

Barandabhar Forest

Operational Plan 2000 - 2005



**King Mahendra Trust For Nature Conservation
1999**

ACRONYMS

BCF	Baghmara Community Forest
BZ	Buffer Zone
BZM	Buffer Zone Management
CBOs	Community Based Organizations
CBS	Central Bureau of Statistics
CDFO	Chitwan District Forest Office
DNPWC	Department of National Parks and Wildlife Conservation
FINNIDA	Finnish International Donor Agency
FRSC	Forest Resource Survey Center
FUGs	Forest User Groups
GIS	Geographical Information System
GPS	Global Positioning System
HH	Household
HMG	His Majesty's Government
JFM	Joint Forestry Management
KMTNC	King Mahendra Trust for Nature Conservation
MPBF	Management Plan of Barandabhar Forest
MoFSC	Ministry of Forest and Soil Conservation
NCRTC	Nepal Conservation Research Center
NFAR	Nepal Forest Acts and Regulations
NGOs	Non Government Organizations
NPWCA	National Park and Wildlife Conservation Act
RCNP	Royal Chitwan National Park
VDC	Village Development Committee

EXECUTIVE SUMMARY

Chitwan harbors more than 43 mammals and over 450 species of birds. It holds the second largest population of the Asiatic one horned rhinoceros in the world. Also, Barandabhar forest that adjoins the Royal Chitwan National Park (RCNP) in the south has over 22 mammals, 273 species of birds. This area with eight forest types is known to contain several endangered species such as rhinos and tigers and a myriad of birds and aquatic fauna.

The Barandabhar forest is located on south of the Mahendra Highway. It is about 4 km wide and 11 km long, and forms a large contiguous forest, which is known as Tikauli. The forest area of Tikauli from RCNP to Mahabharat Lekh extends to 29 km in length.

The guiding principle of the operational plan is based upon the Management Plan of Barandabhar Forest (MPBF) prepared by the DNPWC in 1997. Five programs have been envisaged in the operational plan for Barandabhar. The successful implementation of the programs could lead to a sound management and conservation of the forest corridor. Matrix of problems do exists, however these can be overcome through joint forest management as prescribed in the management plan that may serve as opportunities for stakeholders, principal users of forest resources and managers to metaphor it into avenues of sustainability and biodiversity conservation.

The layout of the operational plan is divided into three chapters. Chapter one concentrates on ongoing programs and facilities in Barandabhar. Chapter two dwells on the working policies. Chapter three provides an indepth on the operational plan modus operandi with 5 programs including activities, time frame and budget allocation.

The five programs prescribed in the operational plan are: 1) Conservation of core area; 2) Buffer zone community forest development; 3) Conservation education; 4) Alternate energy; and 5) Eco-tourism.

1) Conservation of core area and the buffer area has been prioritized, however, areas have not been identified by MPBF. The operational plan proposes identification of the core and the buffer area through surveys and use of GPS, GIS and aerial photo. Construction of fireline, management of Beesh Hazari Tal and traffic in the Mahendra Highway have been addressed with 25.59% of the total budget.

2) Buffer Zone community forest development is crucial in Barandabhar. About 300 to 400 people enter the forest to gather forest product daily. The operational plan has highlighted various schemes in the management of the buffer zone community forest. Joint forest Management and agroforestry have been developed. The Forest User Groups of the community forests are to be strengthened by providing trainings and technical support, to enhance conservation of biodiversity with 21.44% of the total budget.

3) Conservation education is pivotal in understanding the significance of conservation. One of the conservation education programs would be the visitor center, where the visitor and tourist will understand the importance of conservation. Most of the conservation awareness programs will be disseminated through local institutions by conducting programs with allocation of 18.49% of the total budget.

4) Development of alternate energy program has been essential and a necessary as much of the communities depend upon forest for their fuelwood. Viable and affordable alternate energy programs have been identified. Gobar gas, smokeless stoves and electricity are the feasible programs that will be implemented in Barandabhar. For the implementation of this program, 14.9% of the total budget has been allocated.

5) Eco-tourism development is a key element as it supports resource conservation. Promotional activities to draw tourists have been highlighted in Barandabhar through camping facilities and construction of new trails in around Beesh Hazari Tal. All aspect of eco-tourism has been prioritized with 19.67% of the total budget. The total estimated budget for the conservation and management of Barandabhar is US\$ 676,000 for five years.

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Tikauli forest (Fig. 1) is a contiguous forest that stretches from south adjoining Royal Chitwan National Park to Mahabharat Lekh in the north, supporting many wildlife and maintaining gene pool for large endangered species such as rhinoceros and tigers. Along with eight forest types, it provides refuge to many, including a whole array of aquatic fauna. Barandabhar forest area of Tikauli, is bordered on the south by the Rapti River, on the north by Mahendra Highway, in the east by Ratnanagar municipality, Khageri Khola and Budhi Rapti and in the west by Bharatpur Municipality, Patihani and Gitanagar VDCs (Fig. 2). Within Barandabhar, Beesh Hazari Tal, largest man-made wetland in Chitwan contains water-bodies, marshes and forests where resident and wintering populations of many species of waterfowl, several reptiles and fish species occur.

1.1 MANAGEMENT PLAN OF BARANDABHAR FOREST (MPBF)

In 1997, the Department of National Park and Wildlife Conservation (DNPWC), Nepal Conservation Research Training Center (NCRTC) of the King Mahendra Trust for Nature Conservation (KMTNC) and the management of the Royal Chitwan National Park (RCNP) had collaborated to developed a Management Plan for the Barandabhar Forest (MPBF). As Barandabhar is also a part of the buffer zone of RCNP, the MPBF suggests an integrated scheme to protect and conserve existing biodiversity in Barandabhar through effective management and development of the rural communities.

Figure 1. Royal Chitwan National Park & Tikauli Forest

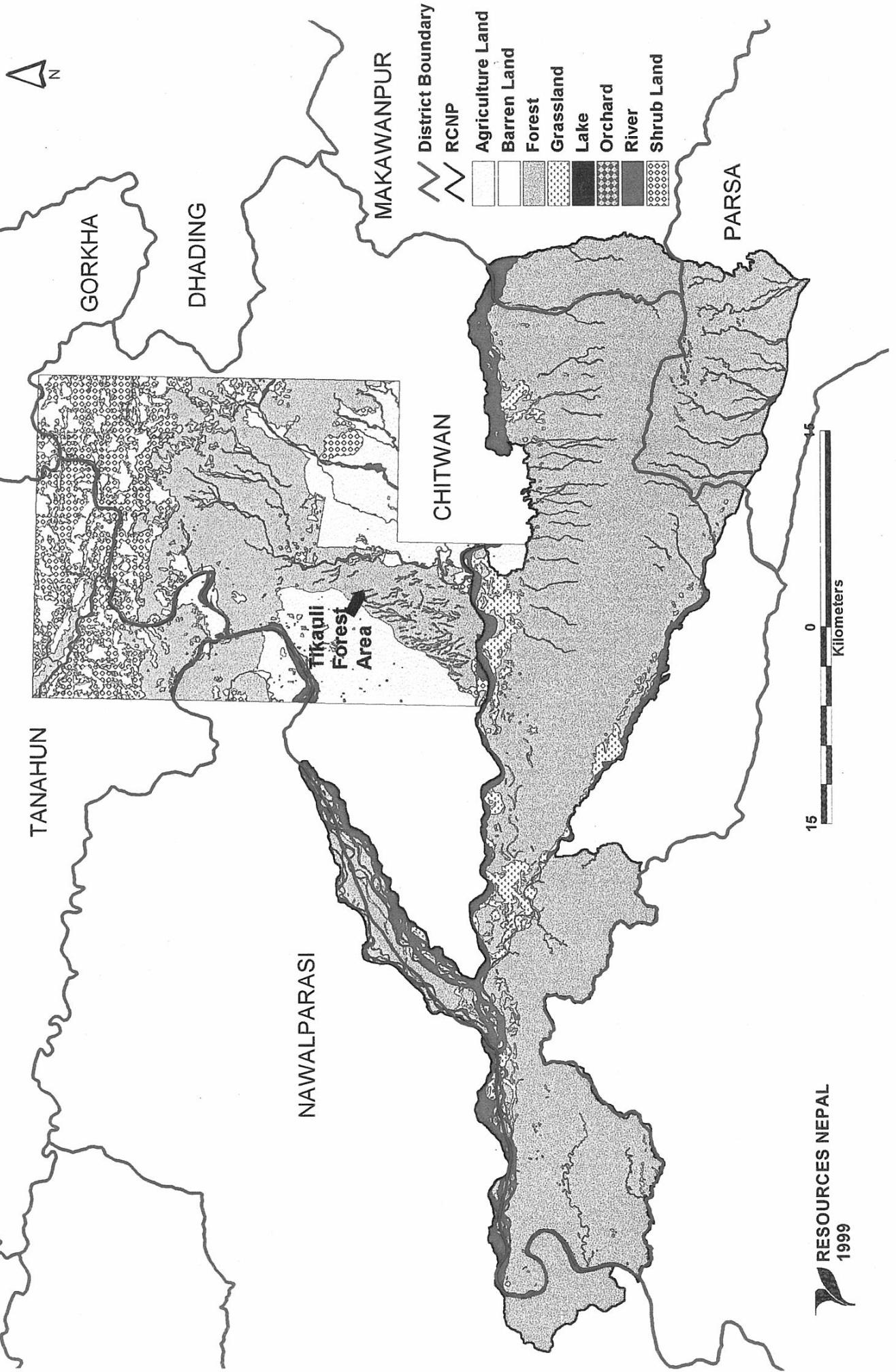
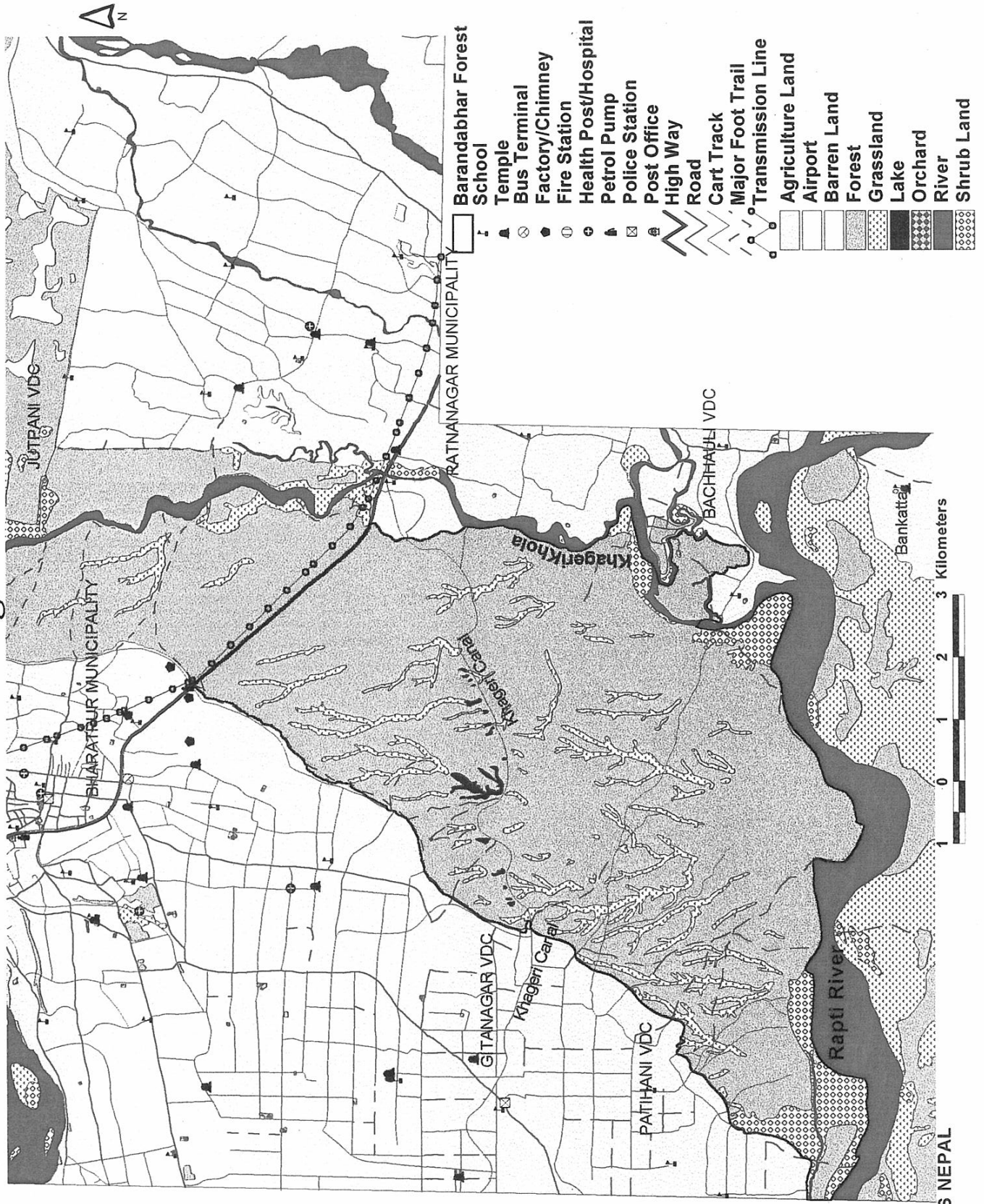


Figure 2. Barandabhar Forest and Surrounding Areas



1.2 AIMS AND OBJECTIVES OF THE MPBF

As this operational plan of the Barandabhar Forest is based upon the MPBF (1997), the aims and objectives of the MPBF are: 1) To carry out an inventory of the flora and fauna; 2) Execution of biophysical and socio-economic surveys of the project area; 3) Conservation and protection and develop multi-sectoral link with other ongoing program in the project area; 4) Identify existing problems; 5) Resolve existing problems through recommendations; and 6) Prepare proposal through work policy to mitigate conflicting issues in Barandabhar. The 1997 MPBF suggests an operational plan be prepared with key emphasis on 1) Core area; and 2) Buffer zone community forest.

1.3 EXISTING FACILITIES

1.3.1 INFRASTRUCTURE

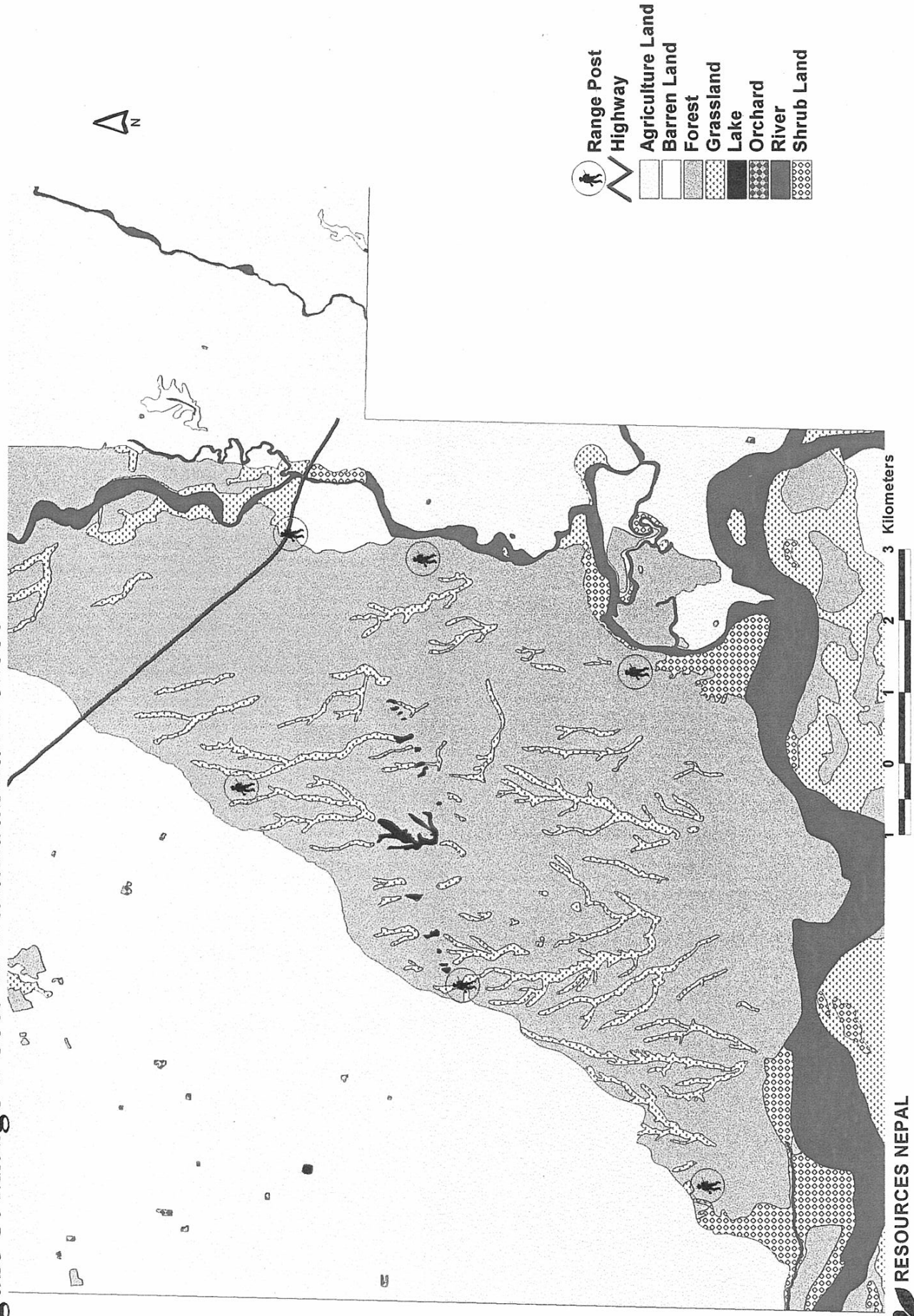
Previously, Tikauli had been a national forest under the jurisdiction of the Chitwan District Forest Office (CDFO) with the Gaida Gasti (rhino patrol) having 205 field staff. After 1992, the number of staff was scaled down to 54. The existing manpower and the 6 range posts (Fig. 3) may not be able to cover all potential sites for conservation. The illicit activities like poaching and felling of timber have increased on the northern side (Mahabharat Lekh) of Barandabhar, where rhinos are poached every year.

Existing Range Posts in Barandabhar Forest

<u>Range Post</u>	<u>Location</u>
Khageri Range Post	Adjoining Mahendra Highway, north east of Barandabhar
Khorsar Range Post	Adjoining Parsa Village, east of Barandabhar
Khorsar Chowki	Adjoining BCF, south east of Barandabhar
Ganganagar Chowki	Adjoining Patihani VDC, west of Barandabhar
Rapti Ilaka Forest Office	Adjoining Devnagar, west of Barandabhar
Jungle Warfare Arm Training Center	North of Barandabhar

Most of these range posts have about 2 – 3 people at any given time. Inadequate trained man power to handle cases of nefarious activities, lack of communication, information and transport system have led to increased poaching and timber smuggling activities.

Figure 3. Range Posts in Barandabhar Forest



1.4 BZ MANAGEMENT AND COMMUNITY FOREST

The National Park and Wildlife Conservation Act 1972, and the Buffer Zone Management Regulation 1995¹, authorizes the Chief warden of the National Park/Reserve as a legal authority in managing the Buffer Zone (BZ). Formation of Forest User Groups (FUGs) in BZ have been initiated and five community forests have already been established in Barandabhar (Fig. 4). The Gitanagar Village Development Committee (VDC) is in the process of establishing a community forest in the south west sector of Barandabhar. Community forests within Barandabhar are:

1.4.1 Baghmara Community Forest

Baghmara Community Forest, in the eastern bank of Bachhauli Village Development Committee (VDC) has technical assistance from KMTNC/NCRTC. Residents of Ward no. 1, Bachhauli VDC carried out the plantation in 1989 and it was formally established as a community forest in 1995. Now, Ward no.1, 2, 3 and 4 have formed collective ownership of the community forest. The community forest covers about 400 hectares and primarily consists of sissoo plantation.

1.4.2 Chitrasen Community Forest

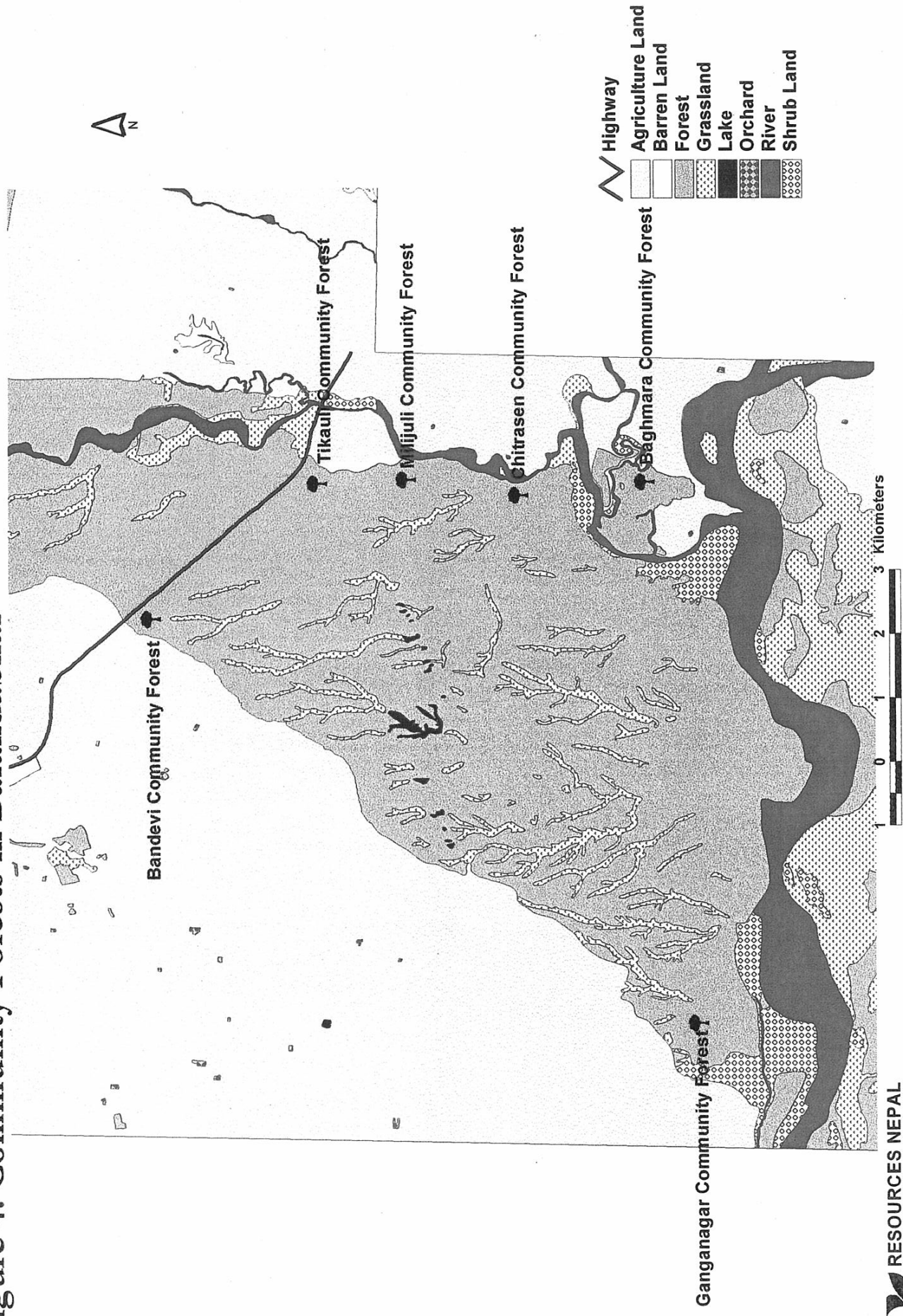
Chitrasen Community Forest was established in 1996 with technical assistance from the CDFO. The FUGs of this forest is from Ward no. 3 of Bachhauli VDC. The forest covers approximately 1200 hectares and three watchmen have been provided by the CDFO to protect it.

1.4.3 Milijuli Community Forest

Milijuli Community Forest is in the eastern sector of Bharandabhar. As this forest area lies in the Ratnanagar Municipality, the municipality annexed it as a community forest since 1996. This forest covers about 1250 hectares. Concurrently, the Ratnanagar Municipality has recruited two watchmen.

¹ The BZ Management Regulation is to promote community forestry program in the buffer zone and to ameliorate the stock through community management. The provision of community forests and other forestry operations described in the Forest Act are not applicable in the buffer zone.

Figure 4. Community Forests in Barandabhar



1.4.4 Tikauli Community Forest

Some parts of the Milijuli forest that was previously under the management of the Ratnanagar Municipality has now been handed over to Tikauli Community forest. The Tikauli FUGs have started managing and protecting this community forest since 1996.

1.4.5 Bandevi Community Forest

Plantation and conservation of the Bandevi Community forest in the north west end of Barandabhar by Ward no. 8 and 9 of the Bharatpur Municipality began in 1991- 1992. The establishment of the community forest started with the technical assistance of the CDFO and plantation has been done on a 300 m width stretch. This area claimed by Bharatpur Municipality has barbed wire fence.

1.5 OTHER ON-GOING PROGRAM

1.5.1 Elephant Breeding Center at Khorshor

With the view to breed elephants in captivity and also for the welfare of all the elephants of the protected area, an elephant breeding center with 18 elephants was established in 1986 at Khorshor. At present, there are 22 elephants and 63 staffs. Two baby elephants have been reared.

1.5.2 Improved Seed Plantation Khorshor

With the cooperation of HMG/DANIDA, improved sissou seed plantation has been established at Khorshor since 1994. One of the objectives of this plantation is to develop improved variety of sissou seed production and disseminate to the farmers.

1.5.3 The Mahendra Highway

The Mahendra Highway passes through 3.8 km of the Tikauli forest. Over speeding of automobiles and high casualties of wildlife² is a major concern.

² Recently in May, a leopard crossing Mahendra highway (north to south) had been run over by a four wheel drive in the morning.

1.5.4 Khageri Canal

The Khageri canal gets its water from the Khageri Khola, which originates in the north east of the Chitwan District. This canal was built during 1960 – 1964 for irrigating agriculture land at Gitanagar. This canal stretches about 9 km inside the Barandabhar, thus providing perennial water source to Bees Hazari Tal and other wetlands. A motor tract had been made beside the canal, which allows the visitors to Beesh Hazari Tal.

CHAPTER TWO

PROPOSED WORK PROGRAM AND WORKING POLICIES BY MPBF

2.1 BACKGROUND

As the Buffer Zone Regulations (BZR) is central in managing Barandabhar, a joint forest management (JFM) to implement integrated conservation and development programs is crucial. As guided by the MPBF, a participatory model to conserve and sustainably utilize natural resources will include:

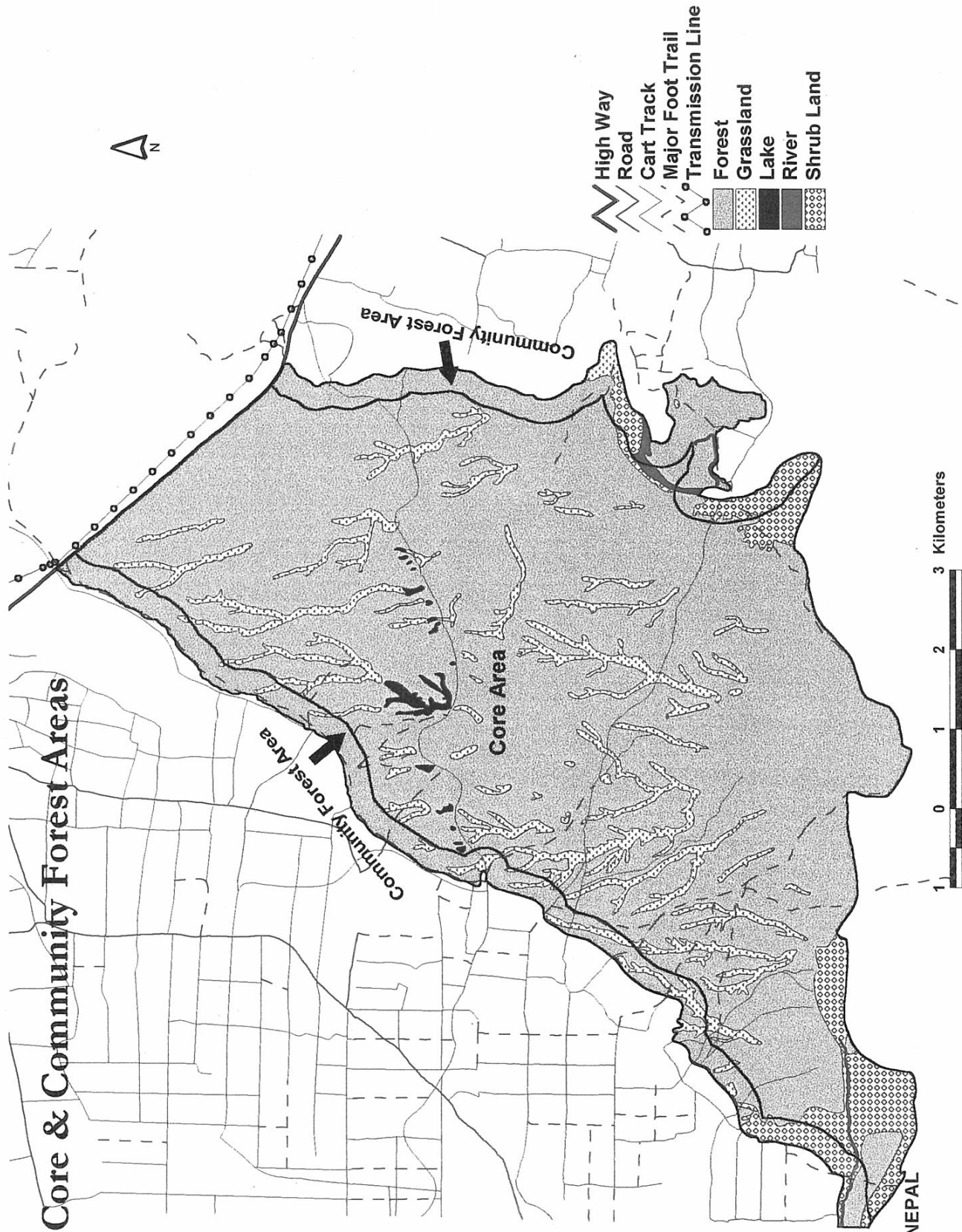
1. Conservation of core area.
2. Buffer zone community forest.
3. Conservation education.
4. Alternate energy.
5. Eco-tourism.

2.2 WORKING POLICIES ON CONSERVATION OF CORE AREA

To conserve and protect the wildlife and its habitat, the MPBF proposes to conserve the biodiversity through identification of the core area. The core area is considered as the area that is buffered by the community forests (width of 300 m) on both side of the Barandabhar running parallel on a south to north direction (Fig. 5). The forest area north of the Mahendra Highway is prescribed by the MPBF to be managed as a protected forest. To efficiently manage the Barandabhar, the MPBF have developed the following working policies:

1. Control grazing and illegal entry.
2. Control water pollution and fishing activities.
3. Construction of fire-line to control fire.
4. Develop a management plan for the conservation of the Beesh Hazari Tal.
5. Enforce speed limit and construct speed-breaker in the Mahendra Highway.
6. As the area north of the Mahendra Highway is suitable for wildlife habitat (especially rhinos), it be provided with a protected forest status.

Figure 5. Core & Community Forest Areas



2.3 WORKING POLICIES ON BUFFER ZONE COMMUNITY FOREST

The formation of FUGs in the buffer area of RCNP has already been initiated. Forest areas adjoining Barandabhar have already established FUGs, and community forests.

The MPBF suggests working policies for community forestry development programs are:

1. The buffer area of the Barandabhar (east and west borders up to 300 m inside) is to be managed as community forest.
2. The community Forestry program must be within the framework of the BZ Rules and Regulations.
3. Conduct training on income generating and skill development activities.
4. Forest areas that overlap community forest with core area should have a distinct marking through pillars, trees or barbed wires.

2.4 WORKING POLICIES ON CONSERVATION EDUCATION

Conservation education is a key factor in promoting, protecting and conserving biodiversity. One of the successful parameters in conservation education is a well-designed program, training, information dissemination and active participation by the local communities. The MPBF have developed the following working policies for conservation education:

1. Conduct conservation education and awareness program in schools and college through lectures and audiovisual.
 - A. Conduct excursion for schools and college to core and buffer zone areas.
 - B. Conduct essay competitions, debate and quiz contest on wildlife.
2. Provide training to Barandabhar personnel concerning conservation education, public relation and information dissemination.
3. Conduct training on income generating and skill development to local communities.
4. Construct a Visitor information Center to disseminate information on Barandabhar and RCNP.

2.5 WORKING POLICIES ON ALTERNATE ENERGY

It is estimated that over 90% of the people depend upon forest resources for timber, fuel wood, fodder, bedding materials, grass and for minor forest products. Over 70,000 people living around Tikauli are its primary and secondary users. Alternate energy is necessary to substitute traditional sources of energy and minimize fuel wood that would substantially reduce pressure from forests. The MPBF have developed working policies to minimize forest resources use through alternate energy program:

1. Demonstration and distribution of improved smokeless stove (using less fuel wood).
2. Promote the use of gohar gas and solar panel and provide subsidies for such installation to the communities.
3. Investigate and develop rural electrification, micro-hydro projects and encourage private sector's participation.
4. Promote agro forestry in farmland and private land. Plant fodder trees.
5. Reduce grazing pressure from forest, initiate stall feeding and gradually decrease unproductive livestock by replacing it with productive ones.
6. Establish nursery for providing fodder plants, dalle grass and fruit trees to community.

2.6 WORKING POLICIES ON ECO-TOURISM

Chitwan receives over 100,000 visitors each year. Some 60% of these visitors visit Sauraha. Most hotels in Sauraha take their guests to Beesh Hazari Tal. If only a fraction of the visitors are attracted to Beesh Hazari Tal, the revenue collected from the entrance fee would considerably help to manage Beesh Hazari Tal and its surrounding area. This area can be developed as a center for conservation education for local children, communities, stakeholders and to promote eco-tourism. The MPBF suggests the following working policies for eco-tourism development:

2.6.1 Entrance and Check post

- i. Construct three entrance for the Barandabhar forest. The first entrance should be at the main entrance of Tikauli forest, while the second and third should be at Dabauli and Khorshor. Levy entrance fee to Barandabhar (similar to that of RCNP).

2.6.2 Construction of lodges and hotels

- i. Lodges and hotels construction in Barandabhar will not be permitted.
- ii. Construction of lodges and hotels in private and community land will be permitted only after an internal environment examination study that shows negative impact to the environment.

2.6.3 Elephant Ride

- i. Elephant would be a major attraction to visitors. Elephants used will be from RCNP stable and when the demand for elephants are not met by RCNP stable alone, local elephants could be hired locally.

2.6.4 Jungle Drive

- i. Jungle drive should be allowed, provided it does not pollute the environment. Private parties should be allowed to manage jungle drive.

2.6.5 Canoeing

- i. At the east west and on south runs Buddhi Rapti River and Rapti River. Boating and canoeing can be allowed through private sectors to ply boats for sight seeing.

2.6.6 Hiking

- i. Visitors wanting to hike in Barandabhar must be accompanied by trained guides. New hiking trails to be constructed.

2.6.7 Watch Tower

- i. Build a machan (watch tower) to observe birds and wildlife. An ideal place would be the Beesh Hazari Tal. In addition, it will help in monitoring wildlife activities.

CHAPTER THREE OPERATIONAL PLAN

3.1 BACKGROUND

The MPBF approach is to conserve Barandabhar from further degradation. The operational plan proposes to strengthen FUGs and stakeholders in managing the natural resources on a sustainable basis to conserve biodiversity. Such a plan may offer wide participation, accrue economic benefits and conserve biodiversity. To be efficient and effective, monitoring and evaluation on a periodic basis shall be conducted to benefit all parties concerned and to achieve the task in a more scientific way.

3.2 EXECUTING AGENCIES

As per the MPBF, the executing agency for managing Barandabhar is DNPWC. For the project implementation, it will be RCNP and the BZ Management Council. In view of the need to mobilize local communities in project planning and implementation, involvement of NCRTC of KMTNC, FUGs, Community Based Organizations (CBOs) and resource person are considered vital for the successful implementation of the operational plan. It is also proposed in the MPBF that the core area should be managed by NCRTC (KMTNC) (see page 24, Management Plan of Barandabhar Forest).

3.3 BARANDABHAR AREA

In line with the MPBF, the Barandabhar can be approached on three management sectors. They are: 1) Core area: This is a sector where the forest is maintained, preserved and conserved in its natural state. No human activities, except research and monitoring will be permitted; 2) Administrative sector and community forest: This sector addresses range posts, and community forests; 3) Tourism sector contains recreation facilities and conservation education center.

4.1 Background

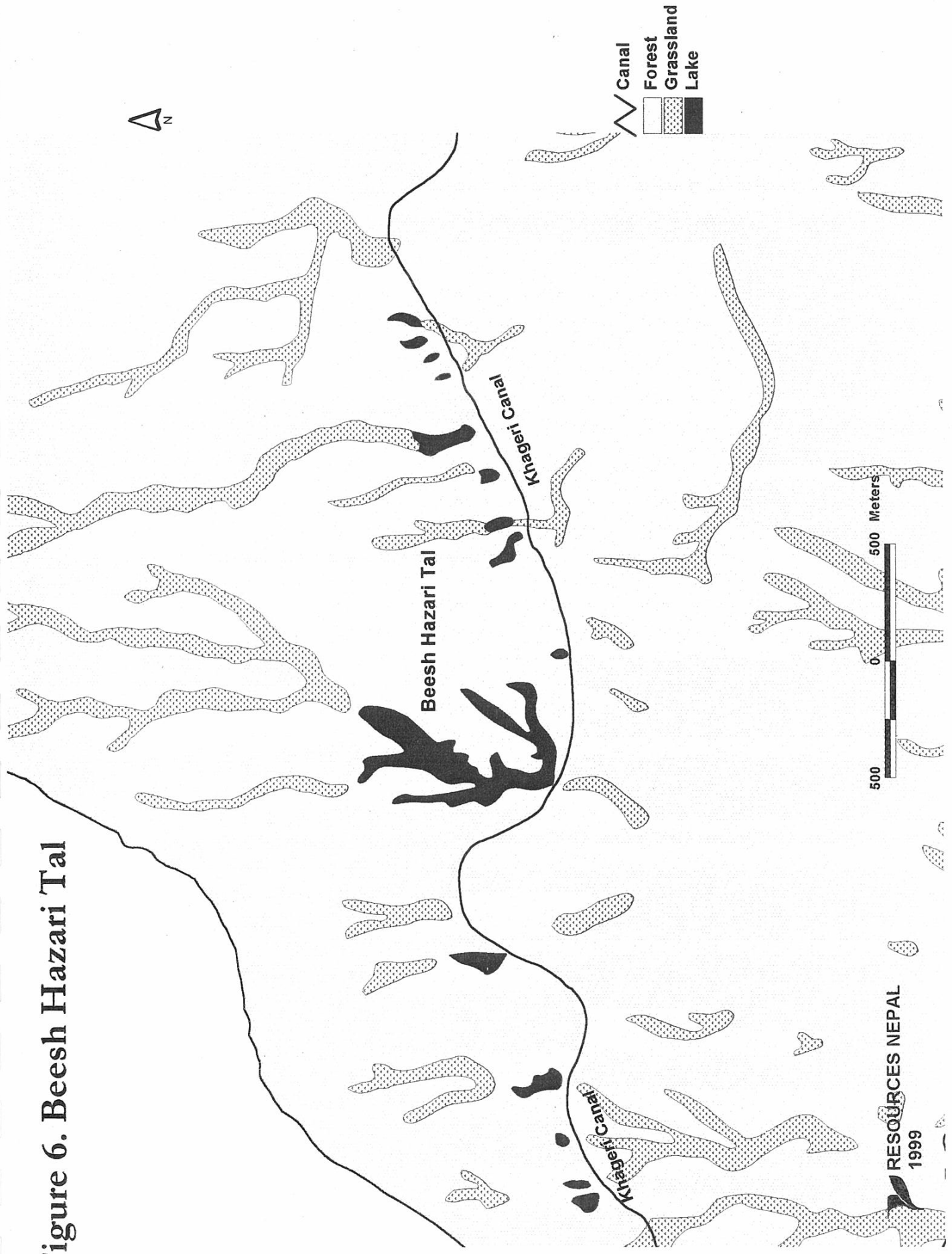
The MPBF describes two management systems for Barandabhar - community forests and core area. However, the MPBF does not designate which areas are to be protected as core areas. Therefore, what biological and conservation criteria should be considered for delineating such core area, is not identified. Also, it does not describe buffer areas in Barandabhar as core area is inherently connected with buffer areas. It is important to note that any area that is ecologically sensitive, if designated as a core area, must come out with a buffer area as well. Therefore, having no lead on demarcating the core area and its buffer in Barandabhar, this operational plan suggests reorientation and proposes following programs.

- 1) Conservation of core area;
- 2) Buffer zone community forest development;
- 3) Development of conservation education;
- 4) Development of alternate energy; and
- 5) Development of eco-tourism. Before putting programs, it is strategically vital to know what is the landuse pattern in Barandabhar. It is also important to determine how much of the Tikauli forest is Barandabhar. Lacking such information, the task on the preparation of the operational plan becomes arduous. Alternatively, a best educated guess will remain erroneous because of faulty information.

4.2. LANDUSE PATTERN OF BARANDABHAR

As the MPBF has several limitations on information, the operational plan team prepared landuse pattern of Barandabhar. The boundary of the Barandabhar was considered as follows: the Mahendra Highway in the north, Ratnanagar municipality on the east with Bachhauri VDC, Bharatpur municipality, Gitanagar and Patihani VDC in the west, and the southern boundary is limited by Rapti River and RCNP. Given these boundaries and using the 1992 FINNIDA map as the source of data, Barandabhar has 48.0166 km² of forest, 5.028 km² of grassland, shrubland 3.2768 km² and water bodies make 0.5072 km², totaling an area of 56.8834 km². There are some 15 ponds that are above .132 ha in size (Fig. 6). The largest pond area is 17.34 ha. The north-south run of Barandabhar is about 11 km and the east west minimum span is 3.8 km.

Figure 6. Beesh Hazari Tal



5.1 Step One: Identification of Core Area & Its Buffer

The identification of the core area and its buffer area would require survey supplemented with aerial photographs, land utilization maps, and use of Global Positioning Systems (GPS). Then, with the help of Geographical Information System (GIS) core and buffer areas could be delineated. The core area is considered as the area that is buffered by the community forests (width of 300 m) on both side of the Barandabhar forest running parallel on a south to north direction. It is advisable to seek services of consultative organization and hire a GIS expert as it is cost effective.

5.1.2. Activities:

- A. Interpretation of aerial photo.
- B. Digitization of lands Utilization Map (1:25000 scale).
- C. Ground survey using GPS.
- D. Develop GIS and monitor landuse changes over time.

5.1.3. Time and Budget:

Three months will be required to complete the assignment beginning January till the end of March 2000. In 2005, ground truthing using GPS will be done for monitoring changes. The estimated budget will not exceed US\$ 15,000.

5.2 Step Two: Boundary Demarcation & Infrastructure

Boundary demarcation and the construction of the guard posts have been recommended by the MPBF. To conduct such activities, the operational plan suggests demarcation of eastern and western boundaries (north ward from the Budhi Rapti and Rapti River upto the Mahendra Highway) using cement pillars. These will form permanent barriers – the barbed wire fencing in the eastern and western boundary. Cement pillars is the best option as opposed to timber posts, which can be stolen or burned. The barbed wire fencing will protect core areas from human related activities, protect wild animals from going into cultivated land and will facilitate north – south movement of wildlife including rhinos. The pillars with size of 6" x 4" x 3" can act as strainers. The distance between two pillars would be 3 m. For protection, five strands of barbed wire is recommended. The lowest strand should be 18 cm above ground level and then at 18 cm intervals until the

third one, then intervals of 30 cm will provide ample protection from livestock. The boundary fencing can only be started after the completion of GIS analytical work. Note that some of the existing community forests already have their areas delineated through barbed wire fencing.

5.2.1 Activities:

- A. The Barandabhar range posts needs renovation and two new posts at Khorsor and Dabauli are to be constructed.
- B. Constructions of barbed wire fencing.
- C. Improve and construct new and existing network of trails along the core area fence line.
- D. Maintenance of trails, canals and guard posts will continue through out the operational plan during the next five years.

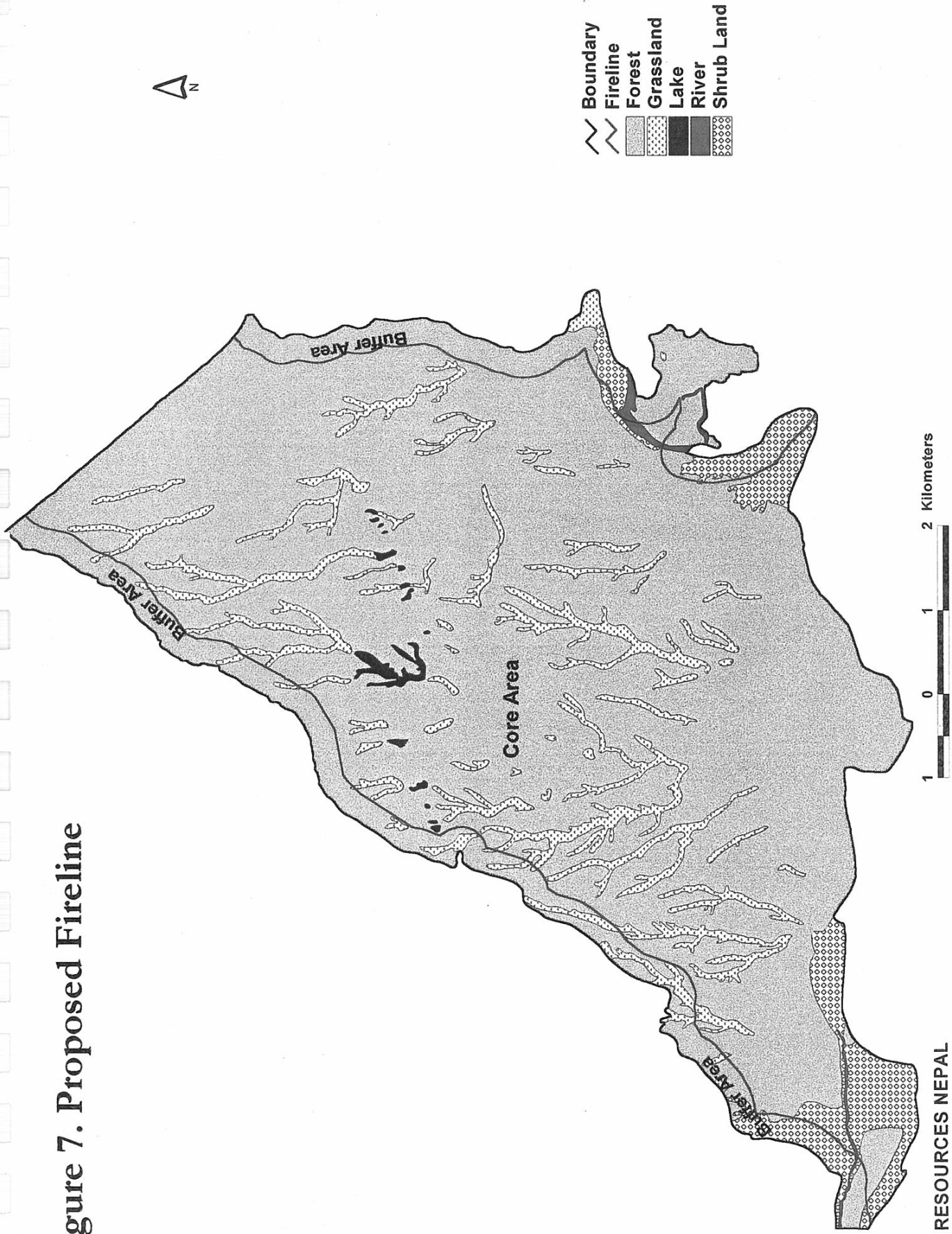
5.2.2 Time and Budget:

As this is an ongoing process, it will continue from March, 2000 till December, 2005. The estimated budget for fencing will not exceed US\$ 40,000 guard post construction US\$ 18,000 and maintenance costs will be US\$ 10,000.

5.3 Step Three: Fireline

Previously, the Rapti Ilaka Forest Office of the CDFO used to employ 10 fire fighters from mid February to mid June to control fire and to check encroachment in Barandabhar. A fireline has been recommended by the MPBF. Fire is capable of doing considerable damage to young plantations and to the forest. After the damage to the young plantation, they are susceptible to fungus and stem borer attacks. However, fire rejuvenates the under growth shrubs and new sprouts of grass which have high nutritious values to herbivores. For effective management, fire line or firebreaks has to be developed in the best suitable way so that forest fire is contained. Boundary of the community forest and the core areas will form the fireline (Fig. 7). In addition, this will further support patrolling to be more effective. The other concurrence is that it will also function as a demarcation line between the two areas.

Figure 7. Proposed Fireline



5.3.1 Activities:

- A. Fireline in Barandabhar will be 6 m wide and cleared of all vegetation (the soil being bare) and will run parallel on a north south direction.
- B. The fire line can be combined with Khageri canal road within Barandabhar for monitoring and patrolling.

5.3.2 Time and Budget:

Activities should be completed within a year time, after the demarcation of the core and buffer area. Fireline construction will begin from April, 2000 and be completed by March, 2001. It has to be annually maintained. The estimated budget will not exceed US\$ 40,000.

5.4 Step Four: Management Plan For Beesh Hazari Tal

The development of a management plan for Beesh Hazari Tal is important as it is of a national significance as it harbors more than 273 bird species, of which 5 are globally threatened and 29 nationally threatened. It is an important staging site for migrating and wintering waders and waterfowls. In addition, 17 species of fishes, 13 species of reptiles and 37 species of aquatic insects along with 99 aquatic plant species are known to occur thus making it a rich biodiversity area. For the conservation and development of the Beesh Hazari Tal, a plan is envisaged with the following activities:

5.4.1 Activities:

5.4.2 Weed control

Oligotrophic conditions have led to the detrimental of ecosystem in Beesh Hazari Tal. As the Beesh Hazari Tal has been undergoing a tremendous pressure from human and livestock, the weeding process can rejuvenate avian fauna habitat. This is done manually by uprooting weeds on an annual basis.

5.4.2 Grazing and Illegal Entry

To control grazing, cattle in Barandabhar will be driven into kanji house and penalty will be levied. Structures of penalty will be similar to that of RCNP. Persons entering Barandabhar should be liable to a nominal fine.

5.4.3 Fishing

Prior to 1990, the CDFO allowed fishing on a contract basis. Now, fishing is not allowed nor the collection of timber and dead wood from the Beesh Hazari Tal area. However, illegal fishing and timber collection still exists. Use of water soluble poison to kill fish and turtles, which also affect crocodiles and birds are prevalent.

Recreational fishing could be allowed from September till January (this is the time when the broods have been hatched) on a fee per body weight catch. This could perhaps generate substantial revenue.

5.4.4 Siltation

Increased siltation and receding water level are key concerns. The channeling of Khageri Canal through the build up of the embankment needs to be maintained. Effectiveness would be to build a hydraulic structure at the beginning of the inlet connection to Beesh Hazari Tal.

5.4.5 Time and Budget:

All activities related to managing Beesh Hazari Tal and its surrounding, is year round. The project will commence from 2000 and will continue to 2005 and beyond. The estimated budget will not exceed US\$ 40,000.

5.5 Step Five: The Mahendra Highway

The Mahendra highway passes about 3.8 km of Tikauli forest. This stretch of forest is open to 24 hours traffic, which have aggravated wildlife movement and accidents at the northern boundary of Barandabhar. Similarly, it has become an access to wildlife poaching and timber smuggling.

The MPBF suggest that the north of the Mahendra Highway is suitable for Rhino habitat and the contiguous forest of Tikauli (north from the Mahendra Highway and Barandabhar forest) be provided with a protected forest status. Following activities to curtail wildlife related loss shall be implemented.