact on this critically endangered animal, is not known as there have been no counts of this population since October 2008.[13] The limited reports of poaching of black rhinos would however suggest the population is growing satisfactorily.

2. Conservation

Currently, the population size and net growth rate of South African white rhino is sufficient to conserve the species, but the relatively small population of approximately 4 000 black rhino places it in a very precarious position with regard to extinction. Between 1991 and 2010, conservation efforts resulted in an average annual net meta-population growth rate of 7.2 per cent for white rhino and 4.9 per cent for black rhino (Emslie, 2012). A population growth rate of five per cent is needed annually from 2012 to result in a net population after mortality of at least 25 000 white rhino by the end of 2016 (Emslie, 2012). Genetic diversity should be maintained, necessitating that rhino should continue to range in the wild. Currently South Africa appears to be approaching its carrying capacity for white rhino within its formal protected areas and new ranges for new populations must be established (Balfour, 2012) probably in other range states.

The IUCN World Conservation Congress (2012) adopted Motion 26 which encourages rapid growth with genetic and demographic viability as the cornerstone goals for the sustainable conservation of the species. In order to achieve these conservation objectives over the next five years, the fewer rhino die, the higher the net population growth is likely to be and consequently the faster the black and white rhino populations will reach the necessary population levels conducive to sustainability of the species. In the longer term, more genetically diverse and ecologically sustainable wild herds are needed to ensure species survival and new ranges are needed to be established to realize this goal. This assumes that poaching does not move the net growth rate into negative territory when different strategies such as advanced reproductive technologies and totally secure environments could be needed.

[12] Count funded by US Fisheries and Wildlife, block surveys.
[13] Although the black and white rhino are included in the herbivore survey undertaken annually, this is not an ideal approach for the black rhino

2.1 Current International Interventions for sustainable conservation

Sustainable conservation depends on political will, the resources allocated to the protection of the species, sufficient resources (ranges, funds, skills, security measures et al) to identify, manage, protect and sustain the rhino populations over time. The costs of protection in particular have escalated beyond the ability of some states to carry the costs (IUCN, 2012) and critically endangered species are fast becoming a global, as opposed to an entirely domestic, resourcing issue. While States struggle to deal with the cost burdens at the same time, private owners become dis-incentivised to invest or even maintain their own populations if their investments are threatened by illegal activities like poaching for rhino horn.

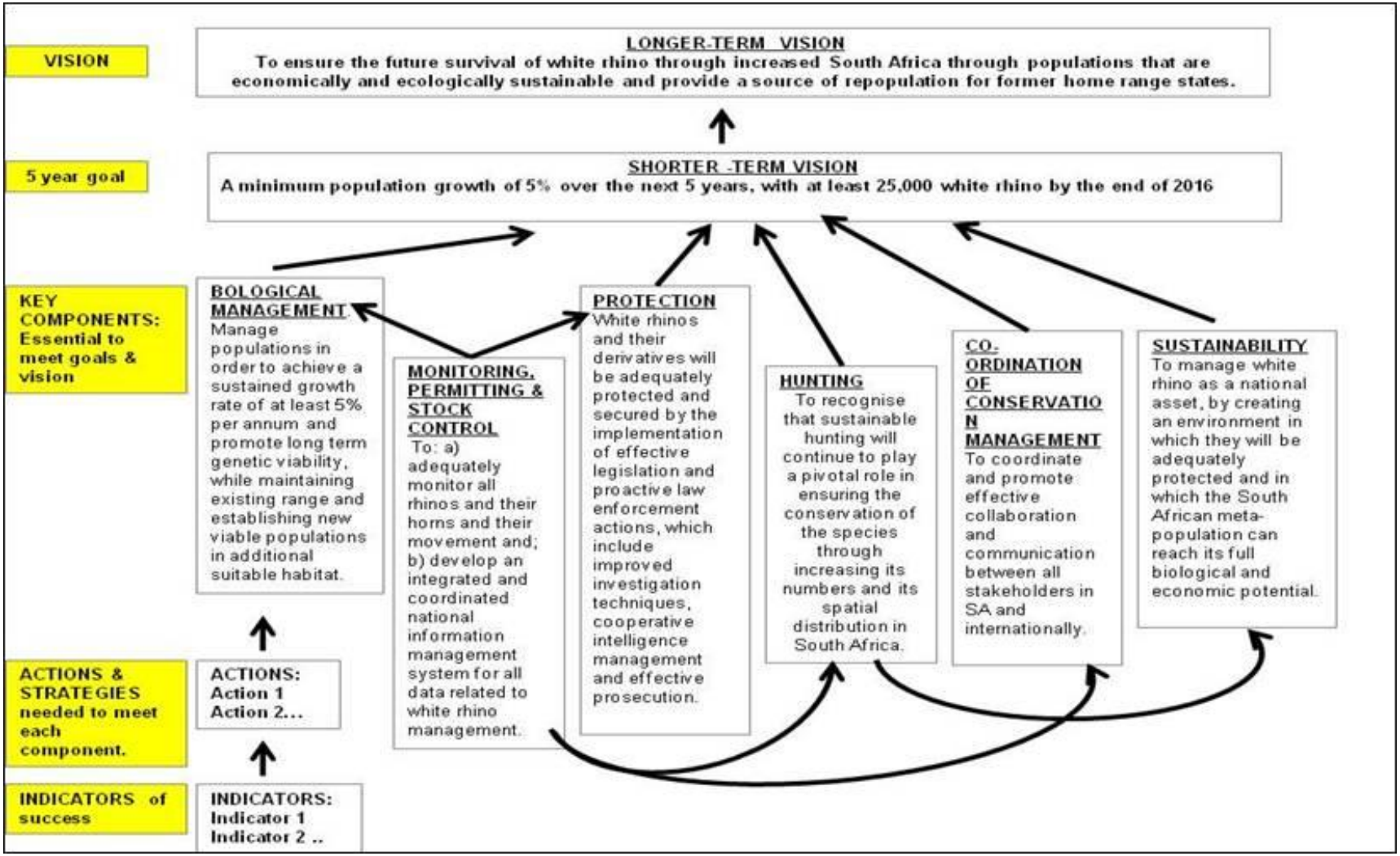
As a result of changing circumstances the strategies to ensure conservation are adapting. Domestic security is no longer adequate in the face of increasing depredations of international syndicates, and significantly more collaboration is needed across national borders, especially in southern Africa. Improved data gathering and information systems are required to permit for accurate and real time monitoring of herds and individuals, and it will be essential that the international community supports the range states financially to the extent necessary (IUCN, 2012).

2.2 Conservation of White Rhino

The proposed management plan for the sustainable conservation of the white rhino[14] is in draft stage and yet to be confirmed, but it addresses the key issues for conservation as shown in the table below. Key elements are the maintenance of existing ranges, the promotion of long term genetic viability, and the establishment of new viable populations. The use of an integrated national (and potentially regional) monitoring system will be a pre-requisite for effective conservation, as will adequate protection measures, (refer section two of this report).

[14] Provided on a confidential basis by Drs R Emslie and M Knight, IUCN SSC African Rhino Specialist Group (2012)

Table Two- White Rhino Management plan



Source: Emslie, 2012

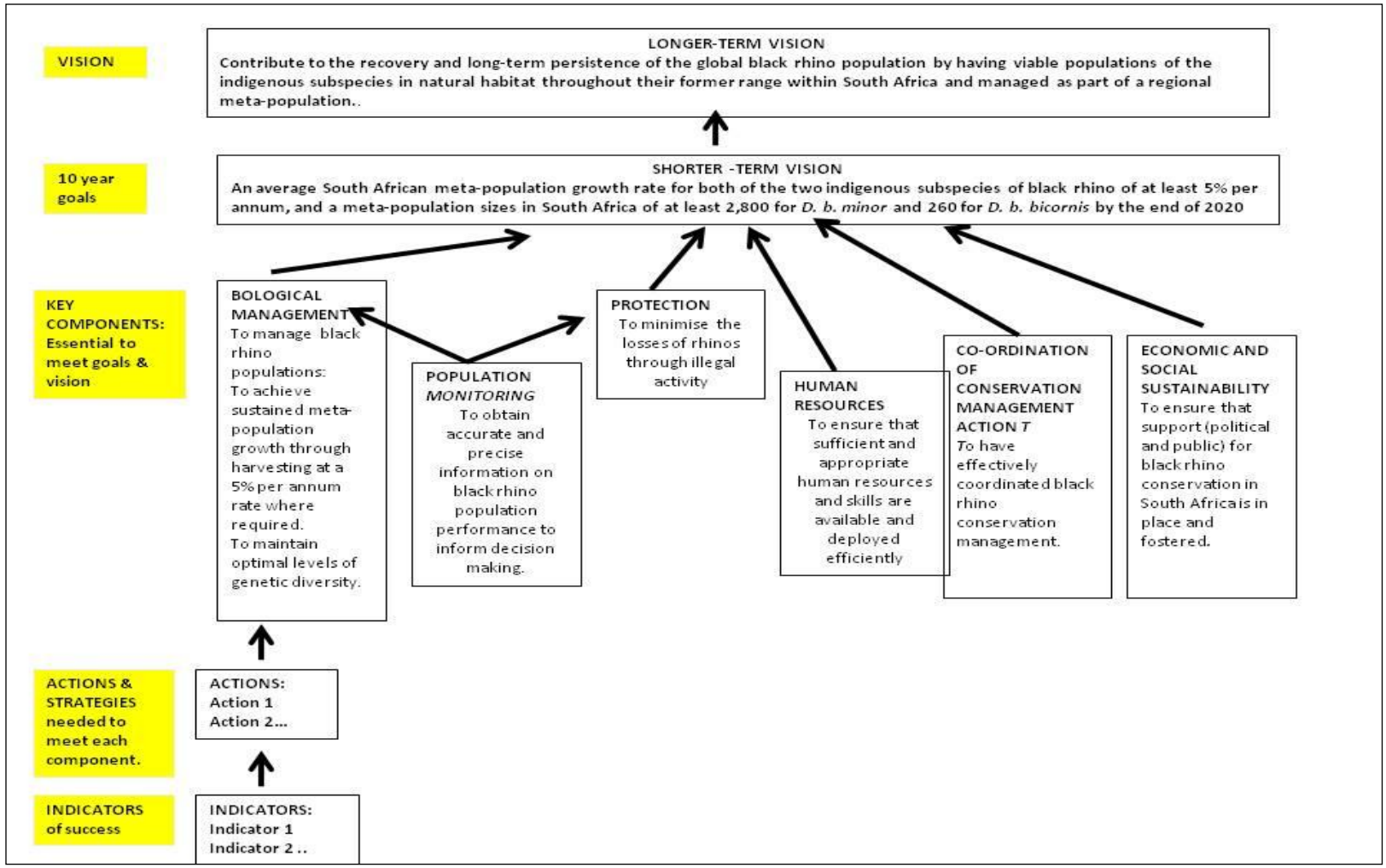
2.3 Conservation of Black Rhino

The Biodiversity Management Plan for the Black Rhinoceros (*Diceros bicornis*) in South Africa for 2011-to 2020 awaits final approval and gazetting by the Minister in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004). The plan was developed by South African members of the SADC Rhino Management Group[15] and a key principle of the plan is to maintain a 5 per cent growth rate (historical growth rate 4.9 per cent average) resulting in a longer term overall population goal of 3 500 black rhino in South Africa. The dynamics and requirements for targeted population growth are different for the three sub-species and consequently different strategies for management are needed. South Africa has supplied founder rhinos to a number of Southern African states[16] with a view to assisting in the re-establishment of rhino ranges and populations there. By the end of 2020, South Africa wants to have a meta-population size of at least 2,800 for *D. b. minor* and 260 for *D. b. bicornis.*

Key elements of the plan require targeting five per cent net growth in population per annum and the maintenance of maximum genetic diversity. These can be achieved through the harvesting of five per cent [17]per annum as necessary and from populations close to their zero growth capacity (ecological carrying capacity), the establishment of new populations (du Toit, 2006), the maintenance of sub-species and range separation and the active promotion of genetic diversity. As noted above for white rhino, the use of an integrated national (and potentially regional) monitoring system will be a pre-requisite for effective conservation, as will adequate protection measures (refer section two of this report).

[15] Dr R Emslie, Dr M Knight & Dr D Balfour
[16] Swaziland, Zimbabwe, Botswana, Malawi ,Zambia and Tanzania
[17] Current population growth theory says that by harvesting at a fixed rate per annum, the population should respond by growing by at least that rate, as long as the carrying capacity is not declining, and removals do not exceed the maximum potential growth rates (Goodman, 2001).

Table Three- Black Rhino Management plan



Source: The South Africa Biodiversity Management Plan for the Black Rhinoceros (2011)

2.4 Conservation Strategies

Various strategies have been proposed to ensure the conservation and growth of the black and white rhino. Under normal circumstances, range management, partnerships with other range states, deployment of founder rhino[18] movements, translocations from non-viable environments, attention to genetic diversity, population monitoring and range and population management to manage birth rates and movements have been sufficient, as is evidenced by the southern African rhino range states success story to date. Populations have increased by a factor of ten times since the private sector in South Africa has been permitted to own rhino. [19]

However, in the face of determined poaching of an organised and well –funded nature, these strategies may not be sufficient at current levels to preserve and grow the species. Until however, effective and reliable monitoring and counts of all rhino populations is implemented, it is not possible to be certain of the true impact of current poaching levels[20]. As a result, a number of other strategies are mooted, for example, de-horning, accelerated reproductive interventions, increased security, international and domestic security forces cooperation, banning of trade, legalisation of trade, rhino farming , live sales to approved destinations and the like. Not all these strategies are available to conservationists however, as currently trade is illegal in terms of CITES.

There is significant divergence of views regarding the viability and desirability of each strategic option, some based on ideological grounds (sustainable use vs no animal use) and some on commercial grounds. Each of these strategies will be discussed individually in section three of this report.

3. RIM Comment

Ultimately, it is the impacts on the net growth of the rhino population that require effective management if the species is to be conserved. The net growth statistics require effective and continuous monitoring to provide essential data for on-going conservation and adaptive management of the species.

South Africa is the custodian of the largest global herd or population of white rhino, which represents approximately 75 per cent of all white rhino. The growth rate of the overall population is currently adequate, but the depredations of poaching may be influencing the growth rate in ways as yet unknown. The black rhino herd in South Africa includes all three sub-species dominated by *D. b. minor*, and represents approximately one half of the global herd.

The growth rate of the South African populations of black and white rhino is sufficient to conserve and grow the species at present, but there is no clear view of the effects of

[18] Rhinos used to establish new populations
[19] T Carroll, DEA
[20] 488 rhinos were poached in South Africa from January 1st 2012 to October 30th 2012 (DEA Statistics)

poaching on the population net growth rate or population structure. Additionally, estimates (Emslie & Knight, 2012) suggest that South Africa, between the public and private sectors, can accommodate a maximum of approximately 50 000 rhino (black and white). In order to accommodate future growth, the range of rhinos in the wild may soon need to be expanded to other range states if South African carrying capacity is reached. Regardless, in order to conserve the species, other ranges outside South Africa should be developed and an African rhino management plan in partnership with other range states implemented (Emslie & Brooks, 1999)

Attempts are made to monitor the rhino populations at the Park/Reserve level, but funds are largely inadequate to ensure that the population is regularly counted and population structure assessed annually. The nature of the terrain, scale and problems of counting species in large protected areas, suggests that regular counts should be repeated every second year to guarantee the ability to detect a 2% change in the populations size. These counts can be complemented by assessments of population indicators such as population structure to provide other indicators of population growth. This is essential to ensure that the white and black rhino population conservation targets can be met, but also to adapt tactics on the ground to mitigate poaching (and other) disruptions to species persistence.

Other critical issues are range availability, habitat preservation, the safety and security of animals and the funding of conservation efforts. The issues of poaching, safety and security, trade, and funding, are dealt with in other sections of this report.

Section Two- Safety and Security of the Rhinoceros

4. Rhino Safety and Security Issues

4.1 Threats to Species Persistence

Various threats to the conservation and persistence of the white and black rhino in South Africa have been identified. Range restriction or attrition, natural mortality and low birth rates are among those which occur on a normative basis and which are currently being managed. The future of the rhino will depend on whether the species can grow at target rates, in a variety of ranges in the wild, and in ensuring that the net growth rate is in the order of a minimum of five per cent per annum (Emslie, R., & Knight, M., 2012). The threat offered by current significant increases in the levels of poaching of rhino places serious pressure on the ability of the rhino to sustain favourable net growth rates. It is estimated that the number of live births still exceeds the number of deaths at between 6.5 - 6.9 % (Emslie, 2012) population growth -net of deaths- from 1995 to 2011.

In 2012, South African rhino were being poached in all nine provinces and extensively in the Kruger National Park (KNP). By December 19th, 2012, 633 rhinos had been poached with the highest number of incidents occurring in the KNP (395). Over 200 arrests have been made to date. The poaching operation incorporates people at various levels, ranging from the poacher on the ground in the area, who is often a member of a local community and/or working for the reserve, through to the international receiver/buyer who sits at the top of the poaching chain. Most arrests that are made involve the poacher on the ground in the area. There is clear evidence of highly organized international and national crime syndicates dominating poaching activities and of neighbouring countries – especially Mozambique- being used as bases for strikes into South Africa. This requires collaboration in fighting poaching at the local, provincial, national, regional and international levels in order to apprehend criminals and stop poaching (Mapanye & Chipu, 2012). The threat of poaching increases with proximity to national borders (Emslie & Brooks, 1999) hence the proportionally higher impact on the KNP.

4.2 Rhino Poaching

2.4% of the South African white rhino population was poached for horn in 2011, with the rate of poaching increasing exponentially from 0.03 rhinos per day prior to 2007 to 1.23 rhinos per day in 2011 (Ferreira, Pfab & Knight, 2012) and a current 1.50 rhinos per day as of October 2012 (DEA, 2012).

5. Safety and Security Options

5.1 Current Interventions

There is a national strategy for the safety and security of Rhino in place in South Africa which outlines the requirements for rhino protection. NATJOINTS, a South African National

coordinating security body, has initiated Operation Rhino and is working to reduce the incidence of successful poaching of rhino in South Africa. Priority committees working on rhino protection have been established in the provinces, and coordinators appointed, under the instruction of NATJOINTS. Dedicated investigation teams have been set up in each province and dedicated prosecutors have been appointed. Information is reported to the central Priority Crime Knowledge Management Centre and the enforcement of environmental legislation pertaining to the rhino has been integrated into the Rural Safety Management Plan. Tracker dogs and handlers are being deployed as well as visible air patrols with increased reaction capability (Mapanye & Chipu, 2012).

SARS Tax and Customs Enforcement Investigations (TCEI) division is implementing a number of projects to ensure that rhino products are not illegally exported from South Africa and is required in terms of South Africa's international agreements to work closely with the International Consortium for Controlled Deliveries in Wildlife Crime (ICCWC). In particular, pseudo-hunting was a major focus of investigation which has largely been addressed via new regulations. Rhino horn is additionally used for purposes of money laundering and racketeering (HAWKS, 2012).

Operation Worthy was conducted by all Interpol countries with the aim to curb rhino horn smuggling. In South Africa a combined effort from The Hawks, Interpol, National Wildlife Crime Reaction Unit, Department of Environmental Affairs, NPA, NATJOINTS and SARS was conducted. Inspections were done at taxidermists, freight agencies, airports, borders, game farms and road blocks were held at key areas and searches were conducted (HAWKS, 2012). This resulted in the gathering of critical information and led to a number of arrests and convictions (SAPS, 2012).

Security checks[21] are now run on all operational personnel working with rhino and security partnerships have been initiated inter alia with the veterinary profession, private rhino owners, farmers, civil aviation participants, and NGOs. The development of a shared rhino safety and security strategy is underway with the Defence Force Chiefs of neighbouring countries. Work at the wider international level is ongoing with Interpol and the NWCRI (Mapanye & Chipu, 2012). The National Wildlife Crime Reaction Unit was established and a number of provincial and local initiatives are underway in State owned areas.

Various legislation is being brought to bear to support protection efforts, to wit; the National Biodiversity Environmental Act 10/2004; the Provincial Biodiversity Environmental Acts and Ordinances; the Civil Aviation Act; the Protected Areas Act (Act no 57 of 2003); the Firearms and Ammunition Act; all fraud and corruption related legislation and regulation; the Drug and Drug Trafficking Act; POCA[22] and MISS[23]. Amendments to the norms and standards for the marking of rhinoceros horn and hunting of white rhinoceros for trophy

[21] Sometimes using polygraph testing
[22] POCA- Prevention of Organised Crime Act
[23] MISS-Minimum Information Security Standards

hunting purposes were published in the government gazette in April 2012 and have since been implemented. The amendments have strengthened provisions relating to marking, the supervision of hunts, the transport of the horn subsequent to the hunt, reporting and monitoring, verification of hunters, and the taking of samples for DNA profiling, and have largely reduced the threats from pseudo-hunting.

While it is clear that rhino poaching has increased, so too has the focus and activities of the South African security forces in attempts to protect the rhino. Even so, poaching levels are inexorably rising to the detriment of the species and it can only be speculated what the levels of poached rhino might have been if additional measures had not been deployed. However, more resources are needed and agreements and strategies with neighbouring countries will be essential.

5.2 Intelligence

South Africa's focus up to now has largely been on reactive strategies, where there have been extensive attempts to focus on escalating rhino poaching. However, it will be significantly more constructive if poachers can be halted before they get anywhere near rhinos. This will only come about through an increased focus on improved intelligence collection, its analysis and the resultant implementation of strategically focused activities. Moreover, a focus on prevention rather than ex post facto apprehension will allow the state and private sector to direct limited resources into areas that can have the most impact.

The analysis of intelligence should be undertaken by skilled intelligence data analysts, with information being fed back to the source institutions as part of the shared approach to information. This kind of effective coordination is a vital element of South African anti-poaching strategy going forward. Intelligence feeding into this national database would include that collected from poached animals, information on syndicates and rhino horn markets. The development of useful preventative intelligence will require greater cooperation internationally. The current problems with the leaky Mozambique border and poor legal deterrents in Mozambique are providing the poaching syndicates the opportunities to operate freely and without fear.

5.3 Dehorning

The horn of a rhino grows approximately 5 cm annually and can be harvested safely as long as the procedure is undertaken properly (Emslie, 2012; Ferreira, 2012; Knight 2012). Micro-chipping and DNA sampling can be implemented at the time of de-horning. The horn is made of keratin, the same substance which forms human hair and nails.

A rhino uses its horns for territory defense, self-defense, dominance assertion through sparring, cows defending calves, mating and foraging. Black rhino use the anterior horn to pull high branches down to feed on. Rhino horns sometimes break in the wild but do grow back. Dehorning is unlikely to have negative long-term effects but it will be important to

ensure that all male rhino are dehorned at the same time, as a dehorned rhino will be at a considerable disadvantage in fighting (Ferreira, 2012).

Dehorning offers some defense against poaching but exposes the animal to some risk as it has to be chemically immobilized, and must be repeated on a regular basis as the horn grows. Humane dehorning, which ensures that the germinal layer is not damaged, leaves the base section intact for further growth. This base could weigh as much as a kilogram and at current prices still be attractive to poachers, thus still exposing the animal to a poaching threat. Poachers also kill dehorned rhinos to ensure they do not track the animal again, although notching of the feet (Lindsay & Taylor, 2011), which indicates in the spoor that the rhino being tracked is dehorned, can be a useful mechanism to deter this. When poachers operate at night, they cannot see if the rhino has a horn or not and may simply shoot.

The numbers of rhino to be dehorned in South Africa poses a logistical and budgetary challenge especially for the larger wide spread populations such as in the KNP or in iMfolozi Park. Each rhino has to be chemically immobilized and then dehorned and in some regions this will require helicopter darting due to the terrain. The darting, dehorning, micro-chipping and DNA sampling process takes between 30 minutes to one hour and costs approximately R8000/rhino[24] after which blood and horn samples are sent to the national database for registration. Once the rhino has been dehorned, this procedure will need to be repeated every two to three years. Mortality from chemical capture is low at around one per cent.

To dehorn 10,000 rhino at a rate of eight rhino per day, will take approximately 1 000 days, and cost in the region of R84 million in 2012 ZAR (RIM calculations, 2012). The outcome of dehorning is a reduction in perceived value as well as rhino horn which, given that trade is illegal currently, is stockpiled. If kept in a few secure locations, protection for the stockpiles can be undertaken cost effectively.

Dehorning has been used as a strategy in Namibia and extensively in Zimbabwe where complete dehorning is preferred for small populations and strategic dehorning in larger populations. In South Africa, dehorning takes place in the private sector reserves and in Mpumalanga, but has not yet been used in SANParks or any other provincial reserve except for specific management purposes. In Namibia, post dehorning, not a single dehorned rhino was poached and in Mozambique, no dehorned rhinos have been killed. In Zimbabwe, dehorning coupled with translocation is believed to have significantly reduced poaching (Lindsay and Taylor, 2011) and in the Zimbabwean Lowveld Conservancies dehorned rhino have a 29.1 percent higher chance of survival than horned rhino (du Toit, 2011). Dehorning interventions work best in conjunction with other protective safety and security measures.

[24] Excluding staff costs (veterinary quotes) and including all other costs (helicopter, and other drugs and equipment)

Where dehorning has taken place without adequate security in place however, results have not been good. In Zimbabwe, in spite of complete dehorning in certain areas[25] extensive poaching has continued and in some areas, entire populations have been wiped out (Lindsay & Taylor, 2011)

5.4 Chemically Treating or Poisoning of Horn

The option of treating horn so as to render it unacceptable to consumers was raised by some stakeholders. Rhino horn was chemically treated in South Africa on a reserve in the Western Cape[26] in early 2012 to protect against poaching. Three substances were injected simultaneously. The first is a dye which appears on the inside of the horn making it useless for decorative purposes. The second is a substance which makes the horn visible on an X-ray scanner, thus rendering the horn more difficult to smuggle out even in powder form and the third is Barium, which makes anyone who ingests it, ill. A concomitant communications campaign informing the public and potential poachers that the horn has been treated would be an essential component of such a strategy. Other chemical and toxic solutions such as ectoparasiticides[27] are available, which have the dual effect of keep parasites away from the horn but which cause convulsions and severe headaches in humans. However, highly toxic substances, which would not harm rhino but which could seriously damage or kill humans are likely to be deemed illegal. Botox has been suggested as a possible toxin to protect horns.

5.5 Translocation

Rhino can be translocated to other areas either in groups or as individuals for the purposes of protection against poaching and to improve chances of survival and protection (Emslie & Brooks, 1999). In many cases, outliers (small populations of rhino or individuals which range in isolated areas) in larger parks are often prime candidates for translocation. Where the terrain or other factors make it impossible to properly protect animals these too can be translocated. Translocation offers the prospect to place rhinos in numerous secure locations thus rendering a greater measure of security provided protection is offered.

5.6 Community Participation

Participation in rhino poaching activities within communities is largely driven by extreme poverty and lack of access to economic opportunity (Anti-Poaching Intelligence Group, 2012). Leaky borders and large number of illegal immigrants exacerbate the situation and poachers are recruited from amongst these, as well as from ex-freedom fighters from various neighbouring states. Such people are targets for international crime syndicates.

Formal training of community members where the community borders on or is part of the Park as rhino scouts has been suggested as an option and has already been implemented in

[25] Chiredzi River Park, Hwange National Park, Matobo National Park, Matusadona National Park and Chipinge Safari Area (Lindsay & Taylor, 2011)
[26] Inverdoom Reserve, Western Cape
[27] William Mabasa, KNP spokesperson, 2011

Kenya with some success (Ferreira & Okita-Ouma, 2012) and is being implemented in some of the reserves on the KNPs western border. The involvement of communities is supported by the World Wildlife Fund of South Africa (WWF-SA) which recommends working with communities living close to rhinos to create buffer zones and to become "the first line of defence" against poaching (WWF-SA, 2012). Various models of counter-poaching such as that provided to RIM by Ntomeni Ranger Services, the International Anti-Poaching Foundation (IAPF) and supported by the Black Rhino Management Biodiversity Plan (Knight, 2011), have been mooted. The draft White Rhino Biodiversity Management Plan (Emslie, 2012) emphasises the importance of working with communities in rhino areas to gather information on an ongoing basis, to identify threats and to support anti-poaching activities. All models emphasise the need for good training and remuneration.

Involving communities in rhino horn farming with the scientific and technical assistance of the government Parks personnel partly as a security strategy is an option for consideration and is being requested by some communities such as the Balepye community[28] which is calling for the removal of white rhino from Appendix ll of CITES and the introduction of legal trade.

5.7 Physical, Mechanical and Technology Options

DNA profiling of all rhino and micro-chipping of all horn and the maintenance of a centralised data base (RhODIS)[29] are specific initiatives currently attempting to provide a baseline of information to be used for various monitoring purposes but which can also be used for forensic purposes to assist in rhino poaching investigations. It can be used to track rhino movements as well as to ensure legal hunting through a centralised permitting system.

Cyber tracking of rhino is possible using specific technology from a central control room located in areas of vulnerability (IAPF, 2012) while GPS and digital communications systems as well as the use of drones (Masie & Keats, 2012) are potential mechanisms to increase protection and reduce poaching. The type of drone recommended is a rotor-blade unmanned aerial vehicle (UAV) which is silent and which operates as part of an extra-sensory ecosystem. They have application in perimeter monitoring, patrol supplementation and animal monitoring, and offer real-time reporting, population studies, fire watch and aerial photography capabilities

The use of technology to reduce poaching should occur in combination with basic ranger work (well trained & suitably equipped) and in particular the development of communities as anti-poaching rangers. The community training should be based upon a well-focussed and implemented NQF qualifications system where training and education occurs on an ongoing

[28] RIM correspondence, 2012
[29] RhODIS currently holds over 5 000 DNA references gathered in the first year

basis (IAPF, 2012). Most conservationists estimate there is a need for one ranger per 10 km^2 (Knight, 2011).

Increased gate security and improved fencing and improved border security can all provide basic barrier methods which if well implemented, will contribute to better rhino security.

5.8 Farming

The IUCN African Rhinos Specialist Group (AfRSG) suggests three categories of rhino (Leader-Williams et al., 1997), wild, semi-wild and captive. Wild rhino move in large areas normally[30] while semi-wild rhino live and breed in smaller areas [31] at a compressed density and require partial food supplementation. Captive rhino occur in much smaller areas, breeding is manipulated and they are fully husbanded with a total reliance upon food provision.

Captive populations act as a "safety net" should the depredations of poachers be successful in reducing wild rhino number to dangerously low levels (Emslie & Brooks, 1999) although high mortality rates and low reproductive rates can hamper speedy growth of captive populations. Some local rhino owners[32] have however succeeded in achieving breeding growth rates of six per cent per annum. Looking after captive rhino can be more expensive than managing rhino in the wild (Leader-Williams et al., 1997). The captive keeping and breeding of rhino would involve captive populations being bred primarily for horn and husbanded in the same way as other animals which are bred and kept primarily for harvesting purposes.[33]

Farming of Rhino has been mooted by many as a way of preventing poaching by providing farmed horn to meet demand, thus removing pressure on wild key and important populations. Captive breeding science and expertise would be needed to ensure proper habitat, handling, and good breeding rates. Black rhino have better breeding rates in captivity but higher mortality rates (Emslie & Brooks, 1999). Rhino farming is non-lethal in that horn can be harvested annually without damaging or killing the rhino and since rhino have a life span of between 35 and 50 years, rhino horn farming is likely to be a sound economic proposition. Trade partners will be needed as part of a strategy to re-introduce international trade, with China, Malaysia and Viet Nam suggested by stakeholders as possible options.

Some stakeholders argue that farmers are likely to breed rhino over time to produce an animal which is genetically selected for horn size thus changing the nature of the species. Others note that if this were to be the case, the parallel is similar to that of domestic cattle and wild buffalo where both exist for different purposes. The genetic integrity of the wild rhino however will not be compromised as long as the farmed and wild rhino remain distinct

[30] >10 km^2 area (Emslie & Brooks, 1999)
[31] <10 km^2 area (Emslie & Brooks, 1999)
[32] Confidential document from local rhino owner, 2012
[33] Chickens for eggs, ostriches for feathers, etc.

(Knight, 2012). The main argument against rhino farming remains that natural selection is discounted from the process and the species could proceed down a domestic animal trajectory. The challenge is to make sure the wild and captive populations remain distinct, with the incentive to still conserve animals over large landscapes in the wild.

5.9 Intensive Rhino Protection Zone

The setting up of an Intensive Rhino Protection Zone (IPZ) is an option where wild rhino range within a specific area, unfenced, and security and law enforcement staff are deployed in greater numbers to ensure higher levels of protection. This is a possibility where there are large areas to be managed resulting in security personnel being spread too thin to be effective against poaching (Emslie & Brooks, 1999). [34]

5.10 Improved Enforcement of Security and Law

Increasing sniffer dogs at airports, improving training of customs officials, increased cooperation with international law enforcement and law enforcement agencies in the consumer countries, as well as increasing penalties and convictions for poaching are being implemented currently but the impact of this is not yet known. Poaching numbers continue to trend upwards and it seems likely that the numbers of rhino poached in South Africa (known) for the calendar year 2012, will reach over 500. The introduction of a crime awareness campaign, and better national coordination and organisation for implementation could yield improved use of resources if combined with other strategies which will ensure that the security forces are not spread too thinly. A proper assessment of law enforcement capacity at borders, customs areas, within ranges and in other critical areas, and the optimum training and redeployment of people and technology as a result, will be required. The deployment of a Rapid Reaction Force in areas where key and important populations are located would be highly constructive (WESSA, GRAA, GRU, 2012).

5.11 Other Initiatives

The President of Indonesia announced the (International Union for Conservation of Nature (IUCN), 2012) the Year of the Rhino in 2012 as the Javan and Sumatran Rhinos are on the brink of extinction. The Indonesian government has established a Rhino Task Force consisting of international and national rhino experts which will help to ensure adequate monitoring of the rhino populations and which will ensure adequate protection for the remaining animals. This will also involve improving the integrity of rhino habitats and translocation of isolated individuals to safer areas. Kenya also declared 2012 as the Year of the Rhino to attempt to raise awareness and allocation of increased resources to rhino conservation and protection (Ferreira & Okita-Ouma, 2012). There is potential for a similar South African Presidential Project.

[34] Zimbabwe has IPZs at Matobo, Sinamatella and Matusadona

The Endangered Wildlife Trust and the Rhino Response Project has set up a Rhino Orphanage which can accommodate, rehabilitate and restore to health orphaned calves[35] and many civil society organisations and private sector firms have set up and/or support specific rhino safety initiatives.

6. RIM Comment

The Safety and security of the South African rhino populations remains an essential element of any rhino strategy if the rhino is to survive. A critical component of this is good basic field ranger-paramilitary training supported strategically with high tech support equipment. The need for more reliable intelligence (data and analysis) is critical to put increasing pressure on poaching syndicates. This will require improved coordination and collaboration within the various security and intelligence agencies, domestically and internationally.

The need to improve relationships with surrounding communities is another critical element in reducing the risk of poaching. Greater inclusion and benefit sharing (jobs & opportunities) will have benefits for the rhino and the communities which are sustainable. Extending ownership of rhinos to surrounding communities may enhance this value, appreciation and its protection.

In sum, it is imperative to deter poachers through decreasing the value of the gains relative to the effort or cost of attempting to poach the horn; increase the probability that the poacher will be apprehended and that sentences will be swift and severe.

[35] Karen Trendler, National Co-ordinator of Rhino Response Project and Consultant to Rhino Orphanage, 2012

Section Three- Commerce and Trade

7. Commerce- Background

Rhino commerce includes not only trade, but hunting, farming and eco-tourism, and the potential for the development of a high-value and potentially high-value added product which can be sold on export markets.

The issue of trade has been the most controversial issue in the RIM process. While stakeholders agree on conservation goals, and accept the need for protection (differing only on issues of what kind of protection is best in what terrain and how to raise funds) the issue of whether or not Trade should be permitted is an emotive one and highly polarised positions have been adopted. This phenomenon is not new, in the review of the CITES Panel of Experts mandated to explore the options for a future trade in elephant ivory, the same polarisation of views is notable (CITES, 2012). It seems likely that the perpetuation of this polarisation is in large part due to the lack of evidence that trade bans work, or that they do not. There are powerful opponents to trade including many global conservation organisations who believe that trade bans, as a strategy, are the only way to preserve and conserve threatened species (t'Sas-Rolfes, 1994), even in the absence of confirmatory (or otherwise) information.

Different circumstances prevail in 2012 than in the 1970's when CITES was formally formed. The increasing sophistication and global reach of international crime syndicates is one such dynamic and the increased pressure of human settlement on the wild ranges of animals is another. There are differences in the impact of these factors on different species. For example, the demand for ivory or lion bone is different from the demand for rhino horn in that the demand for rhino horn does not have to result in the death of the animal. Banning of the Rhino horn trade by CITES and the concomitant moratorium on domestic trade by South Africa has had the unintended consequence of increasing poaching of live animals as there is no other horn available. Consequently the costs of protection have increased exponentially. Because market prices for horn[36] are high, and demand is growing and more people can afford the horn, trade has not ceased but has shifted. The attention of illegal traders has moved from buying horn domestically and moving it out of South African illegally, to poaching rhino domestically and moving the horn out of South Africa illegally, but in this case, leaving the animal dead (Taylor et al., 2012).

Anti-trade proponents argue that removing the ban may not result in a cessation of poaching; that it is unethical to position rhino horn as a medicinal remedy when this is not substantiated by western science; and some hold the ideological position that it is wrong to

[36] Various sources suggest that the wholesale price of 1kg/horn is between US$ 20,000 and US$ 25,000, while the retail price can be as high as US$ 60,000.00. There has been no confirmation of these numbers.

use animals for the benefit of humans. There is no evidence[37] to suggest that the removal of the ban will or will not result in a cessation of live rhino poaching, but pragmatically if it is less costly to acquire the horn than to poach the live animal, buyers are more likely to acquire the horn. Most regions of the world have indigenous medicinal systems[38] to which people subscribe regardless of science and as the reaction of China to western comments on the validity of its traditional medicine has shown, it can be seen as highly offensive to suggest that western medicine is somehow superior to indigenous medicine.

Stakeholders take one of three positions, the full commercial position, where rhino are seen as animals to be used (but treated humanely in this process); the position whereby trade should only be permitted to fund conservation; and the position whereby no trade should be permitted under any circumstances.

7.1 Elements of Commerce

7.1.1 Hunting

Hunting of white rhino in South Africa was re-introduced in 1968 and is considered to have contributed positively to biological management, the generation of revenue for conservation and increased incentives to promote effective population growth (Milliken & Shaw, 2012). The hunting and related industries [39] are estimated to employ approximately 70 000 people in South Africa, largely in rural areas, and include trackers, professional hunters, veterinarians, and capture specialists. From 1995 to 2011, estimates are that approximately 1 300 white rhino have been legally hunted in South Africa (Milliken & Shaw, 2012). Historically, hunters were of South African, European and North American origin, but since 2003, with the resurgence in demand for rhino horn in certain Asian countries, more hunters from these areas have been seeking permits.

Organised and legal hunting is viewed by many conservationists as a useful tool in a portfolio of population management tools which has the additional advantage of raising much needed funds for the conservation of the species. The South African hunting permitting system has however been abused by criminal private sector elements as well as corrupt public sector officials, to the detriment of the rhino . Recent abuse of the hunting system in order to acquire the horn as a “hunting trophy” and thus a legitimate export, led to South Africa introducing stricter measures, including the requirement that a person must submit proof that he / she is a *bona fide* hunter. South Africa furthermore requested Vietnam to confirm that rhino trophies exported to Vietnam since 2010 are still in the hunters’ possession. Until an official confirmation is received from Vietnam, no further applications to hunt rhino are considered if the applicant’s country of usual residence is Vietnam. However, syndicates now simply spread applications for permits in such a way as

[37] There are no definitive data on the impact of CITES trade bans which has resulted in various opinion based positions being taken which makes decision making more difficult.
[38] In Europe, this is Homeopathy, in India this is Ayurveda, in South Africa it is traditional medicine etc.
[39] Taxidermy, crafts, food , specialist outfitters etc.

to spread the nationality profile, as the horn is still a primary target. An improvement in the hunting permitting system[40] is urgently needed to prevent further depredations.

7.1.2 Farming

In the view of some stakeholders, farming of rhino for horn is a non-lethal process with no negative outcomes for the species. As such, it is dissimilar to lethal farming processes such as beef farming, or other lethal harvesting processes such as the killing of bears for their bile, and the killing of elephants for their ivory. Rhino do not need to be killed for their horn. Some argue that farming will change the genetic focus of breeding, and that commercial farmers will adapt rhino to ensure a larger horn and this is quite probable over time. However, farming will not affect the genetics of wild rhino as long as the populations do not mix[41] and should reduce motivation to poach wild rhino. Current private rhino owners firmly support a process whereby they can harvest horn and legally sell it in order to offset costs of rhino herd protection and management and there are practical opportunities for community involvement in farming processes.

Commercial game farming or game ranching involves the breeding of game for a financial return. *Game farming* is intensive, and the animals are kept in relatively small spaces with emphasis on production, welfare and management. *Game ranching* has the same focus, but the animals live in extensive and spacious environments and there is emphasis on biodiversity and eco-viability as well as production, welfare and management.[42]

Community participation (Balepye Community, 2012; Nomtshongwana, 2012) is seen by stakeholders to be an important element of rhino conservation with the benefit of being linked to sustainable economic empowerment. Impoverished communities living within and near parks and reserves need jobs and income and are susceptible to offers of money for assistance with poaching. Such communities could be developed to farm rhino in partnership with the private sector and the Parks, resulting in a significantly improved socio-economic status for these communities. As an example, if South African rhino owners donated 4,800 rhino to the communities, and worked with the communities to increase the number at 5 per cent per annum, the communities would own 29 000 rhino by 2037. If the 4 800 rhino were to be distributed to 120 communities, at 40 rhino per community (requiring approximately 600 hectares of land) then 50 kg of horn could be harvested and sold annually. This would represent, at current prices, an income of over US$ 2 million per annum. Clearly the same applies to commercial farmers who may choose to farm rhino (white). At an assumed price of US$ 40 000/kg, 5kg/horn set, and assuming 500 rhino poached by end December 2012, South Africa will have lost revenue of USD 40 million which, if white rhino were farmed, could have instead been used in local economies. Loon (2012) notes that if rhino are more valuable alive than dead, there will be incentive to keep

[40] Centralised, linked to DNA and microchip rhino profiles.
[41] Emslie, R. Knight, M. (2012) comment
[42] Tanya Jacobsen, RhinoDotCom, (2012) comment

them alive. Currently there is no economic incentive for communities living close to rhino ranges to keep them alive. It is legal in South Africa to farm and ranch rhino but there is no incentive to do so as the horn is the most valuable part of the rhino, and this cannot be traded. Thus, owning rhino currently means that costs significantly outweigh benefits.

7.1.3 Trading

Demand for rhino is vested in the live animals, used for stocking other ranges, zoos, and the like, and the horn, used in traditional medicine and crafts.

Live rhino sales of surplus rhino to approved destinations[43] generated approximately ZAR 236 million for the period 2008 to 2011 (Milliken & Shaw, 2012). This represents an important source of conservation revenue for the various conservation agencies charged with maintaining biodiversity and protecting species in South Africa.

Horns that occur due to natural deaths are required to be declared, registered and become part of the national stockpile where they are micro-chipped and loaded on the central database. More recently, some private sector owners and some public officials have been found to have concealed and sold such horns to illegal traders in defiance of South African law. This was one of the key factors which determined the implementation of a moratorium on the sale of rhino horn inside South Africa which is still in force. Illegal trade has increased dramatically since 2003 with the involvement of international and national organised crime syndicates who use globally sophisticated supply chains to focus on illegal trade in high value items. This includes drug trafficking, human trafficking and trafficking in arms. Due to a reported retail price of between US$ 40,000 and US$ 60 000/kg (Martin, 2012) per animal rhino horn has become an attractive proposition for the syndicates. This has resulted in more sophisticated and efficient poaching techniques such as the use of specific drugs and high calibre weaponry instead of the more traditional poaching approaches (Milliken & Shaw, 2012). It has also dramatically increased the need for and the costs of protection. The South African moratorium on domestic trade in rhino horn, acquired from dead rhino, has had the unintended consequence of shifting the attention to poaching live rhino for horn as the horn cannot be bought legally.

In 1990, fourteen rhino were poached in but by 2011 this had increased to 448. From January to December 2012, 633 rhino were poached and estimates suggest that the final number of poached rhino in 2012 will be over 650 (Knight, 2012). This is occurring in the context of significant increases in protection, improved law enforcement and other attempts to protect the rhino population where the arrest rate in 2012 was more than double that of 2011 and bail is now rarely allowed.

The cost of increasing protection services for rhino has resulted in fewer resources available for other species, and in the face of declining government budgets for Parks and the

[43] From 2011, South Africa will export live rhino only to members of the World Association of Zoos and Aquaria and for reintroduction purposes to approved range states

insistence that they become more self-sustaining, a serious financial problem for many. This is not only important for State entities, but also within the private sector which holds just under 25 per cent of South Africa's rhinos. Those struggling with huge cost increases to protect the rhino call for various forms of trade to be legalised.

State conservation agencies use the funds raised from live white rhino sales to help subsidise conservation efforts or to buy additional conservation land. White rhino sales have been the biggest contributor to total turnover at Ezemvelo KZN Wildlife (EKZNW) game auctions, both live and catalogue, accounting for 74,9% of total turnover from 2008 to July 2011. The average price achieved per white rhino from EKZNW and SANParks in 2011 is just over R230 000/rhino.

The call is for trade in rhino horn as a result of natural death and trade in the stockpiles accumulated by the private and public sector owners to be permitted in order to cover the costs of maintaining the species[44]. Further calls have been made to commercialise rhino horn and permit for the harvesting of horn from live rhino. This would have the double effect of reducing the incentive to poach a rhino with no horn this preserving the animal's life, as well as providing an income through farming in that the horn can be harvested annually and sold as part of a legal trade system. Spin offs of this would include sustainable job creation, and a high value new export industry for South Africa. Value added activities could be implemented prior to export. Communities which might otherwise engage in poaching support, could farm rhino for their own benefit. However, many animal rights and animal welfare organisations[45], some with global reach and large budgets, are anti-trade, believing that it stimulates cruelty to animals, and/or causes or contributes to the extinction of species, although there is no evidence of this for rhino.

7.1.4 Tourism

Rhino are included amongst the big five which can now only be seen in Africa. This attracts tourists who come to see wild animals in a natural range. The value of game viewing based tourism to South Africa in 2011 is not known but there is little doubt that the ability to view rhino is a constituent element of the attraction.

8. Trade – Agreement, Regulation and Legislation

8.1 International –CITES

CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. Species are categorized into two main groupings based on how endangered they are as a

[44] D Cook, I. Player, M Eustace et al., (2012).
[45] Such as IFAW, International Fund for Animal Welfare (Based in Canada, revenues of US$ 25 million declared for tax purposes in 2010)

species. Those species listed in Appendix l are threatened with extinction and trade in these is not allowed unless there are extraordinary circumstances; those listed in Appendix ll are not necessarily threatened with extinction, but there needs to be some control to ensure this does not happen. The Conference of the Parties (COP) is the senior decision making body of CITES and meets every three years.

CITES works by regulating international trade in listed in the Appendices of CITES. For these species, import, export, re-export and introduction from the sea is regulated through a permitting system. Each Party to the Convention must designate one or more Management Authorities in charge of administering that permitting system and one or more Scientific Authorities to advise them on the effects of trade on the status of the species.

CITES was drafted as a result of a resolution adopted in 1963 at a meeting of members of the IUCN and formally implemented in 1975. CITES is a voluntary international agreement and is legally binding on the Parties. It provides a framework which is then translated into the relevant domestic legislation to ensure that CITES is implemented at the national level. There are currently 176 members.

8.1.1 Rhino and CITES

Currently all black rhino are categorised as critically endangered and are listed in Appendix l of CITES, with South Africa and Namibia each permitted a hunting quota for five black rhino per annum. White rhino are categorised as threatened and are also listed in Appendix l, other than South African and Swaziland, which have annotated partial down-listings for live sales to appropriate and acceptable destinations and for the export of hunting trophies.[46] No trade in loose horn or any other specimens of rhino, for commercial purposes, is currently allowed. In order to permit trade in rhino horn, using the standard CITES process, the following are required:

- Two thirds of the Parties (signatories to CITES) will need to agree to the proposal, and some areas, such as the EU, vote as a bloc, making it essential to have their support;
- Consultation with other range States of the species is a requirement – refer to Resolution Conf 8.21
- Consequently, lobbying and education will be required prior to any such proposal to ensure that the reasons for the South African proposal for down-listing are well understood and appreciated;
- Any such application will need to be accompanied by reliable and valid population information as well as information pertaining to the proposed trading system and the monitoring and enforcement of this, the identification and approval of the trading partner, and a system for the application of funds raised in horn trade to conservation;

[46] Kenya has made application to CITES COP 2013 for a zero quota for the export of rhino trophies from South Africa and Swaziland. Correct procedure was not followed and for this reason the application is unlikely to succeed.

- No proposal will be considered unless a) there is a national integrated permitting and data base system in place (to confirm legal origin) and b) a full list of stockpiles with DNA referencing complete;
- The biological and trade criteria[47] agreed by the Parties must be met for the down-listing of white rhino. No down-listing of black rhino will be permitted at this point as the species is not at the point where it will meet the criteria.
- The supporting statement from South Africa must include species and populations characteristics, status and trends, threats, utilisation and trade, review of legal and management systems and species management plans.
- If a process similar to the African elephant is followed, a CITES Panel of Experts (PoE) could then be convened to verify the information provided in the proposal with reference to the viability and sustainability of the population and threats; South Africa's ability to monitor the population; the effectiveness of current anti-poaching measures; South Africa's ability to control the trade and; whether law enforcement is sufficient and effective, inter alia. Subsequent to information gathering, the PoE will report to the COP and a two thirds majority vote will be needed to approve the request.

The Parties meet every three years and the next meeting is in Thailand in March 2013. At this point, South Africa is unprepared to make any submission to amend its annotation to include trade in rhino horn. However, there is provision in the CITES agreement for representations to be made by a Party for changes to the listings outside of/in the time in between, the Conferences of the Parties (COP) meetings.

8.1 NEMBA & TOPS

NEMBA is the National Environmental Management: Biodiversity Act (10/2004) and inter alia, restricts the activities[48] that may be carried out in respect of Threatened or Protected Species (TOPS) animals. In terms of the Act white rhino are classified as *Protected* and black rhino as *Endangered*. Specific procedures are required in terms of approving permits, and owning rhino horn[49]. International trade in live animals to appropriate and acceptable destination and hunting trophies is permitted.

The provincial conservation authorities are responsible for the consideration of permit applications in terms of NEMBA and TOPS if the applicant is private individual or a company. Activities involving rhino is however also regulated in terms of provincial legislation. NEMBA and TOPS also allow local authorities to impose further conditions as they see fit in respect of TOPS animals. It is claimed by the private sector rhino owners that it is

[47] These can be accessed here: http://www.cites.org/eng/res/09/09-24R15.php

[48] "hunting, catching, capturing, searching, pursuing, driving, lying in wait, gathering, collecting, plucking, picking parts of, cutting off, chopping, importing exporting (both internationally and/or inter-provincially), having in possession, exercising physical control over, growing breeding, in any way propagating, causing it to multiply, conveying, moving, otherwise trans-locating, selling, trading in, buying, receiving, giving, donating, accepting as a gift, in any way acquiring or disposing of a specimen of a listed TOPS animal" and in addition to all of the above: "any other prescribed activity involving a TOPS animal".

[49] Horn must be micro-chipped, permitted and registered on the database.

significantly easier permit wise to hunt a rhino and kill it than it is to move it around in South Africa.

Stakeholders in the main do not want to see the TOPS legislation removed but would like to see amendments made to the Act and the regulations to a) render compliance less onerous for legitimate rhino owners b) permit legal domestic trade and c) change and improve the permitting system to a central online and secure system in order to guard against corruption.

8.2.1 Domestic Moratorium

The National Moratorium on Domestic Trade in Rhino horn in South Africa[50] was implemented in 2009 and resulted in a complete ban on all domestic trade in rhino horn. There are increasing calls for the moratorium to be lifted. Those in favour of lifting the ban include the Private Rhino Owners Association (PROA) and other representatives of the private sector, as well as members of the public sector reserves. They argue that permission to sell horn in the domestic market, while it will not lead to reductions in poaching, will a) require the development of an online permitting system impervious to corruption, b) restore confidence of private sector owners of rhino c) act as a pilot for the opening of international trade eventually, should this be undertaken and d) result in the fact tracking of chipping, DNA profiling and centralizing of horn stocks, as well as significantly improved control and identification of horn and rhino.

The suggested process is one where the moratorium is lifted but only horn which has been chipped, registered with the central data base and which is attached to a DNA profile, can be traded. This horn would be termed*, TOPS REGISTERED*. Once the horn has been identified, it is moved to a secure location[51] and kept there. Subsequently paper ownership is traded and not the actual horn. The buyer will require a TOPS permit to buy the horn and ownership is registered to that person. Any person owning a horn must be able to prove the legitimate origin of that horn otherwise that person will be prosecuted under TOPS. All transaction will be certified and all horns must have a TOPS permit. This, it is argued, will simultaneously ensure that all State owned and all privately owned horns are DNA profiled and chipped and the State can trade against stockpiles immediately thus improving cash flows for conservation. Auditing horn stocks will also be significantly easier and more accurate. Most of the suggestions are catered for in TOPs currently, but the lifting of the domestic moratorium will require the Minister to repeal the prohibition. A key argument on the part of those in favour of lifting the moratorium is that it has not resulted in a decrease in poaching.

[50] Gazette number 31899, Notice number 148
[51] The South African Banking Association has offered two secure locations to the private sector

Those against the lifting of the domestic moratorium argue that it will legitimize trade, that it will result in an increase in demand over time and that it will send the wrong signals to the international community.

8.3 Impact of Trade Bans

There are no integrated quantitative data available on the impact of trade bans. Case studies have been undertaken on specific species where the available quantitative data have been used. Some relevant examples are noted below. However, it should be said that there are no directly comparable ban conditions. For example, demand for ivory and demand for canned lion hunting or lion/tiger bone, are all lethal to the animal. Demand for Bear Bile is not lethal, but can be inhumane and is economically speaking, domestic and not international trade. Demand for Rhino horn is international, and harvesting the horn is not lethal. Comparisons are therefore limited in their utility.

8.3.1 The Case of Elephant

Elephant ivory cannot be harvested without killing the elephant.

An international ban on selling ivory came into force in 1989 after poaching halved the number of elephants in Africa between 1979 and 1989, from 1.3 million to 625,000. Kenya lost 85 per cent of its elephants. Since then, the number of elephants in Africa has climbed to approximately 450,000, but an estimated 20,000 are poached annually for the black market run by international syndicates.

Following a one-off ivory sale to Japan in 1999, analysis of ETIS[52] (the Elephant Trade Information System, a statistical database containing the world's largest collection of elephant product seizure data, which is compiled by TRAFFIC on behalf of the CITES member countries), indicated a decline in the volume of illegal ivory trade for the next five years. However, it is not difficult to manipulate seizure statistics[53] rendering them relatively less useful as a proxy for illegal trade. Subsequent to this auction, CITES added China to its approved buyer list for auctioned ivory. Opponents of the auction process, such as the Environmental Protection Agency (EIA) view this as legitimisation of ivory trade and feared an increase in illegal trade as demand increased. Proponents argued that even with the CITES ban, elephants were still being poached to extinction in Central Africa due to the unaffordability of protecting them against well –equipped poachers and that the auction would provide funds to protect the elephant. Botswana, Namibia, South Africa and Zimbabwe support a legal ivory trade but 19 African states signed the Accra Declaration in 2006 and 20 range states called for a total moratorium at a meeting in Kenya in 2007.

[52] Christy (2012), notes that countries have only been submitting seizure data since 1998 and not since1989 as TRAFFIC claims. The data are therefore more limited than previously thought.

[53] It is possible to manipulate these statistics by reporting many small "seizures" such as a tourist wearing ivory earrings. For example, in February 2012 China publicised ivory enforcement efforts of 2011, involving 4,497 personnel and 1,094 vehicles and leading to 19 cases where only 63.5 (or approximately 30kgs) of ivory had been confiscated (Christy, 2012).

Currently, CITES is investigating the possibility of trade in elephant ivory as demand in Asia has not declined and elephant are being poached in large numbers.

8.3.2 The Case of Vicuna

The vicuna (Vicugna vicugna) is similar to a small llama and lives largely in highland areas in South America. The wool of the vicuña is the finest fibre in the world and is highly sought-after in the fashion industry. Prices are very high as each animal produces approximately half a kilogram of wool per year. Jacobsen (2012) argues that there is virtually a complete parallel between the case of the vicuna and the rhino and that the vicuna model can be adapted to meet the current needs of the rhino. In both cases, the product is valuable and regrows (wool and horn), in both cases the ranges of the animals were (and are for rhino) surrounded by impoverished communities, and both species were (vicuna) and are (rhino) severely threatened by poaching.

The vicuna was nearly extinct by 1966, with only 5000 left in the wild. In 1975, CITES imposed a trade ban on the species. In 1979, the affected range states[54] signed a conservation convention and in the early 1980's the private sector became involved as vicuna farming was developed in response to the demand for vicuna wool and the lifting of the CITES trade ban on vicuna wool products. By 1994, in Peru alone numbers of vicuna had increased to over 66 000 animals and in 2007, over 188 000 animals were counted.

Potential exists for the vicuna model to be applied to South African rhino and for a collaborative effort which involves the farming of the horn, with benefits to local communities an intrinsic part of the collaboration, to replace an illegal market with legal trade.

8.3.3 The Case of Rhino

Wild world rhino numbers in 2011 amounted to 28, 195 with African rhino accounting for 25, 050 of this number. 20 170 of these were white rhino and 4 880 are black rhino. In 1895, as a result of extended hunting and poaching activities there were only 50 white rhino left, all in South Africa. This has increased to current numbers as a result of careful conservation and effective protection. In the absence of such strategies, the Northern White Rhino subspecies appears to be extinct. African black rhino numbers declined from over 100 000 in the 1960's to 2 400 in 1995 and have doubled since then to stand at 4 880 in 2011 (Emslie, 2012).

According to Emslie and Brooks (1999) and Milliken and Shaw (2012) trade in rhino horn medicines is continuing despite an almost world-wide ban on commercial international and internal trade. CITES trade bans have not succeeded in halting the rhino horn trade and the huge reduction in black rhino populations has occurred even though it is included in Appendix I, indicating that that international trade bans alone have been not been effective. Trade bans have facilitated the development of a black market for rhino horn, and

[54] Peru, Bolivia, Chile, Ecuador, (Jacobsen, 2012)

encouraged the entry of illegal traders and poachers as demand, and prices, increase faster than supply. Although CITES has implemented increasingly tough measures since the first ban on Rhino trade in 1977 none of these measures has led to a reduction in the poaching of rhino horn or a reduction in illegal trade. Demand for the horn is grounded in cultural beliefs and mores and has increased as consumers have become wealthier (Lockwood, 2012).

The CITES trade ban in rhino horn was put in place to ensure the preservation and growth of the species. It is based on the assumptions that a) the rendering of trade in horn illegal will in and of itself reduce the motivation to trade and b) that the threat posed 35 years ago is of the same intensity and danger as the threat today. Conrad (2012) submits that policy makers were of the view then that restrictions on trade were the best policy response to commercial threats to the survival of threatened species. The CITES mechanism for limiting and prohibiting trade assumes that when a species is no longer legally tradable people will stop buying it or will switch to another commodity (Fischer, 2003). It is also assumed that consumers willing to take the risk of buying from the black market will be put off by high prices or certain and severe penalties.

However, the power of international syndicates and the capacity of developing nations to fight back against poaching have clearly demonstrated with Rhino that a trade ban will not stop determined criminals, and that increasingly sophisticated and expensive protection is required. The costs of protection and the costs of managing down demand in consumer nations is not affordable for many developing nations and a different solution is required. The CITES prohibition on trade, combined with increasing demand could have the perverse effect of further reducing wild populations instead of protecting them.

9. Sustainable Use Model

Sustainable use is defined in various ways. One definition suggests that sustainable use means “using rhino assets in such a manner so as to economically sustain the populations as a result of either covering all costs associated with this and/or making profits related to rhino assets”. Another defines sustainable use as “the use of a biological resource in a way and at a rate that would not lead to the long-term decline, would not disrupt the ecological integrity of the ecosystem in which it occurs, and would ensure its continued use to meet the needs and aspirations of present and future generations of people”. Regardless of how it is precisely defined, the notion of sustainable use has become increasingly important in the face of major increases in costs of conservation in many states and in South Africa (Emslie & Brooks, 1999; Child, 2012; Draper, 2012).

Noting that global trade dynamics have changed but conservation models have not kept pace, Child (2012) argues for a “maximisation of the benefits of wildlife for the people on whose land the wildlife lives”. The SU model rests on four pillars, proprietorship (rights to use, sell and manage), price (humane commercial value of wildlife) subsidiarity (effective

management of scale and hierarchy in institutions) and collaborative adaptive management (adaptation to change and complexity through collaborative processes). The current global philosophy of conservation strategy, based on prohibition/regulation of trade (CITES) and conservation centralised in the hands of the State, should adapt along with changed external circumstances. Trade is an intrinsic part of the new mode of conservation. Child (2012) states that the current model emphasises national and international public interest in preventing rhino poaching, but imposes restrictions on use, thus shifting the costs of these preservationist policies to rhino owners and producers. There is no financial contribution made to the owners and producers for the costs of protection against poaching and no direct contribution in this regard is made to States by CITES or to private owners by States. Child is supported by Draper (2012) who suggests that the world should pay South Africa to protect the rhino and calls for "a fairer future that shares the burden of world heritage custodianship".

Conrad (2012) uses the term "perfect storm" to table the notion that a concatenation of circumstances, not individual problematic, can have lethal results if they co-occur. In this view, these circumstances already exist, and hence there is danger that this will result in the extinction of the rhino as a species. While trade bans can work in the short term she argues, if perpetuated beyond their utility and in "perfect storm" circumstances they can have the reverse outcome to what was intended. The conditions for the "perfect storm", all of which are currently present in the case of rhino are:

- Price insensitive buyers in the market
- High commercial value
- Development of trade, legal and illegal
- Public ownership reduces incentive to protect
- Conflict for resources with humans
- Inadequate enforcement of trade bans

Eco tourism offers job creation to rural communities in rhino management and in related tourism services and products. The hunting of surplus rhino [55]results in improved herd and population management and revenue generation. Live sales offer the same benefits. The sale of rhino horn from natural deaths and stockpiles is a part of sustainable use and generates much needed revenues for conservation. As poaching increases, options for sustainable use decrease. Illegal hunting reduces the number of rhino available for legitimate hunters, changes the population profile, increases the costs of conservation and interferes significantly with conservation goals and objectives.

[55] Usually post productive males (Emslie & Brooks, 1999)

10. RIM comment

In order to be permitted to trade, under normal circumstance, South Africa would apply to the CITES COP which will occur in 2016. However, there is provision for such application in between COPs in Article 27, Section 2. The preparation of an application will require extensive range state lobbying, education for EU countries which tend to vote as a bloc, a strategic communications campaign and other political and practical activities. RIM recommends the re-establishment of legitimate trade[56] in rhino horn and the preparation of an immediate application (18 months to prepare) based on:

- Banning trade in horn has not reduced poaching in the face of increased demand;
- Because rhino do not need to die for the horn to be harvested, if rhino farming is incentivised through the usual market price mechanisms, fewer rhino will die, and a sustainable economic activity which will benefit many South Africans and the South African economy, can be implemented;
- State owned horn can be sold to improve wild rhino protection, and to contribute to conservation budgets;
- South Africa should control all sales using an appropriate model and protecting against predatory buying tactics;
- South Africa should use as part of its application to CITES and as part of its lobbying process, the first econometric "Rhinonomics" model;
- South Africa should remove the moratorium on domestic trade. All traded horn must be registered, chipped and DNA profiled before a TOPS REGISTRATION certificate will be issued. Once the horn has been sold once, it moves to a secure facility and thereafter only the paper will be traded;
- Demand side management strategies should be agreed with consuming nations.

In the shorter term, protection activities should be improved and prioritised according to Key and Important population ratings. A central rhino unit should be supported with key and important population based distribution nationally.

All black rhino and all key and important white rhino populations should be subject to a dehorning programme with immediate effect and as many other rhino populations should be dehorned as can be afforded. This is extremely costly but this exercise will demonstrate South African commitment to the preservation of the species. The horn stub will still have value and therefore poaching will still occur but to a lesser extent. Rhino do not need their horns for social, biological or protective reasons.

[56] Potential willing trade partners suggested by private sector have included Malaysia, Viet Nam, China, Japan and other Asian states.

11. Summary Findings of Rhinonomics[57] Econometric Model[58]

There are no econometric models on the supply/demand dynamics of rhino horn trade which would assist in informing the debate on the likely outcomes of various trade options. For this reason, the RIM commissioned the development of an econometric model[59] to begin the process of scenario building and evaluation on the matter of trade. Even though full data on demand and price are not readily available, even by proxy, the model is able to assess "what if" for various possible data and allows us to assess the impact of various decisions at various levels of impact. Over time, as more accurate data become available on price and demand levels, the model's ability to predict outcomes will become more precise and stable.

There are a number of factors that are relevant to the understanding of the rhino market that should be noted at the outset. *There is a market for rhino products*. This is implicitly or explicitly acknowledged by all parties to the debate, and has a number of implications.

- The fact that this market is – for the most part - illegal under CITES does not mean that it does not exist. Clearly, declaring the trade in rhino products "illegal" has not closed the market down.
- An illegal market may have some unique characteristics, but dynamically it still behaves in much the same way as a legal one. A product's illegal status does not negate the laws of supply and demand. It does, however, make it harder to analyse and study a market when the product concerned cannot be legally traded, because the information flows relating to incentives and behaviour are not as easy to determine.
- From the perspective of the participants in the market (suppliers and consumers) there is probably little about rhino products that is innately different from many other products: it can be supplied profitably; and it satisfies particular wants or needs.

A functioning market is, by its very nature, a dynamic entity that is subject to continual change. It is simply not possible to know everything about a market and to be able to predict with certainty how it will respond to different developments. This is as relevant to an illegal market as it is to a legal one. The market for rhino products is closely related to the market for rhinos themselves. Rhinos have value to different stakeholders for different reasons. These can range from the "value" of their role in biodiversity, the net tourism earnings they are able to deliver over their lifetime, the value that can be extracted as a result of their death (whether natural or unnatural), the medicinal effects they supposedly impart to consumers, the potential for profit to different elements of the supply chain of rhino products, and the potential for speculative profits to be earned from both live rhino

[57] Name registration pending ®
[58] Full report and model submitted seperately
[59] The model Rhinonomics, was developed by Keith Lockwood and Blueprint (Pty) Ltd, 2012.

and rhino products – amongst others. The prices that "consumers" of live rhino and rhino products are prepared to pay are directly linked to their perceived value.

The following conclusions can be drawn from the modeling analysis[60]:

- In the absence of any successful major initiatives or interventions, *demand for rhino horn will continue to increase in years to come as a result of income and population growth in the current major consumer markets of China and Vietnam*. This will support on-going increases in market prices (possibly to in excess of $100,000/kg by 2017) as well as increases in the number of rhino that are poached each year. It carries the added risk that the increased profitability that the higher prices give rise to will encourage the entry of further criminal syndicates into the market, and the possible expansion of demand into new market areas.
- *In order to even begin to reduce the numbers of rhino poached each year, anti-poaching efforts would need to reduce supply by around 33% of current levels* – given the natural growth in demand anticipated. However, on their own, the success of such initiatives would serve to continue to push up the price of rhino horn, possibly making it relatively more profitable to supply. There is therefore little likelihood that criminal syndicates will permanently leave the market if this remains the only element of the strategy.
- *Effective demand-reduction must be part of a long term strategy* if the objective is to reduce the market price and offset the demand growth anticipated as a result of income and population growth. Such efforts may need to target potential new consumer markets as well as existing ones, so as to pre-empt simple displacement. Measures that cause consumers to question the medicinal (and other) effects of rhino horn are likely to be the most effective in the short-to-medium term.
- *Legalisation of trade offers the potential of reducing criminal supply and consumption, of displacing illegal supply, and of expanding rhino ranges and populations* – provided that legal supply is not accompanied by measures that raise its real cost substantially (as may be implicit in existing CITES trade practices).
- *A fixation on avoiding contamination of legal supply with illegal supply is likely to be self-defeating*. It could simply limit the potential to displace illegal supply - resulting in the increased profitability, and perpetuation, of illegal supply in a two tiered market. Legalisation of trade does, however, carry with it built in incentives for suppliers to develop market demand over the longer term, by seeking to identify new markets and uses. The difference is that when the returns on complements in production accrue to the owners of live rhino instead of to criminal syndicates, there is a built in incentive for them to support such demand on a sustainable basis.

The "product" of the criminal syndicates is their supply chain. If it is not used for moving rhino horn, it will almost inevitably be used to move other illegal products (including other

[60] Note, analysis has been peer reviewed,

wildlife products). The factors that make South Africa (and other African countries) conducive locations for criminal syndicate operation (of which corruption is a significant part) need to be addressed effectively to protect biodiversity on the continent.

Addressing the rhino poaching problem cannot be tackled simplistically. It will require a multi-faceted approach that seeks to curb illegal supply through anti-poaching measures, while simultaneously engaging in effective demand-reduction measures. *In this context, legalisation of trade offers the additional potential to reduce the price (and relative attractiveness of the market) to criminal syndicates, displace illegal supply, and promote longer term expansion of the rhino population.*

11. Annexure One –Notes on Rhino Counting

There has been some debate around the accuracy of rhino counts undertaken in the Kruger National Park. Estimating the number of rhino in such a large area presents some particular difficulties and it is not usually possible to be 100 per cent accurate.

Techniques used to minimise error are strip transects, block counts, distance sampling, dung counts, mark-recapture techniques, call-up surveys, registration studies and total counts (100% coverage of an area) (Ferreira, Botha & Emmett, 2012). A total aerial count (by helicopter) is the most accurate[61] method.

*Accuracy i*s assessed in terms of two measures, *bias* and *precision* and there are a number of possible sources of error. First, there may be some animals in the population who are not available to be counted at the time of counting (availability bias), second, the animals may be available but may not be seen to be counted (detectability bias) and thirdly, even if the animals are available and detected, different observers have different abilities to detect (observer bias). These affect the *precision* (the likely spread of estimates given the uncertainties introduce by the biases) of the count.

Accurate counts are critical for the management of rhino (and other large mammals) in the KNP and sufficient budget will need to be found to permit for an annual helicopter based count to be implemented – at least until the poaching threat abates. The budget per count, assuming that population profiles are included, will be approximately ZAR 3 million per count in 2012 Rands (Fereirra, 2012).

[61] Accuracy in this context means how close the estimate derived from the count is, to the actual total population number.

12. Annexure Two- References

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