ZIMBABWE

SHORT AND MEDIUM TERM ACTION PLANS FOR BLACK RHINOCEROS

APRIL 1992

DEPARTMENT OF NATIONAL
PARKS AND WILD LIFE MANAGEMENT

ZIMBABWE

BLACK RHINOCEROS

SHORT TERM and MEDIUM TERM

ACTION PLANS

Department of National Parks

and Wild Life Management

April 1992

EXECUTIVE SUMMARY

The black rhino population in Zimbabwe is unlikely to survive in viable numbers beyond 1994 under present conditions. Levels of illegal hunting are increasing and now include Zimbabwean nationals. The capability for effective law enforcement is declining due to reduced budgets and manpower.

The following major recommendations arise from a workshop convened by the Director of National Parks on 22 April 1992 to address the crisis, both in the short term (the next 6 months) and in the medium term (the next 6-24 months).

SHORT TERM PRIORITIES

1. An immediate programme of dehorning significant numbers of rhinos in vulnerable areas and the involvement of fee-paying outsiders in these operations.

2. An increase of manpower in the areas where most rhino are surviving through any or all of the following options:

   - redistribution of staff within the Parks and Wild Life Estate;

   - initiation of a call-up system which draws on staff from other parts of the Parks and Wild Life Estate;

   - introduction of an Honorary Officer system to augment the anti-poaching effort.

3. Provision of adequate equipment for staff engaged on anti-poaching duties, particularly weapons and transport.

4. Improvement in conditions of service for staff engaged on anti-poaching duties, including:

   - realistic salaries and allowances, at a minimum comparable with other branches of the armed services;

   - the introduction of an incentive scheme.

5. Increased cooperation from the other law enforcement agencies of Government particularly in reducing armed incursions by nationals of other countries into Zimbabwe.

6. An immediate joint effort between research and field staff to survey remaining numbers and distribution of rhino.

7. The provision of emergency budgets for field operations.

MEDIUM TERM PRIORITIES

1. Soliciting of funds from both the Treasury and donors to provide the budget necessary for the survival of the rhino.

2. The inception of controlled legal trade in rhino horn and other rhino products to provide a significant portion of the conservation budget for rhino in the medium and long term.

3. Introduction of other means by which rhino can attain a legal economic value, including sport hunting.

4. Inception of an aggressive public relations campaign both to highlight the plight of the rhino and to prepare public opinion towards the activities listed in the above two paragraphs.

5. The strengthening of investigations in illegal trade in rhino products.

6. Consolidation of viable breeding groups of rhino in more secure areas.

7. The achievement of a recognition within Government that the current crisis facing the black rhino is a national and international priority and that it is vital that adequate Government resources are directed to securing success in this effort.

1(c) Salaries and conditions of service: Departmental field staff are on lower salary grades than comparable units in other branches of the armed forces and police, and receive smaller field allowances. This is causing genuine hardship and lowering morale, especially on joint operations.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S1.5 Present a strong case for increasing salaries and field allowances.	M1.4 If appropriate, adopt recommendations of present WORLD BANK study on staff salaries.
COSTS: S1.5 Recurrent . . $7 million	M1.4 Awaiting recommendations

1(d) Discipline: Despite recent improvements in PSC procedures, Officers-in-charge of stations are experiencing serious difficulties in dealing with cases of indiscipline. In practical terms it is nearly impossible for an officer to dismiss a scout due to the lengthy referral procedures which go as high as the Ministry.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S1.6 Restore powers to officers on field stations to deal rapidly with miscreants.	
COSTS: S1.6 - Nil	

1(e) Incentive scheme: Field staff feel strongly that payments for achievements in law enforcement would produce a highly beneficial effect. The precedent exists for such a scheme through the recent awards made to scouts by Africa Safari Club and a highly effective scheme has recently been implemented in the South Luangwa Valley National Park, Zambia. Such a scheme could be funded from the anticipated sales of rhino horn.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S1.7 Design a schedule of payments to be implemented as an incentive scheme (see Annex 1.2)	M1.5 Implement an incentive scheme based on returns from rhino horn sales.
COSTS: S1.7 - Nil	M1.5 Recurrent . . . . Z$1 million

The sections which follow correspond to the rows of the matrix on the previous page. **COSTS** are Zimbabwe dollar estimates over and above current Treasury allocations to the Department and only the totals are presented below. The detailed costing for each estimate follows in the **COSTINGS** annex at the end of each section.

1. MANPOWER AND ADMINISTRATIVE ISSUES

OBJECTIVE I: CONSERVATION OF LARGE WILD POPULATIONS IN THE PARKS ESTATE

1(a) Staff numbers: The requirement for effective protection of black rhino is at least 1 man/20 sq.km. This implies about 2,500 men to protect the entire rhino range in Zimbabwe. Following ESAP retrenchment, the total number of scouts has decreased from some 1,800 to about 1,500 and, of these, perhaps fewer than 800 are allocated to anti-poaching.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S1.1 Appoint Honorary Officers to increase law enforcement effort	M1.1 Argue strongly for an increase in number of game scouts
	M1.2 Seek additional four ecologists' posts for monitoring rhino numbers in Intensive Protection Zones.
COSTS: S1.1 - Nil	M1.1 Recurrent Z$12 million M1.1 Capital Z$28 million M1.2 Recurrent Z$240 000 M1.2 Capital Z$600 000

1(b) Staff distribution: Staff are presently distributed to deal with a wide variety of responsibilities throughout Zimbabwe. With the crisis facing the black rhino there is a need to examine the present staff distribution, set priorities appropriate to the nature of the crisis and redistribute staff to reflect these priorities. Annex 1.1 to this section contains a breakdown of field staff numbers and distribution throughout the country.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S1.2 Initiate call-up scheme drawing on staff in areas which are not under poaching pressure	M1.3 Examine more permanent redistribution of staff to place emphasis on rhino protection.
S1.3 Assign one senior ecologist to coordinate rhino research and to work full time with CW(Ops)	
S1.4 Reduce overall area in which rhino are to be protected and concentrate staff in key areas (see section 4 - "zoning")	
COSTS S1.2 Recurrent $840 000 S1.2 Capital $ 50 000 S1.3 Recurrent $ 50 000 S1.4 Capital $100 000	M1.3 Capital Z$2 million

1(c) Salaries and conditions of service: Departmental field staff are on lower salary grades than comparable units in other branches of the armed forces and police, and receive smaller field allowances. This is causing genuine hardship and lowering morale, especially on joint operations.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S1.5 Present a strong case for increasing salaries and field allowances.	M1.4 If appropriate, adopt recommendations of present WORLD BANK study on staff salaries.
COSTS: S1.5 Recurrent . . $7 million	M1.4 Awaiting recommendations

1(d) Discipline: Despite recent improvements in PSC procedures, Officers-in-charge of stations are experiencing serious difficulties in dealing with cases of indiscipline. In practical terms it is nearly impossible for an officer to dismiss a scout due to the lengthy referral procedures which go as high as the Ministry.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S1.6 Restore powers to officers on field stations to deal rapidly with miscreants.	
COSTS: S1.6 - Nil	

1(e) Incentive scheme: Field staff feel strongly that payments for achievements in law enforcement would produce a highly beneficial effect. The precedent exists for such a scheme through the recent awards made to scouts by Africa Safari Club and a highly effective scheme has recently been implemented in the South Luangwa Valley National Park, Zambia. Such a scheme could be funded from the anticipated sales of rhino horn.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S1.7 Design a schedule of payments to be implemented as an incentive scheme (see Annex 1.2)	M1.5 Implement an incentive scheme based on returns from rhino horn sales.
COSTS: S1.7 - Nil	M1.5 Recurrent . . . . Z$1 million

The sections which follow correspond to the rows of the matrix on the previous page. **COSTS** are Zimbabwe dollar estimates over and above current Treasury allocations to the Department and only the totals are presented below. The detailed costing for each estimate follows in the **COSTINGS** annex at the end of each section.

1. MANPOWER AND ADMINISTRATIVE ISSUES

OBJECTIVE I: CONSERVATION OF LARGE WILD POPULATIONS IN THE PARKS ESTATE

1(a) Staff numbers: The requirement for effective protection of black rhino is at least 1 man/20 sq.km. This implies about 2,500 men to protect the entire rhino range in Zimbabwe. Following ESAP retrenchment, the total number of scouts has decreased from some 1,800 to about 1,500 and, of these, perhaps fewer than 800 are allocated to anti-poaching.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S1.1 Appoint Honorary Officers to increase law enforcement effort	M1.1 Argue strongly for an increase in number of game scouts
	M1.2 Seek additional four ecologists' posts for monitoring rhino numbers in Intensive Protection Zones.
COSTS: S1.1 - Nil	M1.1 Recurrent Z$12 million M1.1 Capital Z$28 million M1.2 Recurrent Z$240 000 M1.2 Capital Z$600 000

1(b) Staff distribution: Staff are presently distributed to deal with a wide variety of responsibilities throughout Zimbabwe. With the crisis facing the black rhino there is a need to examine the present staff distribution, set priorities appropriate to the nature of the crisis and redistribute staff to reflect these priorities. Annex 1.1 to this section contains a breakdown of field staff numbers and distribution throughout the country.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S1.2 Initiate call-up scheme drawing on staff in areas which are not under poaching pressure	M1.3 Examine more permanent redistribution of staff to place emphasis on rhino protection.
S1.3 Assign one senior ecologist to coordinate rhino research and to work full time with CW(Ops)	
S1.4 Reduce overall area in which rhino are to be protected and concentrate staff in key areas (see section 4 - "zoning")	
COSTS S1.2 Recurrent $840 000 S1.2 Capital $ 50 000 S1.3 Recurrent $ 50 000 S1.4 Capital $100 000	M1.3 Capital Z$2 million

The OBJECTIVES and COMPONENTS are presented in a matrix below. Short term (ST) actions are separated from medium term (MT) actions for each component and priorities have been assigned on a scale of 1-4. Each component is then discussed individually in a series of short papers which follow the matrix and requirements for special allocations of funds are identified.

Table 1: Priorities for Government action for rhino conservation in the short term (next 6 months) and medium term (6-24 months).

	OBJECTIVES													
	I LARGE WILD POPULATIONS		II BREEDING NUCLEI		III IN-SITU CAPTIVE BREEDING		IV EX-SITU CAPTIVE BREEDING		V REALIZE COMMERCIAL VALUES					
									Horn Sales		Dehorning operations		Sport hunting	
PLANNING	ST	MT	ST	MT	ST	MT	ST	MT	ST	MT	ST	MT	ST	MT
COMPONENTS														
MANPOWER	1	2		-	2	3	-	-	3	3	1	2	-	4
EQUIPMENT	1	2	-	-	4	4	-		-	-	4	4	-	
TRANSPORT	1	2		-	4	4	-	-	-	-	-	-	-	-
RESEARCH	2	2	2	2	3	2	4	4	1	2	3	4	-	3
MONITORING	2	2	2	2	2	2	4	4	-	2	3	4	-	2
MANAGEMENT	1	2	1	2	3	3	4	4	-	3	3	3	-	2
PUBLIC RELATIONS	1	2	3	4	4	4	4	4	1	2	2	3	1	2
OTHER AGENCIES	2	2	3	2	4	4			4	4	4	4	4	4
INVESTIGATIONS	1	2	2	3	-	-			3	3	-		-	
BUDGETS	1	2	3	4	2	2		-	3	1	2	3		2

PRIORITY RANKINGS

1 - Top priority, will critically affect rhino survival in the short term
2 - High priority, will directly influence rhino survival in short and medium term
3 - Medium priority
4 - Low priority

All of the above rankings apply to the Zimbabwe rhino population and to actions which should be taken by the Department of National Parks and Wild Life Management

3. Transport:
   - Aircraft
     - helicopters
     - fixed-wing
   - Road transport
     - 5 tonne trucks
     - 4x4 vehicles
     - motorbikes
   - Boats
     - personnel carriers
     - banana boats
     - high speed vessels

   Maintenance of transport is included in this topic

4. Research:
   - surveys of rhino numbers and distribution
   - designation of Intensive Protection Zones for black rhino
   - development of radio tracking methods
   - studies on the effects of dehorning
   - trade studies and economic analyses
   - veterinary studies

5. Monitoring:
   - illegal activity
   - law enforcement effort
   - rhino numbers and distribution

6. Management:
   - dehorning
   - capture and translocation

7. Public relations and awareness campaigns:
   - local, individuals and NGOs
   - international
   - "psychological warfare" on poachers (in respect of dehorning and antipoaching

8. Relations with other law enforcement and military agencies:
   - Zimbabwe
   - neighbouring Governments

9. Investigations and Intelligence:
   - illegal trafficking in rhino products
   - work relating to anti-poaching

10. Budgets:
    - capital requirements
    - operational costs
    - establishment of a special fund for holding monies from legal trade in horn and other income generating activities

PREPARATION OF AN ACTION PLAN

The Director of National Parks called several meetings in 1992 to address the crisis and, on the 22nd April, a one-day workshop of senior Departmental staff (Appendix 2) was convened to prepare short term (the next 6 months) and medium term (6-24 months) action plans.

This workshop examined progress towards achieving the four ***Objectives*** of the ***Zimbabwe Black Rhino Conservation Strategy***, which were to have been pursued simultaneously:

OBJECTIVE I: Conservation of large wild rhino populations in the Parks and Wild Life Estate.

OBJECTIVE II: Establishment of new Breeding Nuclei under extensive conditions in safer areas of the country.

OBJECTIVE III: Establishment of Captive Breeding Centres in Zimbabwe.

OBJECTIVE IV: Support for an *ex situ* captive breeding programme.

In addition to these objectives, the workshop considered a **fifth objective** for rhino conservation which has been steadily gaining support from many people in southern Africa. This entails placing a high commercial value on rhino through such activities as a controlled legal trade in rhino horn and other products, sport hunting of rhino, and using fee-paying outsiders to participate in dehorning operations ("eco-dehorning").

The components affecting each of these Objectives were listed and considered in terms of priority and of the actions needed both in the short term and medium term. These components are as follows:

1. Manpower and administrative issues:
   - staff numbers
   - staff distribution
   - salaries and conditions of service
   - discipline
   - incentive schemes

2. Equipment:
   - weapons
   - specialised detection equipment
   - radios
   - general field equipment

BACKGROUND

Zimbabwe's black rhino population was probably at its highest level in the early 1980s. Rhino numbers are extremely difficult to estimate but it is unlikely that there were fewer than 3,000 in the country at that time.

Illegal hunting of black rhino in Zimbabwe was first detected at significant levels in the last three months of 1984 in the lower Zambezi Valley. Heavy losses (approximately 500) were experienced from 1985-1987 in the Valley and, in 1988, illegal hunting spread to all rhino populations in the country. To date at least 1,000 rhino have been killed and the number may be as high as 1,500.

Several factors have combined to make the present situation extremely serious:

1. Whereas until 1990 virtually all illegal hunting was carried out by nationals of neighbouring countries, during the past 18 months Zimbabwean locals have become significantly involved in both hunting and trafficking in horn.

2. The rate of incursions from neighbouring countries has escalated from a level of one incursion per week in the first few years of Operation Stronghold to about one incursion every day in 1992.

3. Morale of staff is being adversely affected by:

   - poor conditions of service in relation to other branches of the armed services including salaries, field allowances and incentives;
   - the perception that conditions are deteriorating; and
   - A lack of recognition for their efforts, both within Government and outside it.

4. The retrenchment of 264 members of staff under the Economic Structural Adjustment Programme (ESAP) has greatly weakened the Department's ability to cope with intensive illegal hunting.

5. The current drought in the country is likely to lead to additional rhino mortality this year and involvement of Zimbabweans in illegal hunting and trafficking will probably increase as a result of economic problems in rural communities.

In theory (see Appendix 1), there should be at least 1,500 rhinos surviving in Zimbabwe, given initial estimates and numbers killed over the past 8 years. In practice, the reports coming in from all areas of the country suggest a much lower number, pressure on rhinos is escalating and the power to combat poaching is being reduced. At the present rate of attrition, we fear that rhino will not survive in viable numbers beyond 1994.

2. EQUIPMENT (continued)

COSTS: The following schedule presents those capital and recurrent costs which will arise if the programme of short term and medium term actions outlined in this section is adopted. All figures in thousands of Zimbabwe dollars.

	SHORT TERM ACTIONS	
RECOMMENDATION	Capital	Recurrent
S2.1: Additional weapons from ZNA	--	--
S2.2: Spares for weapons	800	--
S2.3: Specialised equipment training	--	100
S2.4: Establish arrangements with MOD	--	--
S2.5: Programme new radio frequencies	10	--
S2.6: New field equipment (general)	400	--
S2: TOTALS	1,210	100

	MEDIUM TERM ACTIONS	
RECOMMENDATION	Capital	Recurrent
M2.1: Purchase of weapons	1,000	--
M2.2: Armourer's post	--	30
M2.3: Operating and maintenance	--	300
M2.4: Special survey research	--	20
M2.5: New radio equipment	220	--
M2.6: Radio maintenance	--	300
M2.7: Maintenance of field equipment	--	600
M2: TOTALS	1,220	1,250

Notes on costs appear on the following page

2. EQUIPMENT (continued)

2(c) Radios: The operational areas of the Parks and Wild Life Estate are now well serviced by VHF communication systems. Certain improvements are indicated as detailed below.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S2.5 The volume of radio traffic now requires that separate frequencies be allocated to different operational areas.	M2.5 Various items of ancillary equipment need to be added to the radio installation.
	M2.6 Provisions must be made for ongoing maintenance of radio equipment (e.g. batteries).
COSTS S2.5 Capital . . . . Z$10 000	M2.5 Capital . . . . . Z$220 000 M2.6 Recurrent . . . . Z$300 000

2(d) Other general field equipment: There is an ongoing requirement for camping equipment, webbing, binoculars etc.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S2.6 With the inception of a call-up system, ensure that each scout has a personal issue of field equipment.	M2.7 Ensure that budgets are adequate to maintain and replace the Departmental stock of field equipment.
COSTS S2.6 Capital . . . $400 000	M2.7 Recurrent $600 000

Equipment requirements relating to the other objectives are relatively minor at this stage and are not included in this Action Plan. There are materials needed to complete phase II of the Captive Breeding Centre at Boulton Atlantica but these are likely to be provided by donors.

2. EQUIPMENT

OBJECTIVE 1: CONSERVATION OF LARGE WILD POPULATIONS IN THE PARKS ESTATE

2(a) Weapons: At Independence the Department had an adequate stock of FN rifles to support its anti-poaching. These weapons have deteriorated over the years and had to be withdrawn for repairs which are carried out by the Army. Because of shortage of spares the total stock has declined. It is intended to replace these weapons with AK47s (although they are not preferred to the FNs) but numbers of AK47s still remain inadequate to equip more than about 60% of the men in the field.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S2.1 An immediate high level approach should be made to ZNA requesting an emergency issue of weapons.	M2.1 The Department should aim to secure its own permanent stock of weapons and spares.
S2.2 Efforts to build up a stock of FN and AK47 spares should be increased.	M2.2 The Department should have an armourer's post to ensure maintenance of weapons.
COSTS S2.1 - Nil S2.2 Capital . . $800 000	M2.1 Capital . . . . . $1 million M2.2 Recurrent $30 000

2(b) Specialised detection equipment: Certain classified equipment should be available to enhance the anti-poaching effort very soon. This equipment may also provide new opportunities for survey of rhinos and other species.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S2.3 Train staff in the use of this equipment.	M2.3 Initiate operations using the new equipment.
S2.4 Clarify mission role and command structure for control of equipment.	M2.4 Experiment with animal counting techniques
COSTS S2.3 Recurrent . . . $100 000 S2.4 - Nil	M2.3 Recurrent . . . . Z$300 000 M2.4 Recurrent . . . . Z$ 20 000

Where a group of individuals is eligible for any of the above payments, the leader of the patrol will receive the first 5% of the total payment and then the balance of the total payment will be shared equally between all members of the patrol, including the patrol leader.

Payments are additive. For example, if a patrol hears shots, detects spoor, finds a rhino carcase, has a contact with poachers and kills one and captures one, recovers two rhino horns weighing a total of 3kg, recovers one weapon, 20 live rounds of ammunition and 4 spent cartridge cases, and the poachers kit - then the total payment would be as follows:

Hearing shots	20
Finding spoor	50
Finding carcase	10
Contact with poachers	300
Capture of poacher	5,000
Killing a poacher	1,000
Recovery of rhino horn	1,500
Recovery of weapon	300
Recovery of live ammunition	200
Recovery of cartridge cases	20
Recovery of kit	100
TOTAL	Z$ 8,500

If the patrol consisted of four scouts, the patrol leader would receive 5% of this amount (i.e. $425) and each member of the patrol, including the patrol leader would receive $2,019.

The value of the rhino horn recovered would be US$6 000 (ie Z$30,000) and therefore this total incentive payout amounts to less than 30% of the value of the horn.

ANNEX 1.2

INCENTIVE SCHEME FOR ANTI-POACHING

It is anticipated that a scheme which provides direct rewards for achievements in the course of anti-poaching work would be implemented once a fund has been established to receive the returns from sales of rhino products. All payments would be made from this fund. The rewards outlined below are indicative only and would require further refinement. The question of incentives for staff not directly involved in field duties arises: it is suggested that this is decided by a committee with discretionary powers to make awards in special cases.

ACHIEVEMENT	PAYMENT (Z$)
RHINO and ELEPHANT POACHERS	
Capture and arrest of entire poaching gang (3 or more)	10,000
Capture and arrest of poacher (first in a gang)	5,000
Capture and arrest of poacher (second in a gang)	2,000
Capture and arrest of poacher (third and all others)	1,000
Killing of an entire poaching gang (3 or more)	4,000
Killing of poacher (first in a gang)	2,000
Killing of poacher (second in a gang, same contact)	1,000
Killing of poachers (all others in a gang)	500
Wounding of poacher	400
Contact with a poaching gang, exchange of fire	300
Contact with a poaching gang, no exchange of fire	200
Recovery of rhino horn (per kg)	500
Recovery of ivory (per kg)	50
Recovery of kit, food etc.	100
Finding a rhino or elephant carcase	10
ALL POACHERS	
Recovery of a weapon	300
Recovery of ammunition (per live round)	10
Recovery of cartridge case (per case)	5
Recovery of bullet (eg from carcase)	50
Visual sighting of poachers	100
Detection of shots	20
Detection of spoor	50
Recovery of snare	10
Arrest and conviction of meat poacher	200
Arrest of meat poacher	100
Arrest of honey poacher	20
Arrest of fish poacher	100

ANNEX 1.1

NUMBERS AND DISTRIBUTION OF STAFF AND RESOURCES AVAILABLE FOR LAW ENFORCEMENT IN THE PARKS AND WILD LIFE ESTATE

LAW ENFORCEMENT FEATURES	MATABELELAND NORTH	SEBUNGWE	ZAMBEZI VALLEY	GONAREZHOU NP	TOTALS
Officers	27	11	19	12	69
Field staff	190	143	190	99	622
TOTAL MANPOWER	217	154	209	111	691
Salaries (approx) Z$ x 1000	5,967	4,234	5,747	3,052	19,000
Operational budget Z$ x 1000	2,512	1,783	2,420	1,285	8,000
TOTAL BUDGET	8,479	6,017	8,167	4,337	27,000
4 Wheel Drive Vehicles	14	10	8	4	36
5 ton Trucks	9	7	5	6	27
TOTAL VEHICLES	23	17	13	10	63
PROTECTED AREA (km^2)	19,400	6,100	11,900	6,100	43,500
Field Staff density (men/km^2)	102	43	63	62	70
Area per vehicle (km^2)	843	359	915	610	690
Total Expenditure (US$/$km^2$)	87	197	137	142	124

NOTE: The actual numbers of scouts on law enforcement are slightly higher than this due to the deployment of an additional 500 scouts recently assigned to the Department from the Ministry of Local Government. At the same time, the recent ESAP retrenchment has reduced the number by 259.

Medium term actions

M1.1 Increased scout establishment: Assuming that approximately 700 scouts are needed for duties other than law enforcement in the Parks and Wild Life Estate and that the required number of scouts for anti-poaching is 2,500 then an additional 1,200 scouts posts are needed. At an annual cost per scout post of $10,000 which includes salary, travel and subsistence and other supporting costs, the cost of the increased establishment would be $12 million.

RECURRENT EXPENDITURE: Z$12 million

In addition to this, housing would be required for these staff. Assuming that 300 would be housed in permanent junior staff houses (married quarters), 600 would be housed in dormitory blocks (bachelor quarters) with 6 men per block, and 300 would be housed in temporary field accommodation, the anticipated capital costs would be:

a)	300 married quarters @ 40,000	$12 million
b)	100 dormitory blocks @ 80,000	$ 8 million
c)	300 units temporary field accommodation @ $10,000	$ 3 million
d)	100 ablution blocks @ 50 000	$ 5 million

TOTAL CAPITAL EXPENDITURE: Z$28 million

M1.2 Additional ecologists'posts: The original Black Rhino Conservation Strategy provided for each Intensive Protection Zone to have an ecologist assigned to monitor rhino numbers and law enforcement effort in relation to illegal activity. The programme was intended to be a joint effort with external researchers and the Zimbabwe government would provide 4 out of the required 8 ecologists.

a)	4 ecologists @ $30,000 salary per annum	$120 000
b)	Operating budgets 4 @ $30 000 per annum	$120 000

TOTAL RECURRENT EXPENDITURE: Z$240 000

Housing: 4 staff houses @ $150,000 each $600 000

CAPITAL EXPENDITURE: Z$600 000

M1.3 Permanent base stations: In redistributing staff permanently to Intensive Protection Zones the most likely requirement would be capital costs for establishing permanent base stations:

4 base stations including office and accommodation @ 500 000 each

CAPITAL EXPENDITURE: Z$2 million

M1.4 No costs as yet

M1.5 Incentive scheme: Annex 1.2 gives a provisional incentive scheme. Assuming that the average total daily payout nationwide under this scheme is $3,000, the annual expenditure would be approximately $1 million. It should be expected that payouts will decrease as illegal activity declines.

RECURRENT EXPENDITURE: Z$1 million

M1.6 Assisting in antipoaching outside the Parks and Wild Life Estate: It is difficult to estimate the costs which could arise in Departmental staff being required to assist in antipoaching and training of antipoaching personnel outside the Parks and Wild Life Estate. A notional budget of $100 000 is presented to cover both aspects.

RECURRENT EXPENDITURE: Z$100 000

M1.7 No costs

1. MANPOWER AND ADMINISTRATIVE ISSUES (continued)

NOTES ON COSTS

Short term actions

S1.1 Honorary Officers: No costs are anticipated as these would met by the private sector. The department would, however, like to set up a Compensation or Social Security Fund in the medium term.

S1.2 Call-up scheme: Assume 200 scouts per month will be moved to the "front line" for 15 day stints. Costs will include subsistence, transport and tented accommodation.

a) 200men x 12months x 15 days @ $20/day $720 000
b) 10 trucks x 500km (average return) x 12months x $2/km . . $120 000

RECURRENT EXPENDITURE: Z$840 000

Scouts will require tents while on call-up. At 4 scouts per tent, 50 tents are needed @ $1,000 per tent - total $50 000.

CAPITAL EXPENDITURE: Z$50 000

S1.3 Coordinate rhino research: A provisional budget of $50 000 is required for an ecologist to coordinate rhino research full-time.

RECURRENT EXPENDITURE: Z$50 000

S1.4 Deploy scouts in Intensive Protection Zones: Since many of these zones are not close to existing base stations, it is assumed that tented accommodation would be required in many areas.

100 tents @ $1,000 per tent $100 000

CAPITAL EXPENDITURE: Z$100 000

S1.5 Increase salaries and field allowances: Assuming a current salaries bill for the Department of $20 million and assuming that a minimum of a 25% increase is required to compensate for recent inflation, the overall increase would be $5 million. Assuming a similar increase in field allowances, on a current expenditure of $8 million this would give an additional $2 million.

TOTAL RECURRENT EXPENDITURE: Z$7 million

S1.6, S1.7, S1.8: No costs

S1.9 Staff for captive breeding centre at Boulton Atlantica: There are no significant recurrent costs attached to transferring staff to Boulton Atlantica. However, there is a need for housing to accommodate an officer, 2 scouts and 2 labourers.

a) One Officer's house @ $150 000
b) One dormitory block @ $ 80 000
c) One ablution block @ $ 50 000

TOTAL CAPITAL EXPENDITURE: Z$280 000

1. MANPOWER AND ADMINISTRATIVE ISSUES (continued)

COSTS: The following schedule presents those capital and recurrent costs which will arise if the programme of short term and medium term actions outlined in this section is adopted. All figures in thousands of Zimbabwe dollars.

	SHORT TERM ACTIONS	
RECOMMENDATION	Capital	Recurrent
S1.1: Honorary Officers	--	--
S1.2: Call-up scheme	50	840
S1.3: Rhino research coordinator	--	50
S1.4: Move staff to IPZs	100	--
S1.5: Increase salaries	--	7,000
S1.6: Disciplinary powers	--	--
S1.7: Design incentive scheme	--	--
S1.8: Honorary Officers	--	--
S1.9: Staff for Boulton Atlantica	280	--
S1: TOTALS	430	7,890

	MEDIUM TERM ACTIONS	
RECOMMENDATION	Capital	Recurrent
M1.1: Increase field staff	28,000	12,000
M1.2: Ecologist posts	600	240
M1.3: New base stations	2,000	--
M1.4: World Bank Study	--	--
M1.5: Incentive scheme	--	1,000
M1.6: Operations outside Parks Estate	--	100
M1.7: Boulton Atlantica - volunteers	--	--
M1: TOTALS	30,600	13,340

Notes on costs appear on the following page

1. MANPOWER AND ADMINISTRATIVE ISSUES (continued)

OBJECTIVE II: ESTABLISH VIABLE BREEDING NUCLEI OUTSIDE THE PARKS ESTATE

1(f) Support for conservancies: In establishing breeding nuclei outside the Parks and Wild Life Estate, it was not intended to place an additional burden on the law enforcement capabilities of Department staff. Anti-poaching support should be limited to serious cases where conservancies require reinforcement.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S1.8 Appoint Honorary Officers in conservancies and communal lands to improve law enforcement.	M1.6 Assist in anti-poaching and staff training as and when required.
COSTS: S1.8 - Nil	M1.6 Recurrent . . . Z$100 000

OBJECTIVE III: ESTABLISH CAPTIVE BREEDING CENTRES IN ZIMBABWE

1(g) Permanent staff for Government Captive Breeding Centre: Captive breeding centres have been established at Chipangali Wildlife Orphanage and at Boulton Atlantica. A nucleus of permanent staff is now required to take care of and manage these rhino (see Section 6).

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S1.9 Designate a small permanent staff for the Boulton Atlantica Captive Breeding Centre, including armed guards.	M1.7 Examine ways in which external volunteers and staff of the University Veterinary Faculty can assist in the maintenance of Boulton Atlantica.
COSTS: S1.9 Capital . . . Z$280 000	M1.7 Nil

There is no Zimbabwe manpower requirement related to Objective IV (the ex-situ captive breeding programme).

Objective V (Commercial Aspects of black rhino conservation) has three sub-objectives: sale of rhino horn (dealt with under Section 10 - Budgets), and dehorning hunts and sport hunting (dealt with under Section 6 - Management). The achievement of these objectives requires certain actions to be taken by staff but they do not entail any significant "manpower requirements".

BACKGROUND

Zimbabwe's black rhino population was probably at its highest level in the early 1980s. Rhino numbers are extremely difficult to estimate but it is unlikely that there were fewer than 3,000 in the country at that time.

Illegal hunting of black rhino in Zimbabwe was first detected at significant levels in the last three months of 1984 in the lower Zambezi Valley. Heavy losses (approximately 500) were experienced from 1985-1987 in the Valley and, in 1988, illegal hunting spread to all rhino populations in the country. To date at least 1,000 rhino have been killed and the number may be as high as 1,500.

Several factors have combined to make the present situation extremely serious:

1. Whereas until 1990 virtually all illegal hunting was carried out by nationals of neighbouring countries, during the past 18 months Zimbabwean locals have become significantly involved in both hunting and trafficking in horn.

2. The rate of incursions from neighbouring countries has escalated from a level of one incursion per week in the first few years of Operation Stronghold to about one incursion every day in 1992.

3. Morale of staff is being adversely affected by:

   - poor conditions of service in relation to other branches of the armed services including salaries, field allowances and incentives;
   - the perception that conditions are deteriorating; and
   - A lack of recognition for their efforts, both within Government and outside it.

4. The retrenchment of 264 members of staff under the Economic Structural Adjustment Programme (ESAP) has greatly weakened the Department's ability to cope with intensive illegal hunting.

5. The current drought in the country is likely to lead to additional rhino mortality this year and involvement of Zimbabweans in illegal hunting and trafficking will probably increase as a result of economic problems in rural communities.

In theory (see Appendix 1), there should be at least 1,500 rhinos surviving in Zimbabwe, given initial estimates and numbers killed over the past 8 years. In practice, the reports coming in from all areas of the country suggest a much lower number, pressure on rhinos is escalating and the power to combat poaching is being reduced. At the present rate of attrition, we fear that rhino will not survive in viable numbers beyond 1994.

PREPARATION OF AN ACTION PLAN

The Director of National Parks called several meetings in 1992 to address the crisis and, on the 22nd April, a one-day workshop of senior Departmental staff (Appendix 2) was convened to prepare short term (the next 6 months) and medium term (6-24 months) action plans.

This workshop examined progress towards achieving the four ***Objectives*** of the ***Zimbabwe Black Rhino Conservation Strategy***, which were to have been pursued simultaneously:

OBJECTIVE I: Conservation of large wild rhino populations in the Parks and Wild Life Estate.

OBJECTIVE II: Establishment of new Breeding Nuclei under extensive conditions in safer areas of the country.

OBJECTIVE III: Establishment of Captive Breeding Centres in Zimbabwe.

OBJECTIVE IV: Support for an *ex situ* captive breeding programme.

In addition to these objectives, the workshop considered a **fifth objective** for rhino conservation which has been steadily gaining support from many people in southern Africa. This entails placing a high commercial value on rhino through such activities as a controlled legal trade in rhino horn and other products, sport hunting of rhino, and using fee-paying outsiders to participate in dehorning operations ("eco-dehorning").

The components affecting each of these Objectives were listed and considered in terms of priority and of the actions needed both in the short term and medium term. These components are as follows:

1. Manpower and administrative issues:
   - staff numbers
   - staff distribution
   - salaries and conditions of service
   - discipline
   - incentive schemes
2. Equipment:
   - weapons
   - specialised detection equipment
   - radios
   - general field equipment

1. MANPOWER AND ADMINISTRATIVE ISSUES (continued)

OBJECTIVE II: ESTABLISH VIABLE BREEDING NUCLEI OUTSIDE THE PARKS ESTATE

1(f) Support for conservancies: In establishing breeding nuclei outside the Parks and Wild Life Estate, it was not intended to place an additional burden on the law enforcement capabilities of Department staff. Anti-poaching support should be limited to serious cases where conservancies require reinforcement.

SHORT TERM ACTIONS		MEDIUM TERM ACTIONS	
S1.8	Appoint Honorary Officers in conservancies and communal lands to improve law enforcement.	M1.6	Assist in anti-poaching and staff training as and when required.
COSTS: S1.8 - Nil		M1.6	Recurrent . . . Z$100 000

OBJECTIVE III: ESTABLISH CAPTIVE BREEDING CENTRES IN ZIMBABWE

1(g) Permanent staff for Government Captive Breeding Centre: Captive breeding centres have been established at Chipangali Wildlife Orphanage and at Boulton Atlantica. A nucleus of permanent staff is now required to take care of and manage these rhino (see Section 6).

SHORT TERM ACTIONS		MEDIUM TERM ACTIONS	
S1.9	Designate a small permanent staff for the Boulton Atlantica Captive Breeding Centre, including armed guards.	M1.7	Examine ways in which external volunteers and staff of the University Veterinary Faculty can assist in the maintenance of Boulton Atlantica.
COSTS: S1.9 Capital . . . Z$280 000		M1.7	Nil

There is no Zimbabwe manpower requirement related to Objective IV (the ex-situ captive breeding programme).

Objective V (Commercial Aspects of black rhino conservation) has three sub-objectives: sale of rhino horn (dealt with under Section 10 - Budgets), and dehorning hunts and sport hunting (dealt with under Section 6 - Management). The achievement of these objectives requires certain actions to be taken by staff but they do not entail any significant "manpower requirements".

1. MANPOWER AND ADMINISTRATIVE ISSUES (continued)

COSTS: The following schedule presents those capital and recurrent costs which will arise if the programme of short term and medium term actions outlined in this section is adopted. All figures in thousands of Zimbabwe dollars.

	SHORT TERM ACTIONS	
RECOMMENDATION	Capital	Recurrent
S1.1: Honorary Officers	--	--
S1.2: Call-up scheme	50	840
S1.3: Rhino research coordinator	--	50
S1.4: Move staff to IPZs	100	--
S1.5: Increase salaries	--	7,000
S1.6: Disciplinary powers	--	--
S1.7: Design incentive scheme	--	--
S1.8: Honorary Officers	--	--
S1.9: Staff for Boulton Atlantica	280	--
S1: TOTALS	430	7,890

	MEDIUM TERM ACTIONS	
RECOMMENDATION	Capital	Recurrent
M1.1: Increase field staff	28,000	12,000
M1.2: Ecologist posts	600	240
M1.3: New base stations	2,000	--
M1.4: World Bank Study	--	--
M1.5: Incentive scheme	--	1,000
M1.6: Operations outside Parks Estate	--	100
M1.7: Boulton Atlantica - volunteers	--	--
M1: TOTALS	30,600	13,340

Notes on costs appear on the following page

4(d) Analyse mortality: The collection of rhino skulls from animals killed by poachers allows estimates to be made of the age structure of the population and numbers of undetected carcases still remaining in the field.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S4.4 Collect all rhino skulls from carcases in the field, and estimate dates of deaths of animals.	M4.5 Analyse numbers of carcases likely to be undetected.
	M4.6 Analyse population age structure
COSTS S4.4 Nil	M4.5, M4.6 Nil

4(e) Population modelling: Predictive models based on numbers of rhino and levels of illegal hunting are valuable for overall assessment of species survival.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S4.5 Ensure data collection on anti-poaching is in suitable form for predictive modelling.	M4.7 Continue population modelling work on black rhino.
COSTS S4.5 Nil	M4.7 Nil

4(f) Studies on the effects of dehorning: There is a need to monitor the effects of dehorning on both white and black rhino. A PhD study is underway at Hwange National Park examining the effects of the 1991 dehorning operation on white rhino.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S4.6 Initiate study of effects of dehorning on black rhinoceros.	
COSTS S4.6 Capital . . . $100 000	

4. RESEARCH (continued)

OBJECTIVE II: ESTABLISH VIABLE BREEDING NUCLEI OUTSIDE THE PARKS ESTATE

4(g) **Research requirements:** A range of ecological, behavioural and management issues must be researched in order to minimize problems associated with the establishment of viable breeding groups. Such research is closely related to the monitoring activities which are outlined in Section 5.

SHORT TERM ACTIONS		MEDIUM TERM ACTIONS	
S4.7	Investigate rhino carrying capacity in various areas, with particular attention to habitat constraints in the Midlands.	M4.8	Develop more effective monitoring and census techniques for rhino in conservancies (including use of microchip transponders).
S4.8	Investigate the manner in which introduced rhino colonize new ranges and establish social hierarchies; investigate intraspecies fighting during introductions of rhino to areas with resident groups.	M4.9	Investigate the potential economic importance of rhino in game ranching operations as an alternative to conventional livestock production.
COSTS	No special allocations of funds are required since assistance is being provided through the Beit Trust/WWF Conservancy Project.		

OBJECTIVE III: ESTABLISH CAPTIVE BREEDING CENTRES IN ZIMBABWE

4(h) Research programme at Boulton Atlantica: A brief outline of the intended short and medium term research programme is included in Annex 4.2. The Department will collaborate with Veterinary Services Wildlife Unit and the University Veterinary Faculty on this research.

SHORT TERM ACTIONS		MEDIUM TERM ACTIONS	
S4.9	Continue to evaluate and modify all aspects of capture, translocation and captivity.	M4.10	Studies on causes of captive mortality, diet and reproduction
COSTS	S4.9 Recurrent . . . $20 000	M4.10	Recurrent $50 000

4(i) Other Captive breeding centres: It is essential with the establishment of Captive Breeding Centres in Zimbabwe, that each centre produces a detailed Research Plan to be evaluated by the Department, and that their research progress is monitored.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
	M4.11 Obtain research and management plans for other captive breeding centres and monitor progress.
COSTS:	M4.11 Nil

OBJECTIVE IV: EX SITU CAPTIVE BREEDING PROGRAMME

Through its own captive breeding centre, Zimbabwe is a participant in the international black rhino captive breeding programme. The research outlined in Annex 4.2 includes measures to improve breeding performance, measures to reduce stress-induced mortality resulting from capture and translocation, and measures to improve the husbandry of captive animals. Zimbabwe is in unique position to make a significant contribution to the international rhino programme.

OBJECTIVE V: ESTABLISH A COMMERCIAL VALUE FOR BLACK RHINO

4(j) Economic research: With Zimbabwe's intention to trade in rhino horn and other rhino products, there is a need for research related to marketing and the sustainability of long term schemes where rhino are "farmed" for their horn. Research is being carried out in South Africa on the chemical properties of horn from different rhino species with a view to distinguishing between sources of horn to prevent illegal trading and Zimbabwe is contributing to this research programme.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S4.10 Research into optimum marketing strategies for rhino horn and other products.	M4.12 Research into the potential of rhino to pay for their own conservation through dehorning and the implications of this for land use outside the Estate
COSTS S4.10 Capital . . . $100 000 Recurrent . . $ 20 000	M4.12 Capital $150 000

4. RESEARCH (continued)

COSTS: The following schedule presents those capital and recurrent costs which will arise if the programme of short term and medium term actions outlined in this section is adopted. All figures in thousands of Zimbabwe dollars.

	SHORT TERM ACTIONS	
RECOMMENDATION	Capital	Recurrent
S4.1: Rhino status assessment	10	--
S4.2: Designate IPZs	--	--
S4.3: Test microchip implants	--	--
S4.4: Collect all rhino skulls	--	--
S4.5: Population modelling data	--	--
S4.6: Dehorning study	100	--
S4.7: Rhino carrying capacity	--	--
S4.8: Rhino introduction behaviour	--	--
S4.9: Captive Breeding Centre research	--	20
S4.10: Rhino horn marketing strategy	100	20
S4: TOTALS	**210**	**40**

	MEDIUM TERM ACTIONS	
RECOMMENDATION	Capital	Recurrent
M4.1: Design survey system	10	--
M4.2: Special equipment survey	--	--
M4.3: Design IPZs programme	--	--
M4.4: Radio collar development	20	--
M4.5: Analyse undetected carcases	--	--
M4.6: Analyse pop. age structure	--	--
M4.7: Self-ownership scheme	--	--
M4.8: Conservancy monitoring	--	--
M4.9: Economics of rhino	--	--
M4.10: Research at RCBC	--	50
M4.11: Other captive breeding centres	--	--
M4.12: Economic studies	150	--
M4: TOTALS	**180**	**50**

4. RESEARCH (continued)

NOTES ON COSTS

Short term actions

S4.1 Rhino status assessment: A preliminary plan for acquiring this data is presented in Annex 4.1. This requires a small budget for travel, data analysis and report presentation.

CAPITAL EXPENDITURE: Z$10 000

S4.2, S4.3, S4.4, S4.5 No costs

S4.6 Dehorning study: The effects of the extensive black rhino dehorning operation which is about to start require to be carefully monitored. This work would be best accomplished under a 3 year PhD programme which is estimated to cost about Z$ 100 000.

CAPITAL EXPENDITURE: Z$100 000

S4.7, S4.8 No costs

S4.9 Research at Captive Breeding Centre: Almost all the research carried out so far at Boulton Atlantica has been funded from the EEC Grant to the Department's wildlife veterinarian and from contributions from external veterinarians engaged in collaborative work. There is a need for the Department to have a nominal budget to be able to contribute to research costs. The maintenance costs of the RCBC are included in Section 6.

RECURRENT EXPENDITURE: Z$20 000

S4.10 Rhino horn marketing research: With the very high potential value of rhino horn (US$2 million/tonne), a small expenditure on optimum marketing strategies is well justified. If such research is able to improve the returns from rhino horn sales by 5%, this would be worth Z$1.5 million to the Department for its existing stock. A 3 month consultancy costing US$20 000 would amount to no more than 0.3% of the value of existing stock of horn and could produce improved returns worth many times the outlay. An alternative would be to employ a high level international marketing manager to achieve the same result. In the budget below allowance has been made for a one-off initial study (capital expenditure) and ongoing research each year.

CAPITAL EXPENDITURE: Z$100 000
RECURRENT EXPENDITURE: Z$ 20 000

4. RESEARCH (continued)

Medium term actions

M4.1 Permanent monitoring system for rhino: E(T) Towindo is doing this research at present. Field work is completed and he is in the analysis stage. The methods will probably need final checking and modification which should be done on a population of known size, even if it is only approximately known. An IPZ will probably be the most appropriate place for doing this. Funding is required for 1 year for mileage and subsistence for an officer and 2 scouts to carry out this check.

CAPITAL EXPENDITURE: Z$10 000

M4.2 Budget included in M4.2.

M4.3 No costs

M4.4 Radio collar research and development: Funds are required to build and test radio collars for black rhino.

CAPITAL EXPENDITURE: Z$20 000

M4.5, M4.6, M4.7, M4.8, M4.9 No costs

M4.10 Captive Breeding Centre research: As with S4.9, there is a need for the Department to have a budget which will contribute to the existing externally funded research effort at the RCBC.

RECURRENT EXPENDITURE: Z$50 000

M4.11 No costs

M4.12 Economic research: The proposed studies would best be carried out by a post-graduate researcher over a three-year period. Typical costs for such a study should amount to Z$150 000 over three years.

CAPITAL EXPENDITURE: Z$150 000

ANNEX 4.1

ASSESSMENT OF RHINO STATUS

Existing estimates from aerial surveys are not good. There are two ways to get a quick update on the last estimates; data collection by Branch staff in the field through examination of patrol reports and information available on stations and/or some reconnaissance surveys with a Super Cub. Probably a combination of the two will give the best results.

Areas from which data is required

Province	Station	Action by
Mashonaland West	Chewore N & S	Wood
	Mana Pools	"
	Marongora	"
	Matusadona	Murphree
	Communal Lands	Murphree/Wood
Midlands	Chirisa	Coulson
Matabeleland N	Chizarira	Murphree (Tatham)
	Chete	"
	Sijarira	"
	Matetsi	Jones
	Hwange	Jones
	Communal Lands	Murphree
Masvingo	Gonarezhou	Tafangenyasha
Manicaland	Chipinge	"

Costs incurred by visiting stations and carrying out limited air surveys with the Supercub in areas of uncertainty should not be more than $10 000.

ANNEX 4.2

RESEARCH PROGRAMME FOR THE CAPTIVE BREEDING CENTRE AT BOULTON ATLANTICA

The following research programme entails both short and medium term components and is not restricted to the Research and Captive Breeding Centre (RCBC).

Objective 1 (largely short term)

To continue to evaluate and modify all aspects of capture and translocation with the goal of reducing stress related problems and both direct and indirect mortalities. This would involve field research which would be carried over to boma confinement and eventually captivity at the RCBC. Specific areas of research include:

Field

- further refinement of chemical immobilisation methods.
- further evaluation of immediate post-capture management, including the use of long-acting neuroleptics (tranquillisers), sled transport etc.
- evaluation of nutritional status at capture, particularly trace minerals and vitamin E/selenium levels.
- continued collection of baseline biological data.

Boma and RCBC

- follow animals from boma confinement through to the RCBC, with evaluation of nutritional status and baseline biological data.
- body scoring to assist in long term nutritional and health evaluation

Objective 2 (largely medium term, in bomas and at the RCBC)

Carry out research to attempt to determine causes of mortalities associated with long-term confinement and captivity. Of particular importance is the haemolytic anaemia syndrome and the inherent problem with the red blood cells of black rhinos. Studies on the erythrocyte (RBC) metabolism of this species has revealed an enzymatic defect that predisposes the black rhino to oxidant stressors. Collaborative research with Dr Paglia (University of California - Los Angeles) and Dr Miller (St. Louis Zoological Park) from the USA will be carried out at the RCBC.

Objective 3 (largely medium term, in bomas and at the RCBC)

Continued research on the nutritional requirements of the black rhino, with a particular emphasis on the various stages of confinement and translocation. This involves collaboration with Dr Thatcher, a veterinary nutritionist at the Virginia-Maryland Regional College of Veterinary Medicine and Dr Miller.

Objective 3 (largely medium term, in bomas and at the RCBC)

Implement a structured research program on the reproductive physiology of the black rhino, including: blood hormonal levels related to pregnancy and normal oestrus cycle, behavioural research related to oestrus, mating and pregnancy, research of veterinary medical problems related to reproduction. Collaboration with Dr Dresser, Centre for Reproductive Research, Cincinnati Zoo, Ohio, USA will be started.

Finally, there will be a continuing refinement of the design and handling facilities at the RCBC.

5. MONITORING

It is important that the requirements of this section are seen as a joint management/research effort, rather than an isolated responsibility of the Branch of Terrestrial Ecology.

OBJECTIVE I: CONSERVATION OF LARGE WILD POPULATIONS IN THE PARKS ESTATE

5(a) Monitoring of numbers and distribution of rhino: Because of the difficulties in applying standard air survey techniques to black rhino, the only effective monitoring techniques available at present are detailed ground studies in limited areas.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S5.1 Record all data on ages, sexes and locations of captured, dehorned and illegally killed rhino and patrol sightings of rhino and spoor.	M5.1. Using the system developed in Section 4.1.a, place individual researchers in IPZs to monitor rhino numbers.
COSTS S5.1 Nil	M5.1 Capital . . . . $800 000 Recurrent . . $700 000

5(b) Monitoring illegal activity and law enforcement effort: This is essential for evaluating progress and trends in the rhino survival campaign. A suitable monitoring system has been developed by staff in Matabeleland North which could be applied throughout the Estate (Annex 5.1).

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S5.2 Implement a monitoring system for illegal activity and law enforcement effort urgently.	M5.2 Analyse data from S5.2. for adaptive management purposes.
COSTS S5.2 Capital . . . . $30 000 S5.2 Recurrent . . $10 000	M5.2 Nil

5(c) Monitoring the outcome of this Action Plan: An essential aspect of adaptive management is the need to review performance of any given plan.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
	M5.3 Report in December 1992 on progress under this plan.
COSTS	M5.3 No costs

5. MONITORING (continued)

OBJECTIVE II: ESTABLISH VIABLE BREEDING NUCLEI OUTSIDE THE PARKS ESTATE

5(d) **Monitoring requirements:** Rhino moved to conservancies and other areas outside the Parks Estate must be carefully managed (as a metapopulation) to minimize loss of genetic variability through inbreeding and genetic drift and to maintain the maximum rate of reproduction. Adequate management is heavily dependent upon the availability of information on each rhino group.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S5.3 Continue to compile detailed records on all rhino within conservancies, and to monitor rhino on other areas of private land, with particular emphasis on breeding success.	M5.4 Train and involve conservancy staff in rhino monitoring, using cost-effective and sustainable methods to maintain records on all rhino
	M5.5 Implement systems for monitoring illegal activity and law-enforcement effort within conservancies.
COSTS No special allocations of funds are required since assistance is being provided through the Beit Trust/WWF Conservancy Project.	

OBJECTIVE III: ESTABLISH CAPTIVE BREEDING CENTRES IN ZIMBABWE

The monitoring requirements for this objective have been dealt with under the previous section 4. RESEARCH.

OBJECTIVE IV: EX-SITU CAPTIVE BREEDING PROGRAMME

There is a requirement by Zimbabwe to monitor the overall breeding performance achieved under this programme. However, it is not included in this action plan.

OBJECTIVE V: COMMERCIAL VALUE FOR BLACK RHINO

The Department will coordinate with TRAFFIC organisation to monitor the international trade in rhino horn.

5. MONITORING (continued)

COSTS: The following schedule presents those capital and recurrent costs which will arise if the programme of short term and medium term actions outlined in this section is adopted. All figures in thousands of Zimbabwe dollars.

	SHORT TERM ACTIONS	
RECOMMENDATION	Capital	Recurrent
S5.1: Monitoring rhino numbers	--	--
S5.2: Monitoring law enforcement	40	10
S5.3: Monitor conservancies	--	--
S5: TOTALS	**40**	**10**

	MEDIUM TERM ACTIONS	
RECOMMENDATION	Capital	Recurrent
M5.1: Monitoring in IPZs	800	700
M5.2: Special equipment survey	--	--
M5.3: Design IPZs programme	--	--
M5.4: Training conservancy staff	--	--
M5.5: Conservancy illegal activity	--	--
M5: TOTALS	**800**	**700**

Notes on costs appear on the following page

5. MONITORING (continued)

NOTES ON COSTS

Short term actions

S5.1 No costs

S5.2 Monitoring law enforcement and illegal activity: Costs to do this entail printing patrol debriefing forms, data capture, and computers for analysing the data. On the majority of major field stations a computer is already present and the presence or absence of a computer should not be seen as a reason not to collect the data.

a) Printing costs: 10 000 forms @ 0,50 per form $5,000
b) Data capture: No labour charges, but miscellaneous costs $5,000

RECURRENT EXPENDITURE: Z$10 000

c) 3 PC computers @ $10 000 each $30 000
d) 1 Laser Printer @ $10 000 ..... $10 000

CAPITAL EXPENDITURE: Z$40 000

S5.3 Costs being met by Beit Trust/WWF Conservancy Project

Medium term actions

M5.1 Permanent monitoring of rhino in IPZs: A full budget for a team of 8 researchers under an overall coordinator is presented in the Zimbabwe Black Rhino Conservation Strategy.

CAPITAL EXPENDITURE: Z$800 000
RECURRENT EXPENDITURE: Z$700 000

M5.2, M5.3 No costs

M5.4 and M5.5 Costs being met by Beit Trust/WWF Conservancy Project

ANNEX 5.1

STANDARD FORM FOR PATROL REPORTING

PATROL DEBRIEFING	Department of National Parks and Wild Life Management: Form NP23
1. Station:	Patrol Area:
2. Patrol Size:men	Duration: days excluding deployment time
3. Date commenced:	Date ended:
4. Patrol leader:	Rank:
5. Method (please tick): Foot / Vehicle / Other (specify):	
6. Time taken to reach base/patrol area:hours	

7. Total distance and patrol time each day. You may use locstats to indicate start and end points. Indicate patrol routes on a separate map.

Day	From	To	From	To	Total km	Hours
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

STANDARD FORM FOR PATROL REPORTING (continued)

8. Summary of numbers of animals seen					
Species	No.	Species	No.	Species	No.

9. Poachers seen/arrested/spoor detected					
No.	Date	Locstat	Seen/Arrested/Spoor	Armed/Unarmed	External/local

10. Number of armed contacts:	Gunshots heard:

11. Poachers camps located:		
Date	Locstat	Days since last used

STANDARD FORM FOR PATROL REPORTING (continued)

12. Animal carcasses/products recovered:

In the following spaces and for each carcass:

a) Indicate cause of death as Poaching, Natural or Unknown

b) Estimate age of carcass as follows:

1. Fresh - less than one month
2. Recent - died since last rainy season
3. Old - died before last rainy season

c) For elephant and rhino state whether tusks/horns are Present/Absent

Species	Sex	Date	Locstat	Cause	Age	Tusks/horns

13. Any other comments:

Debriefing Officer:

Name: Rank: Date:

6. MANAGEMENT

OBJECTIVE I: CONSERVATION OF LARGE WILD POPULATIONS IN THE PARKS ESTATE

6(a) Dehorning of rhinos in vulnerable areas: With the widespread intensification of illegal hunting, dehorning offers the most rapid solution to the problem. Capture and translocation is expensive, fewer animals can be moved, and it works against the objective of conserving large wild populations *in situ*. Moreover, the sale of horns removed from the rhino can be used sustainably to fund rhino conservation.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S6.1 Initiate an extensive programme of dehorning throughout the Parks and Wild Life Estate.	M6.1 Monitor the effects of dehorning, both on illegal hunting and on rhino reproduction and behaviour.
COSTS S6.1 Recurrent . . . $600 000	M6.1 Capital . . . $150 000

6(b) Capture and translocation: The major operations are discussed more fully in Annex 6.1. and summarised below.

SHORT TERM ACTIONS	MEDIUM TERM ACTIONS
S6.2 Complete the provision of a viable founder population to the *ex situ* captive breeding programme.	M6.2 Following the designation of IPZs, reduce rhino populations outside these zones.
S6.3 Provide the nucleus population for the Government Captive Breeding Centre.	M6.3 Provide viable founder populations to rhino conservancies.
S6.4 Capture one white rhino in Gonarezhou NP and move to CFA.	
S6.5 Address problem of overstocking of white rhino in Kyle NP.	
COSTS S6.2 Capital . . . $130 000 S6.3 - S6.5: included in S6.2	M6.2 Recurrent . . . $250 000 M6.3 No costs to government

9. INVESTIGATIONS AND INTELLIGENCE (continued)

NOTES ON COSTS

Short term actions

S9.1 Funding for Investigations Branch: The estimates given below are preliminary and may require revision:

a)	Vehicles: 4 saloon cars @ $50 000 (external purchase)	$200 000
	3 4x4 vehicles @ $70 000	$210 000
b)	Communication equipment . . . secured from donors	

CAPITAL EXPENDITURE: Z$410 000

c)	Field allowances: 10 men @ 100days/year @ $20/day	$ 20 000
d)	Mileage: 10 vehicles @ 1000km/month x 12 months @ $2/km	$240 000
e)	Informer funds: 100 payouts per year of $1 000	$100 000
f)	Foreign travel: 50 days/year @ Z$1 000/day	$ 50 000
	Airfares: 10 regional trips @ $1 000	$ 10 000

RECURRENT EXPENDITURE: Z$420 000

S9.2 and S9.3 No costs

Medium term actions

M9.1 Investigation Assistant Establishment: A submission has been made to the Management Services Division of the Public Service for Investigation Assistants to provide the necessary field intelligence to back up anti-poaching efforts. A budget to support an establishment of 20 investigations assistants is given below:

a)	Salaries: 20 @ $5.000	$100 000
b)	Operating expenses @ 33% of total salary bill	$ 33 000

RECURRENT EXPENDITURE: Z$133 000

10. BUDGETS

In this section we present the following:

1. A table of short and medium term capital costs associated with the Action plan.

2. A table of short and medium term recurrent costs associated with the Action plan.

It is to be noted that the costs presented are over and above the existing Government budgets provided to the Department.

3. An assessment of the potential income from Objective V - that is, achieving a legal commercial value for black rhino.

4. A reconciliation of income and costs.

5. Conclusions on an appropriate course of action.

All figures in thousands of Zimbabwe dollars

10. BUDGETS (continued)

The following table presents those **CAPITAL COSTS** which will arise if the programme of short term and medium term actions outlined in this plan are adopted. Capital costs are those for which funding requires to be found: where donors have already provided support, this is indicated by a code letter with a key to donors below.

	OBJECTIVES														TOTALS		
	1. LARGE WILD POPULATIONS		2. BREEDING NUCLEI		3. IN-SITU CAPTIVE BREEDING		4. EX-SITU CAPTIVE BREEDING		5. COMMERCIAL								
									Horn Sales		Eco-dehorning		Sport hunting				
PLANNING	S	M	S	M	S	M	S	M	S	M	S	M	S	M	SHORT TERM	MEDIUM TERM	GRAND TOTAL
COMPONENTS															430	30,600	31,030
MANPOWER	150	30,600	(a)	(a)	280	-	(b)	(b)	-	-	-	-	-	-	1,210	1,220	2,430
EQUIPMENT	1,210	1,220	(a)	(a)	-	-	(b)	(b)	-	-	-	-	-	-	1,530	9,675	11,205
TRANSPORT	1,530	9,675	(a)	(a)	-	-	(b)	(b)	-	-	-	-	-	-	210	180	390
RESEARCH	110	30	(a)	(a)	-	-	(b)	(b)	100	150	-	-	-	-	40	800	840
MONITORING	40	800	(a)	(a)	-	-	(b)	(b)	-	-	-	-	-	-	430	150	580
MANAGEMENT	130	150	(a)	(a)	200	-	(b)	(b)	-	-	-	-	100	-	1,000	0	1,000
PUBLIC RELATIONS	1,000	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	0	0	0
OTHER AGENCIES			-	-	-	-	-	-	-	-	-	-	-	-	410	0	410
INVESTIGATIONS	410		-	-	-	-	-	-	-	-	-	-	-	-	5,260	42,625	47,885
TOTALS	4,580	42,475	0	0	480	0	0	0	100	150	0	0	100	0			

KEY: (a) Funding provided jointly by Beit Trust, WWF and the private sector
(b) Funded by the International Black Rhino Foundation
(c) Costs not specifically allocated to the cell indicated but may have application in other cells

10. BUDGETS (Continued)

All figures in thousands of Zimbabwe dollars

The following table presents those **RECURRENT COSTS** which will arise if the programme of short term and medium term actions outlined in this plan are adopted. Costs are those for which funding requires to be found: where donors have already provided support, this is indicated by a code letter with a key to donors below.

PLANNING	OBJECTIVES														TOTALS		
	1. LARGE WILD POPULATIONS		2. BREEDING NUCLEI		3. IN-SITU CAPTIVE BREEDING		4. EX-SITU CAPTIVE BREEDING		5. COMMERCIAL								
									Horn Sales		Eco-dehorning		Sport hunting				
COMPONENTS	S	M	S	M	S	M	S	M	S	M	S	M	S	M	SHORT TERM	MEDIUM TERM	GRAND TOTAL
MANPOWER	7,890	13,240	(a)	100	-	-	(b)	(b)	-	-	-	-	-	-	7,890	13,340	21,230
EQUIPMENT	100	1,250	(a)	(a)	-	-	(b)	(b)	-	-	-	-	-	-	100	1,250	1,350
TRANSPORT	1,500	60	(a)	(a)	-	-	(b)	(b)	-	-	-	-	-	-	1,500	60	1,560
RESEARCH	-	-	(a)	(a)	20	50	(b)	(b)	20	-	-	-	-	-	40	50	90
MONITORING	10	700	(a)	(a)	-	-	(b)	(b)	-	-	-	-	-	-	10	700	710
MANAGEMENT	600	250	(a)	(a)	-	180	(b)	(b)	-	-	-	-	-	-	600	430	1,030
PUBLIC RELATIONS	-	1,000	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	0	1,000	1,000
OTHER AGENCIES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
INVESTIGATIONS	-	420	-	-	-	-	-	-	-	-	-	-	-	-	0	420	420
TOTALS	10,100	16,920	0	100	20	230	0	0	20	0	0	0	0	0	10,140	17,250	27,390

KEY: (a) Funding provided jointly by Beit Trust, WWF and the private sector
(b) Funded by the International Black Rhino Foundation
(c) Costs not specifically allocated to the cell indicated but may have application in other cells

10. BUDGETS (Continued)

POTENTIAL INCOME FROM BLACK RHINO

OBJECTIVE V: ESTABLISH A COMMERCIAL VALUE FOR BLACK RHINO

The potentially high commercial value of rhino products and certain activities centred on rhino is seen as one way in which a significant proportion of the funds required for effective long term conservation of black (and white) rhino can be secured. Moreover, by following this course, Zimbabwe avoids reliance on conditional external funding and becomes self-sufficient to a higher degree than would otherwise be possible.

Objective Va: SALE OF RHINO HORN AND OTHER PRODUCTS

Zimbabwe stated to the Parties of CITES that it would place the requirements for the survival of its black rhino population above any constraints which the Convention sought to impose. However, the inception of trade will not be simple. Potential markets exist in Taiwan, China, Korea, Thailand and certain other Asian countries - some of which are Parties to CITES. Even those countries which are not Parties to CITES are sensitive to world opinion on the subject and, while sanctioning an internal trade in their countries, their governments are reluctant to be seen to be overtly importing rhino horn.

The TRAFFIC organisation has provided valuable information on the present rhino horn trade in Asia, and the Southern African countries have taken note of possible approaches which might be used to reduce illegal trade through a controlled legal trade in horn.

Zimbabwe, Namibia and South Africa together hold about 90% of Africa's black rhino populations, and Namibia and South Africa are equally interested in initiating an orderly trade in rhino products, believing that it is in the best interests of the species.

In the table of short term and medium term actions which follows, no costs have been included as it is assumed they will be met from existing government budgets

SHORT TERM ACTIONS		MEDIUM TERM ACTIONS	
S10.1	Meet with government officials from Namibia and South Africa to agree on a plan of action to initiate trade.	M10.1	Having prepared a plan to trade, initiate a high level contact through the Ministry of Foreign Affairs with the target countries.
S10.2	Establish a fund to accept all returns from sale of rhino products under the control of the Director of National Parks and which will be used directly for rhino conservation.	M10.2	Establish a trading treaty involving three producer countries and a limited number of consuming countries which is legal under Article XIV of CITES.
S10.3	With the assistance of TRAFFIC, invite a delegation of the main rhino horn users in Asia to visit southern Africa for discussions.	M10.3	Initiate trade in existing stocks of rhino horn and other products in a manner which will ensure sustainability of supply.
S10.4	Instruct field staff to recover all products from illegally killed rhino (skin, hair etc.) wherever possible	M10.4	Ensure a direct return of profits to support rhino conservation.
S10.5	Enhance security to protect existing rhino horn stocks.		

ESTIMATION OF POTENTIAL INCOME

1. The Department is presently holding stocks of about 3 tonnes of horn and to this can be added the expected yield from the dehorning of black rhino during 1992 which may add up to a further 1 tonne. Valued at US$2,000/kg this is worth about Z$40 million and can be treated as "capital". Subsequent dehorning of rhino will not produce the same amount.

2. The Department plans to continue dehorning rhino and, if it is assumed that 1000 rhino will each produce 1kg of horn annually (allowing for the fact it will not be possible to dehorn every rhino every year), then an annual income of Z$10 million can be expected from this source. This can be treated as "recurrent" income. It may be overestimated.

3. The potential income from "eco-dehorning" and sport hunting was calculated in sections S6.13-15 and M6.10-12 and was estimated at Z$1 million and Z$2 million respectively. It should be noted that these estimates were crude and did not assume full exploitation of the potential for these activities.

FINAL BUDGET

		CAPITAL	RECURRENT
SHORT TERM (next 6 months)	COSTS	5,260,000	10,140,000
	INCOME	---	1,000,000
	BALANCE	-5,260,000	-9,140,000
MEDIUM TERM (6-24 months)	COSTS	42,625,000	17,250,000
	INCOME	40,000,000	12,000,000
	BALANCE	-2,625,000	-5,250,000
COMBINED (next 2 years)	BALANCE	-7,885,000	-14,390,000

DISCUSSION AND CONCLUSIONS

1. It is apparent that in both the short and the medium term the available funds do not meet the shortfall in the budget needed for effective rhino conservation - although they go a long way towards it. The realisation of $40 million's worth of capital from rhino horn can meet over 80% of the Department's immediate capital costs.

2. Examining the estimated costs more closely, by far the largest amount lies in Section 1 (MANPOWER) and, of the various desirable actions listed, the greatest cost lies in the proposed increased in Manpower (M1.1). To increase staff numbers to the required level to contain rhino poaching effectively over the entire Parks and Wild Life Estate would require annual salaries of about $12 million and housing to the value of $28 million.

BUDGET ASSUMING NO MANPOWER INCREASE

		CAPITAL	RECURRENT
SHORT TERM (next 6 months)	COSTS	5,260,000	10,140,000
	INCOME	---	1,000,000
	BALANCE	-5,260,000	-9,140,000
MEDIUM TERM (6-24 months)	COSTS	14,625,000	5,250,000
	INCOME	40,000,000	12,000,000
	BALANCE	25,375,000	6,750,000
COMBINED (next 2 years)	BALANCE	20,115,000	-2,390,000

3. If it is assumed that no staff increases will be possible, the budget may fall within the income possible from rhino horn. The overall balance changes to a credit of $20 million under "capital" and a deficit of $2 million under "recurrent" expenditure. The interest on the $20 million capital would finance the deficit on recurrent expenditure.

4. It is very clear that:

a) the sums of money needed to conserve rhino successfully are large and, if an increase in manpower is included, the budget is unlikely to come from government or donors;

b) Even excluding an increase in manpower, only the sale of rhino horn (and ivory) is likely to meet the required budgets;

c) Given that there will not be an increase in manpower, then the only possible way forward is to implement those parts of the management plan which offer some prospect of preserving the species:

i) Implementing a call-up system;

ii) Focussing manpower on designated zones;

iii) Dehorning rhino;

iv) Implementing an incentive scheme;

v) Appointing a significant number of Honorary Officers;

vi) Examining joint operations with rural communities.

ANNEX 6.1

PROGRAMME OF CAPTURE AND TRANSLOCATION IN THE PARKS AND WILD LIFE ESTATE IN 1992

1. Twenty rhino will be captured in Chete Safari Area in June 1992 (assuming that recent poaching in the area has not reduced the population below this number).

2. These will initially be held in bomas in Chete until they are ready for translocation.

3. Of the 3 rhino already in the CBC and the animals from Chete, the most suitable 10 will be selected for shipment to Australia in August.

4. 6 will be selected to form the permanent nucleus for the Zimbabwe captive breeding programme in the CBC.

5. The balance will be relocated to Bubiana Conservancy to help form a viable founder population in the West Nicholson area.

ANNEX 6.2

PROGRAMME OF CAPTURE AND TRANSLOCATION OUTSIDE THE PARKS AND WILD LIFE ESTATE IN 1992

1. OPERATIONS WHICH ARE DEFINITELY REQUIRED

1.1 **Marula** Three black rhinos on Stokestown Ranch are wasted for breeding purposes and will be relocated to the Bubiana Conservancy.

1.2 **West Nicholson** Seven black rhino which were translocated to Chipizi Ranch in 1988 are straying widely owing to inadequate fencing and do not constitute a viable breeding group: these rhino will be relocated to the nearby Bubiana Conservancy.

1.3 **Midlands** The movement of black rhino in the Midlands area is constrained by excessive electrified fencing and some have become compressed into a restricted area, where deaths due to malnutrition have already occurred. Up to five rhino will be moved from this area (Mazuri Ranch) and relocated to the Bubiana Conservancy. An additional rhino is straying onto a resettlement scheme (Mundamrefu) and will be included in this capture operation.

2. OPERATIONS WHICH ARE PROBABLY REQUIRED

Depending upon the outcome of negotiations to establish proposed conservancies in the Midlands and Lonely Mine areas, the following operations are likely to be necessary.

2.1 **Midlands** A number of rhino have strayed onto properties along the Munyati River; some of these properties may be included in the proposed conservancy and rhino might therefore be left in these areas, while some other rhino are outside the proposed conservancy and should either be moved to the Bubiana Conservancy or moved into the Midlands Conservancy if this is established within the next 2-4 months. Since the number of rhino on Iwaba Ranch has probably reached carrying capacity, relocation of some of these rhino may also be necessary.

2.2 **Lonely Mine** Most of the rhino released on Gourlays Block have strayed to other areas and 5 - 7 must be recaptured and placed within a reasonably-sized conservancy that may be established around Gourlays Block, or these rhino should be moved to the Bubiana Conservancy if the Lonely Mine Conservancy does not eventuate.

2.3 **Small parks** Subadult rhino on small properties (Imire Game Park - 7 rhino; Mhondoro Game Park - 2 rhino; Pamuzinda Park - 2 rhino) may have to be translocated to larger areas if management problems arise.

3. NOTES

3.1 The condition of browse in the Bubiana Conservancy (1300 km²) is relatively good and water supplies are plentiful, despite the prevailing drought, so this area is suitable for the introduction of additional rhino during 1992. Depending upon progress in providing more drinking water for wildlife in the Save Valley Conservancy (3000 km²) and on the completion of a dehorning programme in this area, more rhino should be moved to the Save Valley in due course.

3.2 These immediate management operations will be time-consuming since they involve the capture of scattered rhinos, and do not justify the expense of a helicopter or the diversion of Department Management Units from other priorities. The "clean-up" requirements can be attended to by the Ecologist (Rhino Conservancies) working in conjunction with the Wildlife Veterinarian and using equipment and funds provided by the National Parks/WWF Rhino Conservancy Project.

7. PUBLIC RELATIONS AND AWARENESS CAMPAIGNS

The following public relations issues relate simultaneously to all the Objectives (1-5). All of the actions needed are "SHORT TERM ACTIONS" and so no "medium term" boxes are included. Because of the difficulty of estimating budgets for public relations, a single lump sum figure has been estimated for the entire set of activities listed below.

7(a) Crisis for black rhino survival: The situation for black rhino is now so serious that it must become a national and international priority. The campaign must focus on the failure of conventional protectionist methods of conservation and pave the way for a commercial approach.

SHORT TERM ACTIONS	
S7.1	Ensure that black rhino survival is given maximum exposure in all media.

7(b) Dehorning of rhinos: Ensure local and international press coverage prior to and during dehorning operations with dual objective of winning public support and discouraging poachers. Media coverage should stress value of horn and its use to fund rhino conservation and should neutralise any negative feelings towards "eco-dehorning".

S7.2	Initiate a public relations campaign for dehorning.

7(c) Sale of rhino horn: Since this has the potential to breach CITES, careful local and international media campaigns are needed. The development of a legal international treaty for this purpose which supercedes CITES should be emphasized.

S7.3	Initiate a PR campaign justifying sale of rhino horn.

7(d) Sport hunting: The most important aspect of public relations here is to obtain the support of the Zimbabwean public for the activity.

S7.4	Initiate a media campaign promoting sport hunting of rhino in 1993.

7. PUBLIC RELATIONS AND AWARENESS CAMPAIGNS (continued)

7(e) Minister's briefings: There is a need for regular briefing of the Minister on all aspects of the rhino survival campaign.

S7.5	Ensure that all Sitreps are passed directly to Minister on Monday mornings.

7(f) Relations with NGOs: Zimbabwe is fortunate in having NGOs which are highly supportive of Government's conservation efforts. There is a need to foster this support and invite NGOs participation in rhino conservation matters.

S7.6	Director to establish a working rhino conservation committee with NGO participation.

7(g) Access to media: The present restrictions on Department staff talking to the press are, on balance, acting negatively towards the Department's conservation image.

S7.7	Senior staff of the Department should have ready access to the press.

7(h) Local communities: There is a need to develop better relations with rural communities neighbouring rhino refuges and, if possible provide these communities with economic incentives for rhino conservation.

S7.8	Identify areas in which projects to develop community support for rhino conservation can be implemented and implement suitable projects.

7. PUBLIC RELATIONS AND AWARENESS CAMPAIGNS (continued)

COSTS: Lacking the expertise to asses the nature and extent of the various publicity campaigns which would achieve the objectives outlined in this section, we have approached the matter from a different aspect.

The capital value of a rhino population of 1,000 animals can be conservatively estimated by assuming a value per animal of Z$500 000. This is the value rhino would achieve if they were sold live on an auction. i.e. Z$0,5 billion.

The annual "productivity" of the rhino population can be estimated in a number of ways. Assuming a sustainable offtake of 2% of the population were available to the sport hunting market this would give approximately 20 animals at a value of Z$500 000 each i.e. Z$10 million. If the animals were being dehorned annually and each produced on average 1kg of horn per year, this would produce a sustainable yield of Z$10 million per annum. If 1% of the population were offered on the live sales market this would produce a further Z$10 million. And if it assumed that the presence of rhino in Zimbabwe is able to influence the tourism market (current value Z$650 million) upwards by 2% then a further income of Z$13 million can be added. Combining these gives a total earning capability of about Z$43 million per annum (as a return on Z$0,5 billion it is equivalent to about 9%).

This raises the question of what it is worth spending on public relations. An expenditure of $1million per year would amount to 0.2% of the capital investment we are seeking to protect or about 2% of the annual income realisable from that investment. The Department has had some hard lessons recently on the power of effective public relations campaigns which have been used against it in the international arena. It would appear totally justifiable to invest no less than Z$1 million on public relations related to the identified issues, both as a short term capital budget and as an annual recurrent expenditure in subsequent years.

S7: PUBLIC RELATIONS BUDGET . . . . . Z$1 Million

8. RELATIONS WITH OTHER LAW ENFORCEMENT AND MILITARY AGENCIES

This actions outlined here are needed in the short term and the subject matter applies simultaneously to all the Objectives (I-V).

8(a) Relationship with police, CIO, army, airforce: The Department feels strongly that the role it carries out in protecting the borders of Zimbabwe against armed incursions is not shared equally with other agencies. The Department has an enviable record in dealing with incursions - perhaps better than any other law enforcement agency - but achieves very little support or recognition for this effort.

SHORT TERM ACTIONS	
S8.1	Request Minister to make a high level approach to appropriate Ministers controlling other agencies seeking a unified national effort on the rhino issue.

8(b) Relations with neighbouring countries' security forces: The cooperation and intensified effort of law enforcement agencies in adjacent countries is vital in achieving long term solutions to the rhino problem.

S8.2	Seek to improve relations with neighbouring countries through diplomatic channels.
S8.3	Host a regional law enforcement conference to address matters such as "hot pursuit", information sharing and generally to improve working relations in the region.

8(c) Control of firearms: A major problem is developing with the large number of registered (and unregistered) firearms in rural areas ostensibly required for crop control. Most of these weapons are .303s.

S8.4	Approach police and Ministry of Local Government with a view to tighter control of weapons in rural areas - particularly with regard to ammunition purchase.

None of the above measures entail any significant costs to the Government of Zimbabwe. The law enforcement conference (S8.3) already has a sponsor.

S8: COSTS - Nil

9. INVESTIGATIONS AND INTELLIGENCE

The following matters relate primarily to Objectives 1 and 2.

9(a) Local, Regional and International trafficking in rhino horn: Investigations work in this area is seen as a vital part of a coordinated effort to achieve success in the rhino campaign.

SHORT TERM ACTIONS	
S9.1	Seek improved budgets for investigations including provisions for vehicles, communications, payment of informers and foreign travel.
COSTS S9.1 Recurrent . . $420 000	Capital . . . $410 000

9(b) Intelligence work relating to incursions: Advance information relating to incursions into the Parks and Wild Life Estate gives considerable advantage to anti-poaching forces. Unfortunately, the Department is weak in this aspect and requires a greater emphasis on Intelligence personnel in the field and close liaison with the Officer in Charge of Operations.

MEDIUM TERM ACTIONS	
M9.1	Seek posts for Intelligence staff (Investigations Assistants) whose primary duties lie in field operations.
COSTS M9.1 Recurrent expenditure $133 000	

9(c) Briefings and Statistics: It is a general perception in the Department that the outcomes of investigations operations are not adequately disseminated amongst staff who should know about such matters. Equally, Investigations Branch feel they are not keep fully informed of illegal hunting incidents in a timeous manner.

SHORT TERM ACTIONS	
S9.2	Introduce a system of briefings on investigations cases.
S9.3	Ensure all illegal hunting incidents are reported immediately to Investigations Branch.
COSTS S9.2 and S9.3 - Nil	

9. INVESTIGATIONS AND INTELLIGENCE (continued)

COSTS: The following schedule presents those capital and recurrent costs which will arise if the programme of short term and medium term actions outlined in this section is adopted. All figures in thousands of Zimbabwe dollars.

	SHORT TERM ACTIONS	
RECOMMENDATION	Capital	Recurrent
S9.1: Investigations operating costs	410	420
S9.2: Investigations briefings	--	--
S9.3: Liaison with Investigations	--	--
S9: TOTALS	410	420

	MEDIUM TERM ACTIONS	
RECOMMENDATION	Capital	Recurrent
M9.1: Investigations assistants	--	133
M9: TOTALS	0	133

Notes on costs appear on the following page

9. INVESTIGATIONS AND INTELLIGENCE (continued)

NOTES ON COSTS

Short term actions

S9.1 Funding for Investigations Branch: The estimates given below are preliminary and may require revision:

a)	Vehicles: 4 saloon cars @ $50 000 (external purchase)	$200 000
	3 4x4 vehicles @ $70 000	$210 000
b)	Communication equipment ... secured from donors	

CAPITAL EXPENDITURE: Z$410 000

c)	Field allowances: 10 men @ 100days/year @ $20/day	$ 20 000
d)	Mileage: 10 vehicles @ 1000km/month x 12 months @ $2/km	$240 000
e)	Informer funds: 100 payouts per year of $1 000	$100 000
f)	Foreign travel: 50 days/year @ Z$1 000/day	$ 50 000
	Airfares: 10 regional trips @ $1 000	$ 10 000

RECURRENT EXPENDITURE: Z$420 000

S9.2 and S9.3 No costs

Medium term actions

M9.1 Investigation Assistant Establishment: A submission has been made to the Management Services Division of the Public Service for Investigation Assistants to provide the necessary field intelligence to back up anti-poaching efforts. A budget to support an establishment of 20 investigations assistants is given below:

a)	Salaries: 20 @ $5.000	$100 000
b)	Operating expenses @ 33% of total salary bill	$ 33 000

RECURRENT EXPENDITURE: Z$133 000

10. BUDGETS

In this section we present the following:

1. A table of short and medium term capital costs associated with the Action plan.

2. A table of short and medium term recurrent costs associated with the Action plan.

It is to be noted that the costs presented are over and above the existing Government budgets provided to the Department.

3. An assessment of the potential income from Objective V - that is, achieving a legal commercial value for black rhino.

4. A reconciliation of income and costs.

5. Conclusions on an appropriate course of action.

10. BUDGETS (continued)

All figures in thousands of Zimbabwe dollars

The following table presents those **CAPITAL COSTS** which will arise if the programme of short term and medium term actions outlined in this plan are adopted. Capital costs are those for which funding requires to be found: where donors have already provided support, this is indicated by a code letter with a key to donors below.

	OBJECTIVES														TOTALS		
	1. LARGE WILD POPULATIONS		2. BREEDING NUCLEI		3. IN-SITU CAPTIVE BREEDING		4. EX-SITU CAPTIVE BREEDING		5. COMMERCIAL								
									Horn Sales		Eco-dehorning		Sport hunting				
PLANNING	S	M	S	M	S	M	S	M	S	M	S	M	S	M	SHORT TERM	MEDIUM TERM	GRAND TOTAL
COMPONENTS																	
MANPOWER	150	30,600	(a)	(a)	280	-	(b)	(b)	-	-	-	-	-	-	430	30,600	31,030
EQUIPMENT	1,210	1,220	(a)	(a)	-	-	(b)	(b)	-	-	-	-	-	-	1,210	1,220	2,430
TRANSPORT	1,530	9,675	(a)	(a)	-	-	(b)	(b)	-	-	-	-	-	-	1,530	9,675	11,205
RESEARCH	110	30	(a)	(a)	-	-	(b)	(b)	100	150	-	-	-	-	210	180	390
MONITORING	40	800	(a)	(a)	-	-	(b)	(b)	-	-	-	-	-	-	40	800	840
MANAGEMENT	130	150	(a)	(a)	200	-	(b)	(b)	-	-	-	-	100	-	430	150	580
PUBLIC RELATIONS	1,000	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	1,000	0	1,000
OTHER AGENCIES			-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
INVESTIGATIONS	410		-	-	-	-	-	-	-	-	-	-	-	-	410	0	410
TOTALS	4,580	42,475	0	0	480	0	0	0	100	150	0	0	100	0	5,260	42,625	47,885

KEY: (a) Funding provided jointly by Beit Trust, WWF and the private sector
(b) Funded by the International Black Rhino Foundation
(c) Costs not specifically allocated to the cell indicated but may have application in other cells

10. BUDGETS (Continued)

All figures in thousands of Zimbabwe dollars

The following table presents those **RECURRENT COSTS** which will arise if the programme of short term and medium term actions outlined in this plan are adopted. Costs are those for which funding requires to be found: where donors have already provided support, this is indicated by a code letter with a key to donors below.

	OBJECTIVES																
	1. LARGE WILD POPULATIONS		2. BREEDING NUCLEI		3. IN-SITU CAPTIVE BREEDING		4. EX-SITU CAPTIVE BREEDING		5. COMMERCIAL						TOTALS		
									Horn Sales		Eco-dehorning		Sport hunting				
PLANNING	S	M	S	M	S	M	S	M	S	M	S	M	S	M	SHORT TERM	MEDIUM TERM	GRAND TOTAL
COMPONENTS																	
MANPOWER	7,890	13,240	(a)	100	-	-	(b)	(b)	-	-	-	-	-	-	7,890	13,340	21,230
EQUIPMENT	100	1,250	(a)	(a)	-	-	(b)	(b)	-	-	-	-	-	-	100	1,250	1,350
TRANSPORT	1,500	60	(a)	(a)	-	-	(b)	(b)	-	-	-	-	-	-	1,500	60	1,560
RESEARCH	-	-	(a)	(a)	20	50	(b)	(b)	20	-	-	-	-	-	40	50	90
MONITORING	10	700	(a)	(a)	-	-	(b)	(b)	-	-	-	-	-	-	10	700	710
MANAGEMENT	600	250	(a)	(a)	-	180	(b)	(b)	-	-	-	-	-	-	600	430	1,030
PUBLIC RELATIONS	-	1,000	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	0	1,000	1,000
OTHER AGENCIES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
INVESTIGATIONS	-	420	-	-	-	-	-	-	-	-	-	-	-	-	0	420	420
TOTALS	10,100	16,920	0	100	20	230	0	0	20	0	0	0	0	0	10,140	17,250	27,390

KEY: (a) Funding provided jointly by Beit Trust, WWF and the private sector
(b) Funded by the International Black Rhino Foundation
(c) Costs not specifically allocated to the cell indicated but may have application in other cells

10. BUDGETS (Continued)

POTENTIAL INCOME FROM BLACK RHINO

OBJECTIVE V: ESTABLISH A COMMERCIAL VALUE FOR BLACK RHINO

The potentially high commercial value of rhino products and certain activities centred on rhino is seen as one way in which a significant proportion of the funds required for effective long term conservation of black (and white) rhino can be secured. Moreover, by following this course, Zimbabwe avoids reliance on conditional external funding and becomes self-sufficient to a higher degree than would otherwise be possible.

Objective Va: SALE OF RHINO HORN AND OTHER PRODUCTS

Zimbabwe stated to the Parties of CITES that it would place the requirements for the survival of its black rhino population above any constraints which the Convention sought to impose. However, the inception of trade will not be simple. Potential markets exist in Taiwan, China, Korea, Thailand and certain other Asian countries - some of which are Parties to CITES. Even those countries which are not Parties to CITES are sensitive to world opinion on the subject and, while sanctioning an internal trade in their countries, their governments are reluctant to be seen to be overtly importing rhino horn.

The TRAFFIC organisation has provided valuable information on the present rhino horn trade in Asia, and the Southern African countries have taken note of possible approaches which might be used to reduce illegal trade through a controlled legal trade in horn.

Zimbabwe, Namibia and South Africa together hold about 90% of Africa's black rhino populations, and Namibia and South Africa are equally interested in initiating an orderly trade in rhino products, believing that it is in the best interests of the species.

In the table of short term and medium term actions which follows, no costs have been included as it is assumed they will be met from existing government budgets.

SHORT TERM ACTIONS		MEDIUM TERM ACTIONS	
S10.1	Meet with government officials from Namibia and South Africa to agree on a plan of action to initiate trade.	M10.1	Having prepared a plan to trade, initiate a high level contact through the Ministry of Foreign Affairs with the target countries.
S10.2	Establish a fund to accept all returns from sale of rhino products under the control of the Director of National Parks and which will be used directly for rhino conservation.	M10.2	Establish a trading treaty involving three producer countries and a limited number of consuming countries which is legal under Article XIV of CITES.
S10.3	With the assistance of TRAFFIC, invite a delegation of the main rhino horn users in Asia to visit southern Africa for discussions.	M10.3	Initiate trade in existing stocks of rhino horn and other products in a manner which will ensure sustainability of supply.
S10.4	Instruct field staff to recover all products from illegally killed rhino (skin, hair etc.) wherever possible	M10.4	Ensure a direct return of profits to support rhino conservation.
S10.5	Enhance security to protect existing rhino horn stocks.		

ESTIMATION OF POTENTIAL INCOME

1. The Department is presently holding stocks of about 3 tonnes of horn and to this can be added the expected yield from the dehorning of black rhino during 1992 which may add up to a further 1 tonne. Valued at US$2,000/kg this is worth about Z$40 million and can be treated as "capital". Subsequent dehorning of rhino will not produce the same amount.

2. The Department plans to continue dehorning rhino and, if it is assumed that 1000 rhino will each produce 1kg of horn annually (allowing for the fact it will not be possible to dehorn every rhino every year), then an annual income of Z$10 million can be expected from this source. This can be treated as "recurrent" income. It may be overestimated.

3. The potential income from "eco-dehorning" and sport hunting was calculated in sections S6.13-15 and M6.10-12 and was estimated at Z$1 million and Z$2 million respectively. It should be noted that these estimates were crude and did not assume full exploitation of the potential for these activities.

FINAL BUDGET

		CAPITAL	RECURRENT
SHORT TERM (next 6 months)	COSTS	5,260,000	10,140,000
	INCOME	---	1,000,000
	BALANCE	-5,260,000	-9,140,000
MEDIUM TERM (6-24 months)	COSTS	42,625,000	17,250,000
	INCOME	40,000,000	12,000,000
	BALANCE	-2,625,000	-5,250,000
COMBINED (next 2 years)	BALANCE	-7,885,000	-14,390,000

DISCUSSION AND CONCLUSIONS

1. It is apparent that in both the short and the medium term the available funds do not meet the shortfall in the budget needed for effective rhino conservation - although they go a long way towards it. The realisation of $40 million's worth of capital from rhino horn can meet over 80% of the Department's immediate capital costs.

2. Examining the estimated costs more closely, by far the largest amount lies in Section 1 (MANPOWER) and, of the various desirable actions listed, the greatest cost lies in the proposed increased in Manpower (M1.1). To increase staff numbers to the required level to contain rhino poaching effectively over the entire Parks and Wild Life Estate would require annual salaries of about $12 million and housing to the value of $28 million.

BUDGET ASSUMING NO MANPOWER INCREASE

		CAPITAL	RECURRENT
SHORT TERM (next 6 months)	COSTS	5,260,000	10,140,000
	INCOME	---	1,000,000
	BALANCE	-5,260,000	-9,140,000
MEDIUM TERM (6-24 months)	COSTS	14,625,000	5,250,000
	INCOME	40,000,000	12,000,000
	BALANCE	25,375,000	6,750,000
COMBINED (next 2 years)	BALANCE	20,115,000	-2,390,000

3. If it is assumed that no staff increases will be possible, the budget may fall within the income possible from rhino horn. The overall balance changes to a credit of $20 million under "capital" and a deficit of $2 million under "recurrent" expenditure. The interest on the $20 million capital would finance the deficit on recurrent expenditure.

4. It is very clear that:

a) the sums of money needed to conserve rhino successfully are large and, if an increase in manpower is included, the budget is unlikely to come from government or donors;

b) Even excluding an increase in manpower, only the sale of rhino horn (and ivory) is likely to meet the required budgets;

c) Given that there will not be an increase in manpower, then the only possible way forward is to implement those parts of the management plan which offer some prospect of preserving the species:

i) Implementing a call-up system;

ii) Focussing manpower on designated zones;

iii) Dehorning rhino;

iv) Implementing an incentive scheme;

v) Appointing a significant number of Honorary Officers;

vi) Examining joint operations with rural communities.

APPENDIX 1

EXPECTED STATUS OF THE ZIMBABWE RHINO POPULATION AFTER NINE YEARS OF ILLEGAL HUNTING

Methodology, Notes and Assumptions

1. The rhino population has been modelled below by assuming 4 different starting populations in 1984, allowing the population to increase at a specified rate during the year, and deducting the numbers of rhinos killed at the end of the year. The model has then been used to predict the numbers of remaining rhino in future years on the assumption that the kill rate will continue at the average rate for 1992.

2. The starting populations chosen were 1,500, 2000, 2500 and 3000.

3. The rate of growth has been set at 4% per annum from 1984-1989 and reduced in 1990 and 1991 on the assumption that the lower density of rhino will have had negative implications for breeding success.

4. The numbers killed in each year have been assessed as follows:

   a) All rhino deaths reported from the field have been increased by 10% to allow for some carcases not found.

   b) It is assumed that an additional 10% of the carcases from rhino killed in 1990 have yet to be found.

   c) It is assumed that an additional 25% of the carcases from rhino killed in 1991 have yet to be found.

   d) It is assumed that the number of rhino reported killed at the end of 1992 will be three times the number reported killed in the first 4 months of the year. This number has been increased by 33% to allow for the fact that the full number of carcases from animals killed in 1992 will not be discovered until about 1994.

   e) Finally, all numbers have been rounded to the nearest 10 animals.

5. The analysis has been carried out on a national scale and no allowance has been made for possible variation between different areas.

Status of rhino populations 1984-2000 assuming different values for the population in 1984.

YEAR	NUMBER KILLED	GROWTH RATE %	POPULATION	POPULATION	POPULATION	POPULATION
1984	20	4.0	1,500	2,000	2,500	3,000
1985	120	4.0	1,540	2,060	2,580	3,100
1986	170	4.0	1,482	2,022	2,563	3,104
1987	200	4.0	1,371	1,933	2,496	3,058
1988	200	4.0	1,226	1,810	2,396	2,980
1989	140	4.0	1,075	1,682	2,292	2,899
1990	140	3.0	978	1,609	2,244	2,875
1991	180	3.0	867	1,517	2,171	2,821
1992	240	2.0	713	1,383	2,056	2,726
1993	240	2.0	487	1,171	1,857	2,541
1994	240	2.0	257	954	1,654	2,352
1995	240	2.0	22	733	1,447	2,159
1996	240	1.0	EXTINCT	508	1,236	1,962
1997	240	1.0	EXTINCT	273	1,008	1,742
1998	240	1.0	EXTINCT	36	778	1,519
1999	240	1.0	EXTINCT	EXTINCT	546	1,294
2000	240	1.0	EXTINCT	EXTINCT	311	1,067

APPENDIX 2

PARTICIPANTS IN THE RHINO WORKSHOP

22 April 1992

DIRECTOR - Dr.W.K. Nduku
ASSISTANT DIRECTOR (Research) - R.B. Martin
ASSISTANT DIRECTOR (Management) - W.M. Makombe
CHIEF ECOLOGIST (Terrestrial) - Dr. A.M.G. Conybeare
CHIEF WARDEN (Operations) - G. Tatham
(Acting) CHIEF WARDEN (Res. Mgmt.) - G. Tawona
CHIEF ADMINISTRATIVE OFFICER - T. Chaibva
CHIEF INVESTIGATIONS OFFICER - G. Nott
ECOLOGIST (Rhino Conservancies) - R. Du Toit
CHAIRMAN, PARKS AND WILD LIFE BOARD - Prof.M.W. Murphree