

SATKOSIA TIGER RESERVE

11.1 Introduction of the Area

11.1.1 Description of the Tiger Conservation Unit/Landscape and significance of the area for tiger conservation.

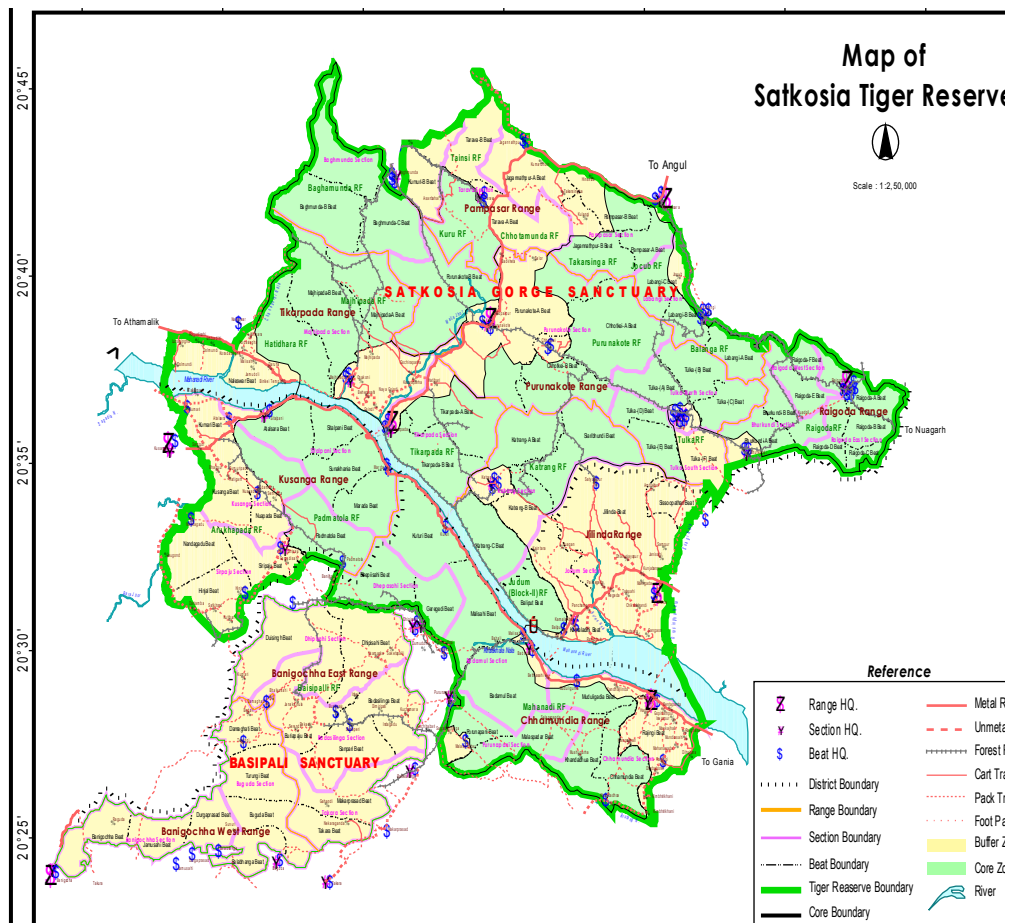
The forests surrounding the Satkosia gorge of Mahanadi river including the stretch of river flowing through the gorge, were notified as Satkosia Gorge sanctuary in May, 1976. The contiguous area to the south of this sanctuary in Nayagarh District was notified as the Baisipali sanctuary in the year 1981. The wild fauna of these sanctuaries comprise of Tigers and Leopards, Elephants, Gaur, Sloth Bear, Sambar, Spotted Deer, Barking Deer, Mouse Deer, Pangolin, Giant Squirrel, Malabar Pied Hornbill, Gharial and Mugger crocodiles, fresh water turtles, freshwater rays, etc. These two sanctuaries together have been notified as Satkosia Tiger Reserve vide Notification No.8F(S)-32/'2006/20807 /F&E. Dated, Bhubaneswar, the 31st December, 2007.

The tiger and leopard population in this reserve is recorded as follows:

<u>Year</u>		<u>No. of tigers</u>		<u>No. of leopards</u>
2000	...	12	...	10
2002	...	11	...	19
2004	...	18	...	34

The landscape surrounding the reserve has extensive forest areas, particularly towards the north-west, south-west and north-eastern sides. The terrain is undulated and has dense deciduous forests. These surrounding forest areas are equally good habitats for wild animals, including tigers. The prey base of tiger in the reserve includes spotted deer, sambar, barking deer, wild pig and gaur, whose population is sufficiently high.

1.1.2 Map of Tiger Conservation Unit/Landscape.



11.1.3 Legal provisions contained in the Wildlife (Protection) Act regarding Tiger Conservation Plan and brief description of their relevance in the Tiger Conservation Unit/ Landscape.

As provided u/s 38V (3) of the Wildlife (Protection) Amendment Act, 2006 the State government shall prepare a Tiger Conservation Plan including staff development and deployment plan for the proper management of Tiger Reserve so as to ensure

(a) Protection of tiger reserve and providing site specific habitat inputs for a viable population of tigers, co-predators and prey animals without distorting the natural prey-predator ecological cycle in the habitat.

(b) ecologically compatible land use in the tiger reserve and areas linking one protected area or tiger reserve with another for addressing the livelihood concern of the local people, so as to provide dispersal habitats and corridor for spill over population of wild animals from the designated core areas of tiger reserve or from tiger breeding habitats within other protected areas.

(c) the forestry operations of regular forest divisions and those adjoining tiger reserve are not incompatible with the needs of tiger conservation.

The sub section 4 of section 38V says further that subject to the provisions contained in this Act, the State government shall, while preparing a Tiger Conservation Plan, ensure the Agricultural, livelihood, developmental and other interests of people living in the tiger bearing forests or a tiger reserve.

Satkosia Tiger Reserve with its adjoining areas is surrounded with enumerable human habitations which depend on the forest for their day to day bonafide requirements of fuel wood, fodder and timber, besides earning their livelihood. Timber mafias also cause threat to the tiger habitat and its prey base by removing valuable timber from the reserve. Unless the dependency of the people is reduced by providing them alternative livelihoods the reserve will sustain tremendous biotic pressures. Similarly protection measures are required to be strengthened to ensure inviolate core area. The adjoining areas of the reserve that are potential tiger habitats need to be linked as satellite areas by creation of corridors for sustenance of 20 breeding females in the core.

11.1.4 Delineation of Area into Core, Buffer and Adjoining Landscape.

The expert committee constituted by the state government under this Act decided the boundary of tiger reserve and delineated the core and buffer areas on 12-11-2007. They have decided to delineate the boundary of the Tiger Reserve to be co-terminus with the boundary of both the sanctuaries. Accordingly the Tiger Reserve has been notified by the state government with 523.61 sq. km as core area out of total 963.87 sq. km. of the reserve.

Tiger habitat outside the reserve has been identified to be Balikiary, Barasingha, Nuagarh RFs of Athagarh division, Nandinia RF of Dhenkanal division, Nuakheta, Bolanga RF of Angul division, Taleipathar, Panchadhara, Hatidhara RF of Athamallik division, and Hatidhara RF, Akhupadar RF of Boudh division. Tiger evidences are found occasionally in these areas. But they have co-predators and rich prey base to sustain viable tiger population.

Tiger Conservation Plan: Core Area

Part A: The Existing Situation

Chapter 1: Introduction of the Area

1.1 Name, Location, Constitution & Extent

1.1.1 Name:- Satkosia core

1.1.2 Location:- Satkosia Tiger Reserve comprises of two adjoining sanctuaries of central Orissa, namely Satkosia Gorge Sanctuary and Baisipalli sanctuary. Core area of the Tiger Reserve lies only within Satkosia Gorge Sanctuary. It has been constituted by removing all village clusters from the tiger reserve thus giving it a plough shape. Total area of the core is 523.61 sq.km. The part of core on the north of river Mahanadi comes under Angul and Cuttack Revenue Districts and the part south of it comes under Boudh and Nayagarh Revenue Districts. Five villages namely Raigoda (Angul dist.), Marada (Boudh dist.), Kuturi, Salapaganda, Musuguda (Nayagarh dist.) still remains inside the inviolate area. The list of different types of forest blocks coming within the core with their extent is given in **Appendix -1**.

The geographical co-ordinates within which the core is located are given below:

Latitudes	Longitudes
20° 25' 12" N	84° 40' 20" E
20° 45' 36" N	85° 05' 24" E

Biogeographically, the core comes under Gadjat hills subdivision of 6B Chhotnagpur Plateau Biotic Province and 6C-Eastern ghats Biotic province under 6-Deccan Peninsular Biogeographic zone as per the classification adopted by Rodger and Panwar (1988).

1.1.3 Constitution:-

The Core area of the tiger reserve consists of Reserved Forest compartments, where signs of tiger, leopard, co-predators and their prey base are frequently available and which are relatively free from biotic interference. Portion of the river Mahanadi has been included in the core to avoid fragmentation of the area. Care has been taken as far as possible to remove the village areas while delineating the core area. In this process, even parts of dense forest areas, has been excluded from core and included in buffer. Where the villages are located deep inside the inviolate forest areas they have been retained as such with an intention to relocate them in future. Villagers of Raigoda have already given their written consent to evacuate the village if a suitable cultivable area / alluring package is given to them. This aspect has been discussed vividly by the

Expert Committee on dt.12-11-2007 while deciding the core area of the reserve. The proceeding of the Expert Committee is enclosed in **Appendix -2**.

1.1.4 Extent (Area statement and Legal Status)

FOREST BLOCKS AND COMPARTMENTS INCLUDED IN THE CORE AREA/ CRITICAL TIGER HABITAT OF THE TIGER RESERVE

Name of the Reserved Forest block included in the core area	Compartment Nos., included in the core area	Area of the compartments included in the core area (ha)
Tikarpada	1 to 9	2760.45
Purunakote(Part)	2,3,8,11 to 20	4915.50
Tulka(Part)	1 to 10	3275.612
Balanga(Part)	11 & 12	675.98
Jocub	1 to 6	1514.79
Takarsinga(Part)	2,3 and 4	1559.352
Raigoda(Part)	1 to 15 & 16 (Part)	4056.65
Katrang(Part)	1 to 8, 10 & 11	4088.157
Jorum(Part)	Block II	886.06
Majhipada	1 to 17	4890.80
Baghamunda	1 to 13	3812.67
Kuru	1 to 9	2116.98
Hatidhara(Part)	23 to 27	1397.98
Padmatola	1 to 11	4674.00
Mahanadi	1 to 17	10283.70
Mahanadi River (Part)		1037.05
Total area		51945.731 hectares

SCHEDULE OF THE REVENUE VILLAGES

PRESENTLY SITUATED IN THE CORE AREA.

Name of the village	District	Area of the village (as per revenue records) (ha)
Raigoda	Angul	172.00
Marada	Boudh	64.66
Kuturi	Nayagarh	119.00
Salapaganda	Nayagarh	27.82
Musuguda	Nayagarh	33.26
Total area of villages in the core area		416.74

1.1.5 Notification:-

The Government of Orissa in Forest & Environment Department, in exercise of the powers conferred by Section 38-V of the Wildlife (Protection) Act, 1972 and with prior 'in principle' approval of National Tiger Conservation Authority notified the two

contiguous wildlife sanctuaries namely Satkosia Gorge Sanctuary and the Baisipali Sanctuary described in the Schedules A, B1, B2 as the "**Satkosia Tiger Reserve**", with the area described in Schedules C, D and E as the "**Core Area or Critical Tiger Habitat of Satkosia Tiger Reserve**" vide Notification No.8F(S)- 32/2006/20807 /F&E. Dated, Bhubaneswar, the 31st December, 2007. The notification is given in **Appendix -3.**

1.2 Approach & Access

The headquarters of the Conservator of Forests, Angul circle and Officer- in-charge, Satkosia Tiger Reserve is at Angul situated on N.H. 42, at a distance of 105 Kms to the West from Manguli chhak, the place where N.H. 42 meets N.H. 5. It is 161 Km from the State capital, Bhubaneswar. Pampasar, the entry point of Tiger reserve from Northern side is 188 Kms from the State capital and 30 Kms from the Tiger reserve headquarters Angul. Similarly, the southern portion of the reserve is approachable from Nayagarh, which is also the district headquarters, and is 80 Kms from the State Capital. From Nayagarh, the Tiger reserve can be approached through the entry point at Chhamundia, which is 60 Kms from Nayagarh via Gania. The tiger reserve can also be approached from Boudha, district headquarters via Kusanga.

The nearest Rail head on North side is Angul and on South is Khurda Road, on Howrah – Chennai Railway line of East Coast Railways. The nearest Airport is Bhubaneswar.

1.3 Statement of Significance

Satkosia Tiger reserve has a tremendous genetic and ecological importance as it is the wet portion of Deccan Zone. It has a significant elephant population in deciduous forests. The Tiger reserve is also important for the natural habitat of two endangered species of fresh water crocodilians viz. Gharial and Mugger, and a sizeable population of Tiger, Leopard, Gaur, Sambar, Chowsingha and Barking deer. Large population of Giant squirrel is sighted on the canopy cover of the forest. Rare and endangered birds and butterflies are very common. 22.4 Km long stretch of Satkosia gorge of Mahanadi river harbours a large population of varied fishes and aquatic fauna.

Temple of Goddess Binikei, and Kankei, Baigani Parbata, Bhimdhara waterfall and Crocodile Rescue & Rehabilitation Centre at Tikarpada with the magnificent view of the gorge attract tourists in to the tiger reserve through out the year. Satkosia is famous for its unique gorge eco-system and it serves also as a major watershed for the entire region. The magnificent Hinjala, Dhauranja, Kochila , Arjuna and Phasi forests on the banks of river Mahanadi are typical elements of riverine forests. Bamboo brakes

consisting of two species of bamboo, namely *Bambusa arundinaceae* and *Dendrocalamus strictus* are common to this Tiger reserve.

Satkosia also represents the endemic life-forms of both the biotic provinces in its transitional zone. Geologically speaking, the eastern ghats form the land bridge for faunal migration between Holarctic, Indo-Chinese and Indo Malayan regions on one hand and the Western Ghats on the other. It forms an important catchment of lower Mahanadi basin. The positive role these catchment forests play in prevention of siltation and maintenance of a specific desirable depth of water that can hardly be over emphasized, particularly for the endangered Gharal, for breeding of amphibians and for spawning sites of commercially important carps and prawns.

The avifauna of Satkosia is rich and varied with resident birds viz. Emerald dove, Malabar pied hornbill, Shaheen Falcon, Yellow legged buttom quail, Malabar trogon, Hill myna, Great stone Plover and Stork billed kingfisher. The migratory birds include Brahminy ducks, Bar-headed geese, Pintails etc.

VALUES IN SCALE OF PRIORITIES OF SATKOSIA TIGER RESERVE

No.	Value Category	Constituents
1	Global	Most <i>endangered</i> Gharials (<i>Gavialis gangeticus</i>), endangered Tiger, sizeable Central Elephant and Chousingha population.
2	National	Southern most <i>natural home</i> of Gharials in fast flowing river Mahanadi contributing to a <i>distinct gene pool</i> besides supporting four species of <i>endangered</i> Turtles- <i>Chitra indica</i> , <i>Leissemys punctata punctata</i> , <i>Kachuga kachuga</i> , <i>Trionix gangeticus</i> the conservation of which is of National priority.
3	Regional	Biogeographically, meeting point of two <i>biotic provinces</i> contributing to assemblage of flora & faunal extravaganza providing rich biodiversity.
4	State	Second largest population of Elephant, Gaur & Tiger. The tiger reserve is part of the catchment of mighty Mahanadi river system providing continuous recharge & feeds ground water.
5	Local	Mahanadi River is spawning site for commercially important carps and prawns. A scenic spot for tourists and local people and a fishing paradise. Satkosia tiger reserve has tremendous forest resource potential for sustenance of local populace.

Chapter 2

Background Information and Attributes

2.1 Geology, Rock and Soil

The rocks of southern tract, where bulk of the forests of the core occur belong to the eastern ghat group of Archean age. The main rocks are gneiss, quartz schist, Khondalite, Charnokites and Granite. Towards Tulka and Raigoda, Ferruginous quartz, Mica schist occur with Quartzite gneiss, Granite Gneiss which extends up to Katrang. In Raigoda, Bolong and Jocub area, Khondalite is commonly met with, yielding very good quality of sandy loam and it is usually associated with pure sal crop, some times found on hill top, as in Jocub.

Kankar formation of Nodular limestone, which produces heavy impermeable clay are also met with in Majhipara and to a less extent in Tikarpara, Katrang, and in north-west area of Baghmunda blocks. This formation bears poor crops. This is not met with in other areas. Alluvial soil of lesser extent is met with on the banks of nalas and rivers.

Soil erosion is not a perceptible feature in sanctuary. Due to steep hill slopes and undulating ground on the plains, the drainage systems have not only removed the top soil rendering the soil infertile but also cut up the grounds badly year after year forming gullies.

2.2 Hydrology and Water Sources

The bulk of precipitation occurs during the rainy season through south-west monsoon. Usually monsoon breaks in the third week of June and continues up to middle or end of September. Pre-monsoon showers are also experienced in first or second week of June, but not very common. Post monsoon showers are also experienced in month of October and November. Thunder storm usually occurs during April and May. The average number of rainy days in a year is 100 out of which, 70 are confined to the period between June to September. The annual average rainfall varies from 1250 mm to 1700 mm.

High floods are not common in Angul. Flood occurred in river Mahanadi during 1934 and 1940 when water level rose up to Hatibari village, 5 kms from Tikarpara ghat and has caused tremendous loss of cultivation in low lying areas. Floods also occurred during 1955 and crossed all the previous record. In the floods which occurred during 1982, 1986 and 2003, water level of river Mahanadi rose up to the road leading to

erstwhile GRACU (Gharial Research & Conservation Unit) Centre below the Forest Rest House and caused enormous damages to crocodile enclosures too. Artificial flood is also experienced when Hirakud Dam Authority opens their Sluice gates to discharge excess water of the dam during rainy season.

Rainfall in m.m. at Tikarapada

Month	2004	2005	2006
Jan	12.8	15.0	-
Feb	18.8	1.0	-
Mar	1.8	33.6	21.6
Apr	85.0	16.4	9.9
May	48.0	32.8	35.6
June	150.6	170.0	106.2
July	423.8	628.2	224.1
Aug	120.2	480.4	597.1
Sept	132.4	440.6	180.6
Oct	130.0	242.9	11.8
Nov	0	1.0	11.4
Dec	0	0	-
Total	1123.4	2061.9	1198.3

Source: Central Water Commission, Tikarapada

The major river into which the water from the reserve drains is river Mahanadi. It flows on the southern boundary of Satkosia Wildlife Division draining water of Purunakote, Pampasar, Jillinda, Kusanga and Chhamundia Ranges through its tributaries (nalas). Mahanadi separates both the Wildlife Divisions, viz. Satkosia Wildlife Division and Mahanadi Wildlife Division comprising the reserve. The tributaries slowly starts to dry after monsoon and during summer the streams are fully dry, except Halua nalla of Raigoda block. However, river Mahanadi and nalas like Brutanga, Chanagodi, Khalakhala, Suhagi carry some perennial water even in summer. The forests of the reserve provide catchments for these streams. Good drainage systems are provided by these rivers and no where any water logging is noticed.

The contributing factors for non availability of water in the nalas during summer can be categorized as follows:

- a) Less water holding capacity of soil due to peculiar geological condition.
- b) Rapid runoff of precipitated water from hill slopes during rainy season due to steep slopes.
- c) Insufficiency of water harvesting structures.

- d) Surface water level of River Mahanadi is very low compared to the topographic features.
- e) The soil formation in most of the areas is due to sedimentation, which do not holds water for long time.

To improve the supply of water, a large number of wells and tanks have been constructed but most of them dry up during summer. There is one huge reservoir at Sisopathar in Jillinda Range and 24 water bodies in different R.Fs of the reserve.

2.3 Vegetation Cover Types

According to Champion & Seth in their Revised Survey of Forest types in India, (1962), the forests of the core of tiger reserve can be divided in to the following types and sub-types.

Sub-group – 3C – North Indian Moist Deciduous Forests- 3C/C2e(ii)- Moist Peninsular Low level Sal.Subgroup-5B-Northern Tropical Dry Deciduous Forests.

- (i) 5B/C 1c Dry Peninsular Sal bearing forests.
- (ii) 5B/C2 Northern Dry Mixed Deciduous Forests.
- (iii) 5/DS1 Dry Deciduous & Scrub forest.
- (iv) 5/E9 Dry Bamboo brakes Seral types.
- (v) 5/S1-Dry Tropical riverine forests.

The details of each types and sub-types are described below:

Moist Peninsular Low level Sal-3C/C2e(ii) :

The moist sal is viewed as a climax (climatic, edaphic, bio-edaphic) formation throughout and in some forms which might be considered seral types have also been included in the climax type as they are sufficiently stable under prevailing conditions of management.

Distribution :

This subtype of forests is seen in the Reserved Forest of Raigoda, Bolong, Jocab, Tulka, Takarsingha, Purunakote, Chhotmunda, Tainsi, Kuru and Baghamunda blocks of the Satkosia Wildlife Division along with adjoining Protected Forests of Purunakote.

Floristic composition:

Floristic composition changes in different site and frequency of the species also varies. However to describe the composition, area covered under this forest sub-type has been divided in to two categories namely, (a) valley areas; where moisture retention capacity of soil is better, humus is more and area is comparatively cooler; (b) other areas consisting of slopes and plains, which is comparatively drier. In these two

categories too; the frequency of species varies, however average crop composition of these two categories are described below:

a) In the valley areas :

- I. Shorea robusta, Dillenia pentagyna, Bridelia squamosa, Terminalia alata, Terminalia arjuna, Syzygium cuminii, Adina cordifolia, Mitragyna parviflora, Lagerstroemia parviflora, Mangifera indica, Bursera serrata, Pterocarpus marsupium, Terminalia bellerica, Anthocephalus cadamba, Bombax ceiba, Gmelina arborea, Garuga piñnata.
- II. Suzygium cuminii, Miliusa velutina, Polyalthia cerasioides, Lannea coromandelica, Pterospermum xylocarpum, Macaranga peltata, Diospyrus Montana, Derris indica, Mallotus philippensis, Careya arborea, Glochidion lanceolarium.
- II a. Bambusa arundinacea.
- III. Ardisia solanacea, Grewia helicterifolia, Flemingia chapper, Flemingia strobilifera, Cycas circinalis, Leea asiatica, Cipadessa baccifera, Strobilanthes scaber, Helicteres ixora, Clerodendrum viscosum, Woodfordia fruticosa.
- IV. Thysanolaena maxima, Panicum species.
- V. Bauhinia vahlii, Combretum decandrum, Butea monosporma, Zizyphus oenoplia, Millettia extensa, Acacia torta, Entada phoseoloides, Smilax zeylanica, Dioscoria species.

b) In other areas :

- I. Shorea robusta, Terminalia alata, Terminalia Chebula, Adina cordifolia, Mitragyna parviflora, Lagerstroemia parviflora, Anogeissues latifolia, Bridelia squamosa, Albizia procera, Albizia lebbeck, Hymenodictyon excelsum, Pterocarpus marsupium, Bombax ceiba, Gmelina arborea, Dalbergia paniculata, Schleicheria oleosa, Madhuca indica, Lannea coromandelica, Diospyrus melanoxyton, Sterculia urens.
- II. Cleistanthus collinus, Dalbergia latifolia, Ougenia oogenensis, Syzygium cuminii, Dillenia pentagyna, Careya arborea, Diospyrus species, Mallotus philippensis, Wendlandia heynei.
- IIa. Dendrocalamus strictus.
- III. Cipadessa baccifera, Woodfordia fruticosa, Clerodendrum viscosum, Zizyphus oenoplia, Indigofera pulchela.

- IV. *Thysanolaena maxima*, *Panicum* species, *Eulaliopsis binnata*.
- V. *Bauhinia vahlii*, *Millettia extensa*, *Combretum decandrum*, *Butea monosperma*, *Acacia torta*, *Zizyphus oenoplia*, *Entada phaseoloides*, *Smilax zeylanica*, *Dioscorea* species.

No specific survey has been carried out to find frequency of grasses in different site of this forest subtype. However a list of grasses which generally get associated with this forest type are furnished below :

Perennial grasses

Aristida setacea, *Bothriochloa pertusa*, *B.bladhii*, *Cymbopogon martini*, *Chrysopogon gryllus*, *Chrysopogon gryllus C.montanus*, *Dicanthium annulatum* ,*Dicanthium annulatum*, *D.Carricosum*, *Eragrostic coarctata*, *Eulaliopsis binata*, *Iseilema prostratum*, *Imperata cylindrical*, *Ichaemum rugosum* *Panicum* species, *Pseudosorghum fasciculare*, *Sporobolus indicus*, *Cyndon dactylon*,, *Heteropogon contortus*, *Thysanolaena maxima* *Themeda triendra*, *Arundinella khasiana*, *A.Setosa*, *Sachharum spontaneum*

Annual grasses

Arthraxon species, *Arundinella pumila* *Eragrostis unioloides*,*E.viscosa* *Setaria glauca*, *Rottboellia*, *cochinehensis*, *Themeda quadrivalvis*, *Dimeria* species, *Eulaliopsis* species

Herbs

Desmodium species, *D.Latifolium* ,*Triumfettarhomboidea*

5B/C1c Dry Peninsular Sal bearing forests :

Distribution :

This subtype is fairly distributed in the core. It is seen in the R.F. blocks of Majhipara, Tikarpara, Katarang & P.F. blocks of Tikarpara and Katrang.

Floristic Composition :

This subtype contains a vast number of species many of which are of little importance. Composition starting from important species is furnished below:

- I. *Shorea robusta*, *Terminalia alata*, *Bridelia squamosa*, *Pterocarpus marsupium*, *Anogeissus latifolia*, *Schleichera oleosa*, *Lagerstroemia parviflora*, *Albizia* species, *Adina cordifolia*, *Mitrgyna parvifolia*, *Terminalia bellerica*, *T.Chebula*, *Madhuca indica*, *Acacia catechu*, *Buchanania lanzan*, *Lannea coromandelica*, *Boswellia serrata*, *Dalbergia paniculata*, *Ougenia oogenenses*, *Dalbergia latifolia*, *Gmelina arborea*, *Syzigium cuminii*, *Terminalia arjuna*, *Stereospermum chelonoides*, *Bombax ceiba*, *Dillenia pentagyna*, *Dyospyrus melanoxylon*.

- II. *Cleistanthus collinus*, *Chloroxylon swietenia*, *Emblica officinalis*, *Cassia fistula*, *Aegle marmelos*, *Wendlandia tinctoria*, *Gardenia species*, *Symplocos racemosa*, *Morinda tinctoria*, *Cochlospermum religiosum*.
- IIa. *Hollarrhena antidysentrica*, *Ixora arborea*, *Woodfordia fruticosa*, *Antidesma acidum*, *Aristida setacea*, *Indigofera pulchella*, *Phoenix ecaulis*.
- III. *Eulaliopsis binata*, *Themeda species*, *Heteropogon contortus*, *Cynodon dactylon*.
- IV. *Combretum roxburghii*, *Butea superba*, *Smilax species*, *Zizyphus oenoplia*, *Bauhinia vahlii*.

5B/C2-Northern Dry Mixed Deciduous Forests:

Distribution :

The forests in Tainsi R.F. block comes under this forest type.

Floristic Composition :

- I. *Anogeissus latifolia*, *Lagerstroemia parviflora*, *Haldina cordifolia*, *Terminalia alata*, *Mitrgyna parvifolia*, *Dalbergia latifolia*, *Hymenodictyon excelsum*, *Bridelia squamosa*, *Albizia species*, *Bombax ceiba*, *Shorea robusta* (less than 5%), *Pterocarpus marsupium*, *Dalbergia paniculata*, *Lannea coromandelica*, *Dyospyrus melanoxylon*, *Diospyrus species*, *Cleistanthus collinus*, *Melia composite*, *Terminalia bellerica*, *Stereospermum chelonoides*, *Bursera serrata*, *Boswellia serrata*, *Acacia leucopholea*.
- II. *Ougenia oogenensis*, *Cassia fistula*, *Alangium lamarkii*, *Careya arborea*, *Hollarrhena antidysentrica*, *Casearia elliptica*, *Mallotus phillippensis*, *Catunargegam mutans*, *Limonia acidissima*, *Acacia leucophloea*, *Zizyphus glaberrima*, *Chloroxylon swietenia*, *Gardenia latifolia*, *Gardenia gummifera* (It occurs sub-gregariously on many of the dried hills with clay soil derived from quart & zscist, H.H.haines), *Ixora arborea*.
- IIa. *Dendrocalamus strictus*.
- III. *Helicteres iora*, *Strobilanthes species*, *Woodfordia fruticosa*, *Indigofera cassiodes*, *Cipadessa baccifera*.
- IV. *Cymbopogon martini*, *Aristida setacea*, *Eulaliopsis binnata*.
- V. *Combretum decandrum*, *Zizyphus oenoplia*, *Butea monnosperma*, *Butea parviflora*, *Milletia extensa*, *Smilax species*, *Grewia tiliaefolia*.

Seral types 5/S1-Dry Tropical Riverain Forests :

Immature soil on the bank of larger nallahs or river which is in the process of development supports forest of this type. The occurrence of Sahada trees and Phasi (*Anogeissus acumminata*) on bank of nallahs and occurrence of Phasi and Kuchila trees on bank of river Mahanadi represent seral stage ecologically. These areas may be taken as a secondary succession as constant erosion and re-deposition of soil is a regular feature associated with this subtype.

Satkosia Tiger Reserve is one of the best habitats for Elephants, Tigers, Sambar, Barking Deer, Gaur etc. The riparian vegetation provides excellent habitat condition for Giant Squirrels. Abundance of Nux Vomica trees provide good food for horn bills. The different forest types provide required cover for all types of wild animals.

2.4 Wild Fauna, Habitats and Trophic Niches

There are carnivorous animals such as Tigers, Leopard, Jungle cat, Civet, Small Indian mongoose, Wolf, Jackal, Stripped Hyaena, Sloth bear, Wild dog found in Purunakote, Tikarapada, Pampasar, Raigoda, Jillinda and Chhamundia and Kusanga Ranges of the core.

There are herbivorous animals such as Elephants, common Langur, Sambar, Chital, Chausingha, Mouse deer, Barking deer, Wild pig, Gaur, Fruit bats, rodents like Malabar Giant squirrels, Five striped palm squirrel, Common hare and Porcupines in the reserve. Nilgai was noticed some years back in Satkosia Wildlife Division. But Nilgai locally called Ghodian are seen in Mahanadi RF Comp. No. 15 & 16 of Mahanadi WL Division. **Chousingha are seen in compartment No.17 of Majhipada, R.F., Compartment No. 4 of Raigoda R.F. & Compartment No. 11 of Tulka R.F in the reserve.**

The locality like Labangi, Tulka and Raigoda are very congenial for wild animals. All the above animals are sighted frequently in these areas. Raigoda, Kuadoli, Halua nalla, Nandini nalla, Hatigirija, Tulka, Baghmunda, Katranga, Purunakote, Chhotmunda, Kuru, Labangi, Karadapada, Majhipara blocks of the reserve are known as Elephants' play ground. Quite a number of animals are noticed in the forest of Purunakote, Raigoda, Tikarapada and Pampasar Ranges. Many animals are sighted in game tank areas like Kantarsingha, Hatigirija, Kandhaida, Kadalikhola, Takarsingha, Buchhundabhogra, Nadapathar, Ranibandha, Paintiri and Khajurinallia.

Crocodiles (both Gharial and Mugger) are found in Satkosia Gorge of river Mahanadi. Threatened species of the area are Crocodiles, Tiger, Elephant and Chousingha. Tiger population during 1979 was 26, it reduced during 1984 to 22.

During 2004 it came down to 17. Elephant population during 1979 was 133, it reduced during 1988 to 118, during 2005 only 98 elephants were noticed in the sanctuary but in the last census of 2007, 195 elephants were counted showing an upward trend. Leopard population during 1984 was 15 and during 2004 it was 34. Total 801 Gharials and 295 Muggers of different sizes have been released in Mahanadi river from 1975 to 2001. During the census of 2006, 2 nos. of Gharials and 68 nos. of Muggers were noticed in river Mahanadi. In rainy season during high flood, it is seen that only Muggers escape from river Mahanadi to important nalas for their survival while Gharials are unable to adopt this. They are swept away by high flood and die out resulting in decline of their number. This is corroborated from the fact that Gharials are rescued from Kendrapara areas. 22 Muggers are seen in village ponds of Jamudoli, Beherasahi and in Kadalikhola game tank. It is observed that Muggers move along nalas in opposite direction of water flow up to certain distance during rainy season and survive from high flood.

Wild animals are well distributed in the reserve, but concentration of wild animals in certain sheltered or favoured pockets are there also. These pockets are forests near Kuadoli, Kuanalli, Raigoda, Tulka, Purunakote, Tikarpara, Kuru, Tainsi, Baghmunda, Majhipara and Chhotmunda forest blocks. In Raigoda and Tulka more concentration of Elephant and Indian Bison population is observed. Deer population appears more in comparatively level areas of Kuru, Baghmunda, Tainsi, Majhipara, Purunakote and Katrang than hilly areas of Raigoda, Tulka, Jokub and Bolong. Wildlife population is seen to be less abundant in forests of Nuakheta, Bolong, Krushnachakra, Burti, Kurudu, Antulia-Tabada and Katada blocks of Angul Forest Division which are adjacent to the tiger reserve.

Unique habitats :

A large number of caves, rocks, crevices, shelves, over hangs are existing inside the sanctuary. Some of these such unique habitats are located in compartment no.7 of Tikarpara RF having longitude 84 ° 49.041' E and latitude 20° 35.245' N, second in compartment no.10 of Tainsi RF on Transect line 24 having longitude 84 ° 51' E and latitude 20° 42' N, third in Baigani pahad in Jorum R.F. at geo coordinates of 20° 30' 47.6" N, 84° 53' 4.8"E. Fourth place is in Katrang-Chunaghati chhak area along the forest road with Latitude 20° 34' 58.4" N, long 84° 52' 15.8 ", Altitude 183 mt. These areas are being used by the porcupines. Again the following caves/dens are noticed in this core.

Jhinkadari in Baghmunda Compt. No. 5, Satkunjia in Baghmunda Compt. No. 6, Badakheta in Kuru Compt. No. 2, Karadabani in Baghmunda Compt. No. 11, Places in Purunakote Compt. No. 4 & 5, Khusara pahad, Jhinka dara, Dabakhol, Sissoo khol in

Raigoda Compartment No.12 in Bhukundi Beat, Hatikunda khola in Tulka Compt. No.7, Places in Raigoda R.F. Compartment No.1,2,8,9,10,11,12,13, Places in Katrang Compt.No.5 and 7.

GRASS LAND:

Following meadows of small area are noticed in the core, viz. Karadabani in Baghmunda Compt. No.11, Andeikunjia in Baghmunda Compt. No.6, Khalikana in Katranga Compt.No.3, Rangamatia in Katrang compt.No.2, Kaduamada in Katranga Compt.No. 3, Chadheikhola in Katrang Beat, In Tikarpada R.F. Compt.no.3 &7, Asurakhola nala in Purunakote Compt.No. 11, In Chhotamunda Compt.No.3, In Kuru Compt. No. 5, Satidhara in Tulka Compt. No.9, Telibahal in Bolong Compt. No.12, Magunibhugra in Katrang Compt.No. 4&5.

2.5 Major Conspicuous Changes in the Habitat Since Inception

Due to managerial intervention and interpolation of various forest conservation practices the habitat has undergone changes like availability of water holes and salt licks. The meadows have been developed. Due to fire protection measures and protection of the forests against illicit felling the ground floral have become conspicuous and the canopy is being recouped. The positive and negative changes can be summarized as follows:

Positive:

1. The total lack of large waterbodies have been addressed by construction of several small water bodies at Hatigirija, Nuabandha, Kandhaida, India ghati etc.
2. Due to active management of salt-licks, animal visitation and sightings near water bodies have improved.
3. A series of small meadows have been artificially developed in the core area, which has increased the habitat for grazers.
4. Continued and effective fire protection in the core has resulted in luxuriant and moisture-loving ground flora, especially in semi-evergreen patches.

Negative:

Since lot of villages are there in the buffer, sometimes core is not free from biotic pressure, illicit felling and poaching. Illicit felling has created open patches, which have been occupied by weeds limiting the fodder availability.

Chapter 3

Status of Tiger and Co-Predators

3.1 Distribution

Presence of Tiger in the reserve has been ascertained from its direct sighting by public and staff during their patrolling in the reserve. Besides, indirect evidences are found plenty all over the reserve, which include pug mark, scat, scratch, rake on tree, call and kill evidences. Domestic cattle are sometimes found depredated while grazing inside reserve. Pugmark census was last carried out during 2004. The report reveals that there were 18 tigers and 34 leopards in the reserve. During last monitoring of Tiger and co-predators in 2006, a lot of evidences were collected. Kill evidences were recorded during 2007. Collating the above data the core area of the reserve has been delineated and it is estimated that there are 13 exclusive tiger territories inside the core. These territories are as follows

Territory No.	Range	RF / Compartment	Local name
1	Purunakote	P.Kote-19,20 Tulka – 7	
2	.do.	P.Kote-9,11,12	Asurakhola
3	.do.	Tulka 2,3	Kuanali
4	.do.	Tulka 10,11	Satidhara Bhimadhara
5	.do.	Baghamunda 8,9	Fireline
6	.do.	Kuru 5,6,9	Kukurbindha
7	Tikarpada	Tikarapada 3,9 Katrang 2	Kandhaida Mahadev khau
8	.do.	Majhipada 10,12,15	Gohirapada Hatigirija
9	Pampasar	Takarasingha 2	Atharmile
10	.do.	Balanga 11 Raigoda 13,15	Kantarsingha Rasanda
11	Raigoda	Raigoda 4	Raigoda-Nuagarh
12	.do.	Rairoga 14,15	Kuadoli
13	Jillinda	Katrang 4 Purunakot 15	Hadibasabara

Besides tigers, co-predators like leopard, sloth bear, wild dog, wolf, jackal, and hyena are also seen in the reserve which was noticed during monitoring 2006. It is seen that all the predators coexist without inter- species competition.

Species	R.F.	Compt.No.	Local name
Leopard	Raigoda	3	Near Raigoda village
	Raigoda	1	Near Brahamanidei GT
	Purunakote	9	Near Purunakote village

	Kuru	6 & 7	Near Gopalpur village
	Tikarpada	5	Near Tikarpada village
	Majhipada	7	Near Balisahi of Majhipada village
	Baghmunda	9 & 12	(Near Baghmunda)
	Baghmunda	2	(Near Dolasingha & Dalki village)
	Katrang	2	(near Katrang village)
	Tulka	7, 12	
	Jocub	6	
	Jocub	2	(Near Pampasar village)
	Chhotamunda	5	Near Salor village
	Tainsi	10	Near Tarava
	Mahanadi	1,2,7,8,9,17	Khala Khala nala
Wild dog (Dhole)	Baghmunda	12,13	
	Kuru	8	
	Tulka	8&9	Tulka-D
	Jocub	3& 4	Labangi-C

3.2 Abundance Status

Tiger: 18 tigers was estimated during the pug-mark census undertaken during 2004. The NTCA report released in 2008, says that "Satkosia Landscape is part of a forest patch of 13,459 km² and has tiger occupancy in 787 km² with several smaller pockets reporting tiger presence. The low density population was estimated to about 6 tigers. The area covers the districts of Phulbani, Ganjam, and Kalahandi."

Leopard : A total of 34 was estimated during the pug-mark census undertaken in 2004.

Dhole : No estimate has been done, but four packs were seen during monitoring in 2006. Similarly, there are ample evidences of presence of **Hyena, Bear and Wolf.**

3.3 Prey-Predator Relationships

Though systematic investigations into the dynamics of prey-predator relationships have not been carried out, analysis of direct sightings, indirect evidences and scats reveal the prey preferences of Tiger and its main co-predator the Leopard. Large-sized prey like Gaur can be taken only by the Tiger, though Sambar and Wild Boar remains its preferred prey. Leopards seem to prefer Muntjac, Chital, Langur and smaller mammals like Porcupine. Hence, a sort of resource partitioning based on prey size exists.

3.4 Assessment of Threats.

Agriculture is the main occupation of the people residing inside the Reserve and on the fringes. The population is increasing rapidly creating tremendous biotic pressure. People depend on forest for shelter, firewood, and food. Raw materials for erecting houses are obtained from forest. Their cattle graze in these forests. Roots, leaves, tubers, herbs,

and flowers collected from the forests constitute their main food during the time of scarcity. Diseases are cured by application of forest herbs. Hunting and fishing in forests and rivers are their common pastime. With increasing population all these activities are also rising. Sometimes people from inside and outside Satkosia Tiger Reserve overexploit the forest resource for commercial gains. In fact, the traditional methods of collection of forest produce never harm the forest to a major extent. The timber traders, poachers and smugglers are causing more damage to the health of the forest. The smugglers and poachers exploit the simple tribals living inside the reserve and use them for their benefits. Traditional tribals and communities residing in the reserve are not destructive of the forest because their resource consumption is sustainable and they are very adapted to the forests. The threats to the reserve are mainly from the people residing outside through their timber smuggling and poaching. As a result, the following threats are persist in the reserve.

Subsistence hunting and snaring of small game and birds by the local inhabitants is known from the area, albeit rarely.

Targeted elephant poaching for ivory by outsiders with the help of local people is an acknowledged threat, though much less when compared to the buffer areas.

Loss of habitat by way of illicit felling of valuable timber trees.

Human settlement and consequent biotic interference inside the core zone. There are 5 villages inside the Core area of the Reserve having 416.74 Ha. of land. The total population of these villages is estimated to be around 200 persons. The management efforts obviously will be towards making the core zone fully inviolate by formally settling the rights of these villagers and providing them appropriate and attractive resettlement package outside the Tiger Reserve.

Chapter 4

History of Past Management and Present Practices

4.1 Conservation History

The core area in past was managed by 5 territorial divisions viz. Angul, Athmallik, Athgarh, Boudh and Nayagarh Forest Divisions. At that time the forest areas were known by Reserve Forests, DPFs, and Khesra forests. Separate Working Plans were in operation for the areas coming under particular territorial divisions.

Working Plans for erstwhile Angul (T) Division portion:

Mr. T.I.Peacock's Plan	(1 st Working Plan)	1908-09 to 1922-23
Mr. L.R.Sabharwal's Plan	(Preliminary Working Plan)	1922-23 to 1925-26
Mr. W.D.M. Warren's Plan	(A Scheme)	1925-26 to 1927-28
Mr. R.L.Dirry's Plan	(24 Yrs Plan)	1923-24 to 1946-47
Sri Jee's Plan		1944-45 to 1964-65 extended up to 1980-81
Dr. C.R.Mohapatra's Plan	(Revised Plan 1970-1990)	Implemented after 1980-81
Sri B.P.Singh's Plan		90-91 to 99-2000

Working Plans for erstwhile Rairakhol Division / Athmallik (T) Division portion:

Mr. S.B.Das's Plan	(1965 to 1985) (Rairakhol Division)
Mr. Dinesh Singh's Plan	(1985 – 2005) (Athmallik Division)

Working Plans for erstwhile Nayagarh Division portion:

Sri N.C.Bal's Plan	1983-84 to 2002-2003
--------------------	----------------------

Working Plans for erstwhile Boudh Division portion:

Sri Basudev Mohapatra's Plan	1975-76 to 1994-95 extended till 2000
------------------------------	---------------------------------------

Working Plans for erstwhile Athgarh Division portion:

Sri G. Mohapatra's Working Plan	
---------------------------------	--

In all the above plans, emphasis was given mostly for production of quality timber. Up to Shree Jee's Plan of Angul (T) Division there was no mention about Wildlife Management. Dr. C.R. Mohapatra in his Plan had inserted a chapter on Wildlife Management under Miscellaneous Working Circle. But he had not provided suitable emphasis on the subject. Only the names of Acts and Rules prevailing during that time were mentioned.

Sri B.P. Singh for the first time has included a Wildlife Management Working Circle (over lapping) in his Working Plan. By that time the Satkosia Gorge Sanctuary has already been notified. He had divided the Working Circle into to 2 areas i.e.

Wildlife Management in Sanctuary area.

Wildlife Management in other area.

The highlighted Management Prescriptions were as follows :

1. Creation of water holes and of check dams on the Plateaus and higher slopes along nalas to improve water availability in summer.
2. The concept of zonation inside the sanctuary has been felt. He had divided the sanctuary in to four zones, viz. Core zone, Buffer zone, Tourism zone, River zone.

Felling of timber yielding trees above exploitable diameter were allowed even in Core zone without creating any lasting gap in canopy. But no green felling of any kind was allowed in 50 mtr. Width along road, nalla, around game tank, Salt licks and favourite sites of wild animals.

Some other prescriptions were :

- No teak plantation in core area but grass and fruit bearing tree plantation in eroded and blanks were allowed.
- Reduction of cattle population in villages in and around the sanctuary.
- Adequate soil and moisture conservation measures were to be taken during subsidiary silviculture operations (SSO).
- Timber and bamboo working were allowed in sanctuary to be completed before end of February every year.

Prior to 1920, the erstwhile Ruler of Athamallik State had declared the Hatidhara forest as a Reserve for the Wildlife. It was reported that the population of elephants was enormous in Hatidhara forest leading to elephant catching by Kheda operation there.

There was a ban of shooting of Partridge, Pea fowl and jungle fowl from 1st April to 15th September in the forests promulgated by the Athmallik State Rulers.

There is no special mention of Wildlife Management in the Rairakhol Plans up to 1964. In the Revised Working Plan of Sri S.B. Das (1965 – 1985), the Wildlife Management was dealt with in a separate chapter (Chapter IX). He had suggested the following measures for the Management of Wildlife:

- To raise anti poaching gates at different places bordering Satkosia Gorge Sanctuary at Kurab and Bipradih.

- To issue shooting permits in a restricted manner and number of such permits should be very small.
- To constitute Hatidhara block into a game sanctuary adjoining to Tikarapara game sanctuary.

In Dinesh Singh's Plan (1985 – 2005): Wildlife Management was discussed in Chapter XV. No separate W.C. was formed. Habitat improvement, Infrastructure development, establishment of anti-poaching gates, adequate fire protection measures, raising succulent grasses, salt licks, construction of water holes were some of the suggestions made in the Plan for Wildlife Management. Some of the suggestions were implemented in course of the Plan period, but majority could not be implemented due to paucity of funds.

Sri N.C.Bal in his Working Plan for Nayagarh Division has not kept any Working Circle for Wildlife Management. But he had some prescriptions in general on census operation, Regulation on grazing , Precaution on plantation and grass land development, salt licks, water holes, control burning.

Sri Basudev Mohapatra in his Working Plan for Boudh division applicable to Padmatola R.F. and Arakhapadar R.F. constituting part of the sanctuary did not prescribe any specific working Circle for Wildlife Management. But he has some prescription in general. He has mentioned that Padmatola was notified as a sanctuary vide Notification No.10151/F. 4F. Dt. 22.2.1962 of C..F., Berhampur Circle under Rule 3(1) of the Orissa Government Reserve Forest Shooting Rules, 1938. He has prescribed to renovate the Padmatola game tank and develop few salt licks around it. He had prescribed to construct road, FRH, and watch towers to attract tourists.

Most of the prescriptions of all W.P.OS. could not be implemented in the field due to paucity of funds.

4.2 Habitat Management

In Dinesh Singh's Plan (1985 – 2005) Wildlife Management was discussed in Chapter XV. Habitat improvement, adequate fire protection measures, raising succulent grasses, salt licks, construction of water holes were some of the suggestions made in the Plan for Wildlife Management. Some of the suggestions were implemented in course of the Plan period, but majority could not be implemented due to paucity of funds.

First Management Plan for Satkosia Gorge Sanctuary was prepared by Sri Arun Kumar Mishra, Assistant Conservator of Forests, Satkosia Wildlife Division for the period from 2000 to 2010. He had suggested Water resource development through

Construction of game tank, Water storage structures, check dams, Percolation trenches and weed eradication.

The present management plan prepared by Sri P.C. Mishra suggests following activities to be undertaken in the core area. The soil and moisture conservation activity includes Brush wood with loose stone, Gully plugging / check dam, Inverted Bandhara, Percolation Tank. Other habitat improvement activities include Renovation of existing water hole, creation of new water holes, Salt licks, Grazing control, Weed eradication & fodder plantation, Plantation, silvicultural operation in bamboo, Removal of degraded Teak and conversion to meadows, Special Intervention to Giant squirrel. Most of the above activities are being carried out.

4.3 Protection and Intelligence gathering

The forest protection and collection of intelligence has gained primed importance. It has resulted in ensuring protection of the landscapes from the clutches of axe, saw, bow and arrow and gunshots. For the purpose of proper protection the area has been divided into smaller units. Anti smuggling and anti poaching squads have been deployed in each such units for conducting foot patrolling. Movement of mobile party with vehicles has been ensured. Regular monitoring is done over VHF net work. Mahanadi river squad is operating at 3 strategic locations on the bank of river to prevent illegal removal of forest produce through it. Villagers from inside and outside the reserve have been engaged by the DFOs and range officers to gather intelligence and secrete information about smugglers and poachers. Surveillance over them could be possible due to them. They have been provided with mobile sets and paid incentives regularly.

4.4 Tourism and Interpretation

There is ample scope for ecotourism in the tiger reserve. Places like Tikarpada, Labangi, Baliput and Badamul are frequently visited by tourists during winter season. Visit of tourists in rest part of the year is reduced. Around 25000 visitors visit the reserve annually. Most of them are picnickers. Night halts have increased after establishment of tentage accommodations in Ramgaon nalla sand. Attended interpretation needs improvement. But unattended interpretation available in the reserve includes publication of leaflets, posters, erecting hoardings on road sides and creation of nature trails. The Interpretation centre at Tikarpada needs improvement. Boating and elephant ride facilities are available at Tikarpada. But vehicle are not available for tourist to move inside forest to see animals. Community based ecotourism has started at Tikarpada in the name of Tikarpada Parivesh Paryatan Samiti (TIPPS), which is a

registered society. It renders services to the visitors, who stay in night in tents, besides they act as eco guides for them.

4.5 Research and Monitoring

Tikarpara Crocodile Project :

Government of Orissa decided to protect Gharials and Muggers left in Satkosia during March 1974. Dr. H.R. Bustard, an F.A.O. Consultant on crocodiles visited the place during June 1974 and recommended for a Conservation Project. The Project started during March 1975. Dr. H.R. Bustard worked as Chief Technical Advisor in the project till 1980.

The project had a three phase plan: Collection of wildy laid eggs for hatching, incubation and rearing of hatchlings up to 1m. long size and releasing the hatchlings in Satkosia Gorge for rehabilitation.

An NGO called Foundation for Ecological Security (FES) has studied the biomass of the sanctuary, and livelihood opportunities of the people living inside the reserve. Except the above no other study has been carried out in the reserve.

4.6 Relocation of Villages

There are 5 villages inside the core area of the tiger reserve. These include Raigoda, Marada, Kuturi, Salapagonda and Musuguda. Emphasis will be given to relocate the families in these villages based on the packages prescribed by NTCA. Relocation of Raigoda revenue village is in pipeline. People have volunteered to leave the reserve. But adequate suitable land is not available in the vicinity. An area of 22 acre of 'Puratan patit' category land has been identified in village Jamugadia, which can be useful to relocate only a part of the population of Raigoda village. The Collector of Boudh district has given his opinion to relocate another village Marada from core. But the report from Collector Nayagarh is still awaited as regards relocation of Villages like Musuguda , Salapaganda and Kuturi from the inviolate area of the reserve.

4.7 Administration and Organization

River Mahanadi nearly divides the reserve into two parts, north of river Mahanadi is managed by D.F.O. Satkosia WL Division and South by D.F.O. Mahanadi W.L. Division. D.F.O. is the head of the Division and one A.C.F. in each division assists the D.F.O. in overall supervision of the sanctuary.

Systematic Management of Wildlife of the division started after the area was notified as a Sanctuary in 1976. The sanctuary was under control of ACF, Chandabali long back with headquarters at Angul. In 1985, a separate Wildlife Division with headquarters at Angul was created for intensive management of the sanctuary. The DFO was having then overlapping jurisdiction over sanctuary portions of Angul, Athmallik, Athgarh, Boudh and Nayagarh Territorial Divisions. He was looking after the Wildlife Management aspects of the sanctuary. During 1999, Government vide their Notification No. 13060/F&E . 8F(WL) Dt.12.7.1999, assigned territorial jurisdiction of the sanctuary to 2 Wildlife Divisions, Satkosia Wildlife Division with headquarters at Angul with Northern part of the sanctuary including the river Mahanadi and Mahanadi Wildlife Division with headquarters at Nayagarh (earlier at Phulbani), assigned the part of the sanctuary South to river Mahanadi in addition to Baispali Sanctuary.

The details of field set up are given below:

Satkosia Wildlife Division, Angul		
Range	Section	Beat
1. Purunakote	1. Tulka (N)	1. Tulka (A) 2. Tulka (B) 3. Tulka (C)
	2. Tulka (S)	3. Tulka (D) 4. Tulka (E) 5. Tulka (F)
	3. Purunakote	7. Chhotkei (A) 8. Chhotkei (B) 9. Purunakote (A) 10. Purunakote (B)
	4. Baghamunda	11. Baghamunda (A) 12. Baghamunda (B) 13. Baghamunda (C)
2. Pampasar	5. Pampasar	14. Pampasar (A) 15. Pampasar (B) 16. Jagannathpur (A) 17. Jagannathpur (B)
	6. Labangi	18. Labangi (A) 19. Labangi (B) 20. Labangi (C)

	7. Kumuri	21. Kumuri (A) 22. Kumuri (B)
	8. Tarava	23. Tarava (A) 24. Tarava (B)
3. Jillinda	9. Jodum	25. Baliput 26. Kamaladihi 27. Jillinda 28. Sisoopathar
	10. Katrang	29. Katrang (A) 30. Katrang (B) 31. Katrang (B) 32. Siaribhundi
4. Tikarpada	11. Tikarpada	33. Tikarpada (A) 34. Tikarpada (B)
	12. Majhipada	35. Majhipada (A) 36. Majhipada (B) 37. Naleswar
Raigoda	13. Raigoda (E)	38. Raigoda (A) 39. Raigoda (B) 40. Raigoda (C) 41. Raigoda (D)
	14. Raigoda (W)	42. Raigoda (E) 43. Raigoda (F)
	15. Bhurkundi (W)	44. Bhurkundi (A) 45. Bhurkundi (B)
Mahanadi Wildlife Division, Nayagarh		
Range	Section	Beat
1. Chhamundia	1. Badamul	1. Kuturi 2. Badamul 3. Malisah
	2. Chhamundia	4. Chhamundia 5. Rajingi 6. Muduligadia 7. Khandadhua
	3. Dhipisahi	8. Dhipisahi 9. Gergedi
	4. Purunapani	10. Purunapani 11. Malasapadar

2. Kusanga	5. Kusanga	12. Kusanga 13. Nuapada 14. Kumari
	6. Sitalpani	15. Marada 16. Sukhania 17. Sitalpani 18. Atalasar
	7. siripaju	19. Padamatola 20. Siripaju 21. Nandagadu 22. Hinjala

The existing pattern of staff by hierarchical levels in both the Wildlife Divisions with sanctioned strength, vacancy position is as follows:

Name of the Division	Name of the post	Sanctioned strength	Staff in position	Vacancy position
Satkosia Wildlife Division, Angul	DFO	1	-	1
	ACF	1	1	-
	R. O.	7	3	4
	DY.R.O.	1	1	-
	FORESTER	22	16	6
	F.G.	59	25	34
	G.G.	6	6	-
	Bungalow- -Choukidar	5	5	- -
	Pool Attendant	1	1	-
	Pumpman	1	1	-
	Jr. Vet Officer	1	-	1
	V.A.S.	1	-	1
	Head Clerk	1	1	-
	Accountant	1	1	-
	Sr. clerk	4	4	-
	Jr. clerk	7	6	1
	Stenographer	1	1	-
Amin	1	1	-	

	Driver	2	2	-
	F.E.O.	5	5	-
	V.F.W.	15	13	2
	Office Choukidar	1	1	-
	Office peon	1	1	-
	Mali	1	1	-
	Sweeper	1	1	-
Mahanadi	DFO	1	1	-
Wildlife	ACF	1	1	-
Division	R. O.	2	2	-
	Forester	7	5	2
	F.G.	22	6	16
	G.G.	2	2	-
	Head Clerk	1	1	-
	Accountant	1	1	-
	Sr. clerk	4	4	-
	Jr. clerk	7	5	2
	Stenographer	1	1	-
	Driver	1	1	-
	F.E.O.	1	1	-
	V.F.W.	4	-	4
	Mali	1	1	-
	Sweeper	1	1	-

Chapter 5

Land use Patterns & Conservation-Management Issues

5.1 Land use Classification

The entire area of the core area is forest land. The land measuring 4.16 sq. km, occupied by 5 villages in the core area is under cultivation and human habitation. Their agriculture is traditional and rainfed. Upland paddy, maize and millets are prime crop followed by sesamum, mustard, horse gram and black gram as paira crop. Most of the forest fringe-lands remain fallow as the crops are frequently raided by wild animals. As a result weeds like eupatorium, lantana and parthenium occupy the space. Infrastructure development is very poor in the core area.

5.2 Socio-economic Profile of Villages

The people residing inside the core area mainly live on agriculture supplemented by collection of tubers, roots, fruits and other NTFPs. Economically the people are very poor. Besides agriculture, people often migrate to urban and coastal areas as labourers. As Salia and Daba bamboo are plenty many families take up basket making and other bamboo handicrafts. Fishing is mostly confined to people staying in villages along river Mahanadi. Forest is a part life for the people living within the core area of the reserve.

5.3 Resource Dependency of Villages

The people living inside core largely depend on forests. Besides collection of tuber, root, fruits and nuts for their consumption, people set fire deliberately to the forests every year during the summer, to get good flush of kenduleaf, sal seed and mahua flowers. This causes immense damage to forest and wildlife. People also burn forest floor so that the ash gets washed into their farm lands and enriching it. Similarly fishing reduces the food availability for the muggers and crocodiles in river Mahanadi. The grazing and browsing by the village cattle cause shortage of forage for the wild animals and sometimes it spread infectious diseases among wild animals.

In brief the present land use and resource dependency of villagers is not sustainable for long term conservation of Satkosia tiger reserve.

5.4 Human- wildlife Conflicts

Human-wild animal conflict is a serious problem in the core area. During many occasions the communities suffer human kill, cattle depredation and crop raids which causes friction between people and reserve managers. Production from crops decreases

due to depredation of crop by elephant and wild pigs. Though reports on human death and injury caused by wild animals are not common, some cattle are killed by big cats.

5.5 Assessment of Inputs of Line Agencies / Other departments

A few line developments take up their activities in the core villages. These are merge and often quite insignificant for improving the livelihoods of the communities. Mostly the works are implemented through Forest department funded by D.R.D.A. The various schemes being operated by DRDA are :

1. SGSY
2. NREGS (National Rural Employment Gurranty Scheme)
3. I.A.Y. (Indira Awas Yojana)

Immunisation to cattle are done with the help of Veterinary department. Health camps are organized in the core villages with the help of Medical staff. There are few N.G.Os working in the sanctuary area. The NGO namely FES (Foundation of Ecological Security) with local headquarters at Angul is doing some work for livelihood support of the inhabitants.

Part B : The Proposed Management

Chapter 6: Visions, Goals, Objectives and Problems

6.1: Vision

The Tiger task force report 'Joining the Dots' submitted to the Prime Minister in 2005, stresses that "a strategy of inclusive protection should be the essence of future conservation in India because of the internecine conflicts between people and park managers, regarding resource use in the park fringes". Thus, the need of the hour is to work out a strategy which fully takes into account the local people, their aspirations and felt needs while going about the business of conserving the tiger and its habitat. The vision of this plan is therefore, to conserve the complete ecosystem of Satkosia landscape in perpetuity using the tiger as a flagship species by maintaining a healthy viable breeding population inside an large inviolate core area in conjunction with a multiple-use buffer and adjoining area.

6.2 Management Goals

- To make the core area a safe zone for a healthy breeding population of the tiger.
- To eliminate biotic interference inside the area.
- To actively manage selected pockets and enhance the forage availability for prey base, increase their population and thereby facilitating increase in tiger population.
- To maintain selected pockets as benchmark ecosystems to carry out research, monitor ecological changes, quantify ecosystem services and exhaustively document biodiversity richness.

6.3 Management objectives

With the vision and goals stated above, long term objectives are set forth as under:-

- Protection and conservation of flora and fauna with special reference to the Tiger.
- Enhancement of capacity building of staff and protection infrastructure development.
- Habitat improvement including water development that aims at increasing carrying capacity of prey base.
- Relocation of villages from the inviolate area.

- Safeguarding tiger habitat from ecologically unsustainable development.

6.4 Problems in achieving objectives

- High degree of biotic interference, illicit felling and poaching.
- Shortage of wildlife qualified manpower.
- Shortage of field level staff.
- Inhospitable working condition and proneness to malaria.
- Forest fire and scarcity of water in summer.

6.5 Strengths-Weaknesses-Opportunities-Threats (SWOT) Analyses

Strengths

- Substantial area of intact contiguous forest which has excellent long-term conservation potential.
- Rugged terrain interspersed with valleys to provide secluded area for tigers to ambush and escape.
- Adequate tiger population which can serve as the nucleus of a healthy source for the buffer and adjoining landscape
- Adequate Mesic sites, key areas, riparian zones, special habitats and unique habitats for diverse fauna.

Weakness

- Presence of 111 villages in the buffer area immediately adjoining core
- Lack of awareness and support towards Tiger Reserve by the local people.
- Largely illiterate tribal population with very backward socio-economic conditions
- Increasing population inside the villages with strident demand for more facilities
- Inadequate man power with the management.

Opportunities

- Excellent opportunity to work out an integrated protection-cum-habitat management in the core to increase the carrying capacity and maintain a healthy tiger population with long-term conservation potential.
- Excellent potential for long-term research into tiger habitat selection, ranging, social dynamics and prey-predator interrelationships.
- Excellent support from NGOs and media.

Threats

- Local poachers and smugglers.
- Inhospitable terrain, climate and endemic malaria-proneness.
- Growing population in the buffer area and their dependency on the reserve.

Chapter-7

Management Strategies

7.1 Delineation of Buffer Areas and Other Zones within the Buffer Area (e.g. Eco-development Zone, Forestry Zone, Production Sector zone, etc.)

The Constitution and extent of the Buffer Area has already been described in para 1.1.3 and 1.1.4 of Chapter 1.

Forest area = 235.82 sq. km

Village area = 204.44 sq. km.

Total Buffer area = 440.26 sq. km.

Forest area consists of RFs and Places of Tourism importance. Similarly village area includes habitations, tourism places and a part of Mahanadi gorge. These are the places from where people derive their bread and butter. Hence it is proposed to divide 440.26 sq.km area into 4 distinct zones to provide exclusive treatments. They are as follows:

- 1. Eco-development Zone:** It includes village areas excluding the portion covered in eco tourism zone and production sector zone
- 2. Forestry Zone:** It includes reserved forest areas of Satkosia and Baisipalli WL sanctuary excluding that included in eco tourism zone
- 3. Eco-tourism Zone:** It includes Tikarpada RF Comp. No. 5A of 20.00 ha., Tikarpada village, Purunakote village and adjoining forest, Labangi village, Baliput, Badamul village, river Mahanadi in between both the villages, Banigochha and Buguda
- 4. Production Sector Zone:** It includes Mahanadi gorge portion of 19.73 sq.km in buffer where traditional fishermen community use to catch fish for sale. It includes Sisupathar Medium irrigation dam and village tanks where fishery is one of the livelihood of local community. Agriculture lands in each village constitute the zone as they are the primary source of income for the inhabitants of the reserve.

7.2 Zone and Theme Approaches to Management Strategies.

7.2.1 Zone Plans

7.2.1.A. Eco-development Zone (EDZ) :-

Broad Strategies.

- Need of the villagers will be permitted, where regulated livestock grazing is allowed, and collection of NTFPs and firewood is permitted for the bonafide use of the villagers.
- Eco-developmental activities like construction of water body for the benefit of both animal and people need to be permitted.
- Resource use regulations *prima facie* need to be tied to wildlife habitat needs.
- As in core zone steps to be taken to develop refuges and shelters for wild animals and all the available nesting dens of different animals may be surveyed, identified and protected.
- Fire needs to be prevented by involving the people of the villages.
- Compartment or part of the compartment needs to be earmarked for villagers for the grazing of their cattle.
- Steps will be taken to improve the economic condition of the people.
- They will be provided with alternate livelihood in order to reduce the dependency on reserve.
- Infrastructural development will be made in the villages to improve their social status.
- Steps will be taken to reduce Man-Animal conflict.
- Activities to be undertaken to gain the confidence of the people living in the reserve.

Detail is being discussed in Chapter 8

7.2.1.B. Forestry zone:- Forests in buffer are vulnerable to all sorts of pressures and interference. Development in this zone is essential to counter the adverse impact of grazing, lopping, illicit felling, fire, unsustainable removal of NTFP and poaching so that wild animals from core may use this zone frequently to meet their habitat requirements.

7.2.1.B.1. Activities proposed

7.2.1.B.1.1. Silvicultural Operation of Bamboo in Elephant passages

Elephants move in two migratory paths passing through Baisipalli sanctuary. One path starts from Buguda and passes all along Langalkhol Nala in comp. No.5, 6, 8, 9, 10, 11 till it reaches the boundary of central RF of Nayagarh Division and another

starts from Hatidhara R.F. of Boudh Division and passes through comptt. no.1 of Baisipalli RF to towards Chakapad area of Phulbani Division. For development and maintain of this corridors following prescriptions are suggested. The quality of habitat will be maintained all along the paths with special attention to riparian zone, mixed deciduous forest and bamboo forests. Because of suspension of bamboo working consequent upon declaration of sanctuary, the area has led to congestion of bamboo crop which reduces the forage availability for elephants. The dead culms in bamboo clump are also prone to fire hazards. Hence selective bamboo working by removing dead culms from the congested clumps is needed to reduce fire hazards as well as to improve the forage availability.

7.2.1.B.1.2 Weed eradication:

Eradication of Weeds is also highly essential for proper management of habitat.

7.2.1.B.1.3 Creation Water bodies and maintenance:

There are ample scope and justification to restore, create and maintain water bodies in the compt. No.1, 7, 12, 15, & 16, Comp. no 1 of Takarsingha RF, Tainsi RF and Chhotamunda RF. In summer days there happens to be scarcity of water in those Comptts. in particular places. The limited availability of nalas in rainy season can be exploited to create permanent water sources for wild animals. Except seasonal streams, at present there exist three nos. of WHS at Nekarganda, Banigochha and Takuda and two check dams at Buguda & Sapapathar and one water hole at Atharmile. These are not sufficient to meet the need of the PA. So few more WHS, Check dams, Game Tanks and small Water holes are proposed to be created in the area. The sites proposed for creation of water bodies during the plan period are given below.

Type of Water Body	No.	Location	Compt. No.
WHS	02	Near Garsa & Raguda	Compt. No.01
	01	Near Chillipathar	Compt. No.07
	01	Near Senapari	Compt. No.12
	02	Near Kuchumara & Dimiripati	Compt. No.15
	02	Near Osamaska & Sektapalli	Compt. No.16
Checkdam	01	Near Garsa	Compt. No.01
	01	Near Jamusahi	Compt. No.02
	02		Compt. No.7

	01		Compt. No.12
	02		Compt. No.15
Waterhole-Big	01		Compt. No.16
	02		Tainsi RF
	03		Chhotamunda RF
	01		Compt. No.15
	01	Near Chillipathar	Compt. No.07
Waterholes (small)	10		@ 2 each in Compt. No.1.7.12.15,& 16

Apart from the above existing water bodies created in compt. No.2,5,1,6,of Baisipalli RF and Comp. No. 1 of Takarasingha RF are to be renovated for perennial water sources for wild animals during scarcity season for their sustenance.

7.2.1.B.1.4 Improvement of catchment through Soil & Moisture Conservation measures:

Effective and appropriate soil conservation measures need to be taken in sloppy areas of Compt. No.1, 14, 15, 16 & 20.of Baisipalli RF, all comp. of Tainsi RF and Chhotamunda RF All the gullies & ravines in these areas will be treated with effective plugging of the same.

Unless the run off is checked, it will lead to heavy soil erosion which may affect the tree growth in the slope areas which will ultimately affect the wild animals habitat. The above compartments are well known for the existence of herbivores like Sambar, Barking deer, Elephant, and major carnivores like Leopard & Tiger. Within the above compartment six enclosed villages are there having crop field which are expected to be affected by the gullies. Hence Soil moisture conservation measures will be undertaken.

7.2.1.B.1.4.1. Steps to be taken for control and reclamation of gullies and ravines in the Compartments under prescription:

Step.1.:The area first must be closed to grazing and other biotic interference.

Step.2.: Contour Bunding: Elongated bunds created along the contour line on the slopes at an interval of 100 mt. in order to

- (a) Increasing the time of accumulation and thereby allowing more run off water to be absorbed and held in soil profile.
- (b) Intercepting a large slope into several short ones so as to maintain less than a critical velocity for the run off.
- (c) Protections against damage owing to excessive run off.

As applicable to the area of treatment there may be additional bunding if required i.e Side bunds, Lateral bunds, Supplemental bund and marginal bunds.

Step.3: Gully plugging:-

This is achieved by constructing temporary and semi-permanent structures and nala bunding. One of such structure is check dams to check the velocity of run off through barrier constructed to hold back water and raise its level. These are the important structures invariably accepted for control of gullies to facilitate vegetative growth. The Check dams break the erosive velocities of the run off by flattening out the steep uniform gradient. A series of check dams constructed across the gullies transform the longitudinal gradient into a series of steps with low risers and long flat treads. In the comptt. prescribed for the treatment, only loose Boulder check dams shall be constructed. The check dam should be vertically spaced in such a way that the crest elevation of one should be the same as the bottom elevations of the adjacent dams on the upstream side. Check dams should be extended far enough into the bottom and sides of the gully to prevent under mining by water forcing through the bottom and ends. To prevent the scour, if noticed, an apron of sufficient width and length should be provided. Usually the dam is taken 30 cm into the bed of the gully and the ends are taken about 60 cm. into the stabilized sides of the gully.

Hence, all the gullies formed in afore mentioned Compartments will be plugged in phased manner during the entire plan period to check soil erosion and loss of habitat and also for moisture conservation.

7.2.1.B.1.5. Rehabilitation of Degraded Forest Plantation

Though Baisipalli sanctuary as a whole is covered with dense flora and fauna, there are some degraded patches in Compt. No.1, 7 & 19. Natural regeneration in these compartments is very poor due to biotic and other factors. Similarly there are patches in the fringe of enclosed villages' boundaries in compt. No.11, 12, 14, 15 & 17 of Baisipalli RF, which have been degraded due to constant biotic influence. These areas are required to be rehabilitated. Only protection and some plantations in gaps in the compt. No.11, 12, 14, 15 and 17 of Baisipalli and forest patches near villages like Tarava, Badakheta, Purunakote, Gopalpur and comp. no. 11,12 of Tulka RF are enough to meet the objective at this present juncture. Tree fodder and Fruit bearing trees should get priority for plantation in these areas. While rehabilitating the areas weeding operation shall be made in identified patches which should not be below 2 Ha. Post planting care is very vital in these areas which can be managed by separately engaged labourers for the purpose.

During the plan period it is proposed to take up 100 ha. of RDF plantation of fruit bearing species as well as species of Leguminocea and Malvaceae in those compartments @ 20 ha. per year. The area proposed to be planted in each compartment is reflected in Annual plan of operation for each year.

7.2.1.B.1.6. Meadow development:

Compt. No.8,9 & part of vacant portion of Compt. No.19 of Baisipalli RF are proposed to be covered under Meadow development in this plan to improve the habitat quality and to conserve the soil & moisture. In the present context a 'grass land' means the area raised normally with perennial grasses primarily and specifically to save the soil from erosion and permit only safe and conservative use of the forage crop to ensure improvement and build up soil component of the habitat.

This part of the reserve is covered with 'Sehima-Dichanthium type' of grass land having 24 predominant grass communities of which *Themeda* and *Isiclemia* are most under spread. These grasslands hold high potentiality to produce up to 6300 KG per ha. of hay. When subjected to grazing the dominant perennial communities are degenerated to annual ones in the order of *Dicanthium* – *Bothriochloa* – *Heteropagon* – *Eremopogan* – *Aristida* – *Eragrostis* - *Melanocenchris*. Lopping the forest tree species, Fire and unregulated grazing are the main factors of degradation of grassland in the area.

During the plan period it is proposed to create 5 ha. of grass lands in the Compt.No.8,9 & 19 of Baisipalli RF in identified open patches which are generally surrounded by tree growth. In addition to this it is also proposed to create grasslands in the open areas near by enclosed villages i.e 2ha. in each village periphery.

7.2.1.B.1.7. Regulation of grazing:

Apart from reducing cattle population the available resource of grazing should be properly managed to ensure high sustained yield and animal growth. This includes:-

a. Closure	f. Periodic grazing
b. Ceiling on grazing incidence	g. Penning the cattle
c. Rotational grazing	h. Allowing free cutting of grass
d. Deferred grazing	i. Conservation of forage for the lean period.
e. Deferred rotational grazing	

7.2.1.B.1.7. Fire Control measures.

The buffer zone is highly fire prone. Villagers deliberately lit fire in the reserve in the process of collection of Mahua flower, sal seed, kenduleaf, honey, and karanj seed. Villagers of Purunakote set fire to kill tick, an ecto-parasite of livestock. Fire in the

reserve pose a serious threat to it as it damages nearly 60 % of ground cover during fire season from Feb. to May every year.

It is proposed to take up following preventive and curative measures to avoid damages caused due to fire.

- 1. Fire map:** A fire map of the buffer will be prepared basing on the previous 3 years' data indicating low intensity and high intensity areas.
- 2. Fire line tracing:** Fire lines will be traced as a preventive measure. No burning is required. The dried leaf litters will be swiped to one side leaving gap of 15' exposed earth. This will prevent fire to spread to other side of the forest. Fire lines will be drawn parallel to roads, foot paths being used frequently by the villagers on both sides after a gap of 3 chains from them to avoid deliberate firing by the passers. Fire lines may also be drawn around the habitations, around the prime NTFP collection areas inside the reserve and on Tiger reserve boundary to avoid fire spreading from outside.
- 3. Firefighting squad:** A squad consisting of 5 local persons under the leadership of Forest guard will be stationed at each vulnerable beat in buffer zone. It will be better if separate squads are deployed for day and night duty. There are 40 such vulnerable beats in the reserve.
- 4. Fire fighting equipments** Helmets and gloves are more useful to the squad at the time of extinguishing fire. They may also be supplied with First aid medicines to cure their burn and injuries.
- 5. Fire watching manchans:** At 25 vantage points straw thatched manchans will be constructed where 2 villagers will stay from dawn to dusk to watch the fire over a large landscape. They will inform the squad stationed at beat Hq about first appearance of fire over VHF hand sets. This will facilitate curbing fire at preliminary stage.
- 6. VHF hand sets:** Nearly 60 VHF walkie talkies with solar charging apparatus are required for the squad and observers to have better communication among themselves.

7.2.1.C. Ecotourism zone:-

Ecotourism activities will be restricted within the buffer zone only. The places like Tikarpada, Purunakote, Labangi, Baliput, Badamul, Buguda and Banigochha and their adjoining forests are the most attractive places in the reserve who attract large number of tourist flow into the reserve. Being one of the finest and the second largest Protected Area of the State, it not only attracts the visitors from places like Cuttack, Bhubaneswar, Sambalpur and Rourkela inside

Orissa but also tourists from other states of India. A significant number of foreign tourists also visit the Reserve. Both the Sanctuaries remain open to visitors round the year. But Ideal season of visit is from November to February. Arrival of tourists reaches peak during December and January. Picnicking within this buffer has been allowed and camping facilities have been developed in Ramgaon sand of river Mahanadi at Tikarpada.

Places of Tourist Interest

The places of tourist interest inside the PA is given below:

Places	Attraction
Tikarpada	For river Mahanadi, Boating, Angling, Elephant ride, Children's park, Crocodile rescue centre, Gharial, Tentage accommodation on Ramgaon sand.
Purunakote	For Nature trail, watch tower, Nandini nalla, water hole at Hatigiriya, Elephant sighting
Labangi	Picnic spot, landscape viewing, Animal sighting near water holes and watch tower at Kantarsingha
Baliput	River Mahanadi, Boating, Crocodile sighting, Adventure trekking to Baigani hill top. Picnic.
Badamul	River Mahanadi, Boating, Crocodile sighting, Picnic
Buguda	Sighting elephant, picnic
Banigochha	Sighting elephant, picnic

Community based ecotourism is seen at Tikarpada, where local youth of Tikarpada village have been engaged to manage tourists by providing services to them.

The detail activities to be undertaken in this zone for promotion of Ecotourism, interpretation and nature education are being discussed in chapter 14.

7.2.1.D. Production sector zone:

Agriculture and fishery are the 2 primary sectors of production in the buffer zone. Interventions required to promote production in these sectors may be as follows.

1. Enhancing irrigation potential by construction of WHS, MI projects, and diversion weirs alongwith irrigation channels.
2. Supply of modern agricultural/ horticultural inputs and subsidy on them..
3. Providing technical knowhow on agricultural / horticultural practices.
4. Creation and renovation of fishery ponds in villages.
5. Supplying fish fry/ fingerlings and other inputs on subsidized rate.
6. Maintenance of cold chain and market linkages for quick and profitable disposal of production.

7.2.2. Them plans

7.2.2.1. Anti poaching and Anti smuggling activity

Protection from professional timber smugglers, poachers is badly needed for the area. Well organized squad at different identified sensitive pockets within the buffer and its periphery and their intelligent movement in the peak hours is necessary to cope with the situation and to combat smuggling and poaching. Due to development of fast moving vehicles and developed communication system like Cell Phone, Walky talky etc. the smugglers are well equipped and tries to do the smuggling in a planned manner. The Forest staff and other anti-poaching squad engaged for the purpose need to be one step ahead of the smugglers to combat the situation.

It has been experienced in the past that the engagement of anti poaching squad at different strategic locations involving local youth yielded good result. To continue the process it is essential that the engagement of such squad be continued. It is proposed to engage 40 persons divided in to 5 squads to be stationed at Tarava, Buguda, Banigochha, Makarprasad & Dhipisahi initially with subsequent change of locations as per need for the whole year through out the entire plan period. These squads will act as striking force for every unwarranted situation that may arise in the area. Though their main station will be fixed for a particular year, but they will move in the buffer area as per requirement and as per direction of the Range Officer.

Proper co-ordination is also required in the VHF networking and communication system. The VHF stations are required to be kept open round the clock and in each VHF station 3 daily wage workers will be engaged on 8 hourly basis to be in constant touch with neighboring stations to tackle all sorts of illegal activities. The entire planning and implementation of anti-smuggling/ anti-poaching activity will be planned and organized by the concerned Range Officers with proper mobility in the area.

7.2.2.2. Animal Rescue Centre:

Animal rescue center is an important aspect of wildlife management. Very often it is seen that, some people keep animals like spotted deer, barking deer, wild boar, peacock, etc. at their home. In the forest also the animals get injured at times due to in fighting or accident or any other reason. These animals need rescue and extra care. So it is proposed to construct 4 such Animal Rescue Centers at different locations to take special care of such rescued animals.

7.2.2.3. Barriers and Check gates:

The barriers and check gates have been installed as a measure to control Smuggling & poaching activity. Inadequate staff position makes it difficult to maintain

them. So it has been prescribed that at least 3 daily wage persons be engaged in each check gate and VHF stations so that those can function properly.

7.2.2.4. Salt Lick

In addition to the general feeding habits of the animals, the minerals and salts are highly essential for their wholesome development. They get the salts in nature at few places. But that is not sufficient for a protected area where animal population is more. It is necessary that some salt lick points are made near the water sources, so that animals get those in relatively adequate quantity. It is proposed to make 100 such Salt Licks in the entire plan period. Natural and artificial salt licks have to be maintained.

7.2.2.5. Wildlife Health Surveillance and Vaccination.

Wildlife health is to be kept under closed watch and the surveillance should be in regular manner. Mainly the herbivores are susceptible to epidemics such as FMD, RD, Anthrax from the domestic Cattle of the near by villages. So to have a check over the matter immunisation / vaccination of Cattle, Goats, Sheep etc. in regular interval is necessary so that there is no out break of epidemic and consequential attack on wild animals.

7.2.2.6. Maintenance & Construction of Forest Roads:

There are different Forest Roads inside buffer zone, which need to be repaired annually for movement of anti-poaching staff as well as villagers The roads are as follows: -

- | | |
|---|--------------|
| 1. Gergedi to Duising | -- 13.0 KMs, |
| 2. Gochhabari to Buriapaju | -- 9.8 KMs, |
| 3. Duisingh to Janakajhola | -- 7.0 KMs |
| 4. Gergedi to Suliaparvat | --18.0 KMs |
| 5. Sanasilinga to Badmul | -- 12.0 KMs |
| 6. Bhurkundi to Tulka | --6.4 KM |
| 7. Purunakote to Chhotkei | --5.0 km |
| 8. Baghamunda to Tarava via Kumuri | --10.0 km |
| 9. Tikarpada to Tikarpada FRH | --1.0 km |
| 10. Baliput to Angul border on river bank | --5.0 km |

During the plan period it is proposed to convert the trekking path from Buguda to Gergedi for 23 Km. to a jeepable road for better monitoring and supervision of the reserve.

7.2.2.7. Relocation Plan:

Baisipalli buffer has got 18 enclosed villages having a total area of 11.05 Sq. Km. The villages are having a population of 991 as per 2001 Census. As per the provisions of section 19 to 25 of Wildlife Protection Act 1972, the Collector, Nayagarh vide his Letter No. 803 dt. 24.08.1998, addressed to the Principal Secretary, F & E

Department Govt. of Orissa, has recommended for final notification of the sanctuary stating that the enquiry report has already been submitted to the Government by Old District Office, Puri vide Letter No. 338 dt. 28.07.1989 addressed to Joint Secretary to Govt., F & E Department Govt. of Orissa. And as the entire sanctuary is a legally constituted reserves forest, there is no need to again go for enquiry. He has mentioned that there are 18 villages inside the sanctuary area. Due to absence of specific recommendation, a high level decision is required to be taken for relocation of villages. The villages situated inside the buffer are debarred from general benefits and side by side there is possibility of their involvement in illegal activity. Hence it is required that the villages need to be relocated out side the reserve as per the provisions of "National Rehabilitation and Resettlement Policy 2007". During discussion with many a villagers also they have volunteered for relocation.

7.2.2.7.1. Specific Objective:

1. To identify suitable land for relocation of villages in consultation with District Administration.
2. To organize Motivation camps for the villagers.
3. To make a relocation package in consultation with villagers and as per the advice of District Compensation Advisory Committee.
4. To make necessary follow up action of rehabilitation.
5. To develop grassland for wild animals in the evacuated area and rehabilitate the forest areas.
6. To create some water holes, water bodies on the area to recharge ground water as well as for the purpose of drinking water to animals.

7.2.2.7.2. Land Acquisition and Payment of Compensation:

The procedure prescribed by the Govt. shall be followed in acquiring land and other property and for payment of compensation. All compensation money due to the displaced families shall be paid through A/c payee Cheque.

As regards public property like School Building, Club Houses, Hospitals, Panchayat Ghar etc., value of such property affected shall be deposited with the concerned District Collector. Either Project Authority or functionaries of District Administration shall take up construction of the place as would be determined in consultation with representatives of displaced persons.

Site for the resettlement habitat shall be selected by the "Rehabilitation & Periphery Development Advising Committee" (RPDAC) in consultation with the displaced families. No physical displacement shall be made before the completion of resettlement work as approved by RPDAC. The certificate of completion of resettlement work will be issued by the collector.

Motivation camps are to be organized in every village in regular intervals to make the people aware regarding the benefits they are likely to get in the process and how they will be economically uplifted in the programme. As far as possible the field functionaries shall be directed that at no point of time their sentiments be affected while conducting such motivation camps and to give examples of other villages situated outside P.A. boundary during such camps. A special training programme for this purpose shall be organized at Division Headquarters to train the staff with involvement of revenue authorities of the District.

7.2.2.7.3.Rehabilitation Assistance or Package:

The NTCA has proposed package of 2 options

Option I: Payment of entire package amount (Rs. 10.0 lakh per family) to the family in case the family opts so, without involving any rehabilitation / relocation process by the forest department.

Option II: Carrying out relocation/ rehabilitation of village from protected area/ Tiger reserve by the forest department.

Chapter-8

Eco-development and Livelihoods

8.1 Policy and Institutional Framework

EDCs in protected areas and VSS in Reserved Forest areas are being formed under the Joint Forest Management resolution, 1993 of Govt. of Orissa. As on today there are 38 nos. of EDCs constituted within Satkosia Tiger Reserve under Forest Development Agencies in two Divisions.

8.2 Livelihood Support Initiative through Village Micro-plans

Microplans for each EDC have been formed and Forest development work synchronized with livelihood support to the villagers are being taken up over the area under National Afforestation Programme. Microplans are developed after conducting effective PRA exercises with the targeted villagers. Help and support of local NGOs like FES, NEWS-Angul, etc are being taken for this purpose.

Important Livelihood support initiatives include

1. Agriculture
2. Horticulture
3. Fisheries.
4. Apiculture
5. Poultry
6. Mushroom cultivation.
7. Tailoring

Dependency on fuel wood can be reduced by using fuel efficient chulla, LPG chulla, solar cookers, pressure cookers, bio gas plants and gobar gas plants. Energy plantations can be raised in community lands in villages to cater fuel wood need of the people.

Agriculture productivity can be enhanced by using Vermi-compost as bio fertilizer instead of use of inorganic fertilizers.

8.2.1. Rehabilitation of reformed poachers and timber smugglers

Special emphasis will be provided in rehabilitating oldtime poachers and timber smugglers, now struggle for their daily livelihood. Special rehabilitation package and livelihood enhancement activities will be taken up so that this section of the community are brought to the mainstream.

8.3 Integration of Rural Development Programmes

The rural development works like development of roads, creation of water bodies, WHS, diversion weir, renovation of ponds, sinking of tube wells, dug wells, establishment of schools, community halls, and establishment of human and veterinary health centres etc. can be taken up in collaboration with other line departments. Convergence of different programmes of line department is also possible in the reserve.

8.4 Monitoring and Evaluation

The monitoring and evaluation of the ecodevelopment activities will be carried out by other than the implementing agencies. Local NGOs , Institutions, university can be asked to evaluate the ongoing activities.

Chapter-9

Implementation Strategy

9.1 State level Monitoring Committee

There will be a State Level Monitoring Committee as the guidelines prescribed by the NTCA to facilitate coordination and mainstreaming of wildlife concern at state level.

State level Monitoring committee consists of

- i. Chief Secretary of the State - Chairman
- ii. Secretaries of related department - Members
- iii. Chief wildlife Warden

(Assisted by Field Director of tiger reserve) - Member Secretary.

9.2 Tiger conservation Foundation and District level Coordination Committee

Section 38X of The Wild Life (Protection) Amendment Act, 2006 provides for establishment of a Tiger Conservation Foundation in each tiger reserve, to facilitate and support management, apart from taking initiatives for involving people in conservation. The Foundation is a new institutional framework, which can complement the tiger reserve management and liaison with various ecodevelopment committees and their confederations apart from production sectors in the landscape. The Foundation should be registered under relevant rules of the State as a Trust, and as prescribed in the guidelines, will have a State level Governing Body, apart from a field level Executive committee under the Chairmanship of the Field Director with representatives of the ecodevelopment committees as nominated by the Governing Body. The Foundation would act as a "non profit center" and as a "development agency" by increasing local participation. It can secure the tiger reserve from financial constraints by providing funding support through various sources: recycling of gate receipts, service charges, donations and the like. The Foundation, may undertake various activities related to mainstreaming of conservation: ecodevelopment, staff welfare, visitor regulation, field research, facilitating ecodevelopment committees for market access, conducting capacity building programs, ecotourism and Joint Forest Management.

9.3 Formation of Eco-development Committees (EDCs), Confederation of EDCs and Other Supporting Institutions like Self Help Groups (SHGs) and Nature Clubs.

It is proposed that about 100 EDCs will be created and will be attached to the FDAs of Satkosia Wildlife Division and Mahanadi Wildlife Division working in the area. In each

village 4- 5 SHG groups will be formed for different income generating activities. The Eco-clubs formed in the schools under National Green Corps within the Reserve area will be converted to Nature clubs. The later may include institutions formed independently to educate people on environment and its values.

9.4 Livelihood Support Initiatives through Village Microplans.

The livelihood support to the villagers will be provided through various income generating activities (IGA), which includes pisciculture, vegetable farming, poultry, apiculture, mushroom farming, decentralized nursery, diary, tailoring, dwocra casting, small crafts, terracotta, bamboo crafts, candle making, incense stick making, pickle and papad making, pharmacy in traditional herbal medicine etc. Value addition to the products can be made by processing, grading packing/ bottling and labeling in descent way. EDC members will select their convenient IGA at the time of microplanning. Technical training in respective sectors will be imparted to them by outsourcing the experts. SHG groups will be taken to successful villages on exposure visit to learn on different IGA. Inputs, equipments, raw materials if required to initiate IGA will be provided by the Tiger Conservation Foundation. Micro financing to SHGs can be made to support IGA. Micro entrepreneurship can be promoted in the reserve.

9.5 Integration of Rural Development Programmes.

The developmental works proposed to be taken up by TCF can be dovetailed with the District Rural Development Agency (DRDA) of respective districts, line departments like SC & ST Development Department, Irrigation, Horticulture, Agriculture, Soil conservation, Watershed mission, RWSS, Industry, Education and fisheries department. Labour intensive activities can also be undertaken in NREGS, NFFW programmes. Developmental activities can be taken up under RADF (NABARD) and Watershed Development Projects. Convergence of activities can only be possible in the reserve if regular meetings are held at district level among all line departments. Roads, irrigation, water supply and electrification can be mde under Gopabandhu Gramin Rojgar Yojana (GGRY), Sampurna Gramin Rojgar Yojana (SGRY), Tubewells, Rural pipe water supply, toilets in school,anganwadi centres can be made RWSS department through Jaldhara Yojana, Swajaldhara Yojana. EGS centres can be constructed by education department. Rajib Gandhi Rural Electrification Programme and Biju Kutir Jyoti Yojana are there for electrification of villages inside the park. self employment in fisheries and PMRY can add a feather to their cap.

9.6 Monitoring and Evaluation

Monitoring and evaluation shall be done as per the guidelines of the NTCA issued from time to time. There will be midterm evaluation after 2nd and 4th year of the plan period by any independent body either from a university or an institution or an NGO. The plan may be modified according to the observation of team conducting mid term evaluation, by the competent authority. Final evaluation will be made by the NTCA or any authorized organization.

Chapter-10

Mainstreaming Strategy with various Production Sectors

10.1 Forestry (affect directly) (D*)

The gaps in the canopy will be filled up with plantations of indigenous fodder and fruit bearing species. Plantations in revenue areas in villages will be raised with fuelwood and small timber species. Block plantation and RDF plantations can be raised depending on availability of space and suitable land.

10.2 Agriculture (D)

Unscientific agriculture practices will be discouraged and use of chemical fertilizer will be banned. The people will be educated to use bio-fertiliser, bio-pesticides like neem oilcake and biological pest control measures. Proper cropping pattern, crop rotation will be followed basing on the soil type and soil moisture potential of the area. Alternate crops will be selected in elephant movement areas to avoid man animal conflict. Dugwells and deep bore wells can be sank to improve irrigation potential in the agriculture fields, which in turn help in crop production in the area.

10.3 Integrated development (eco-development, development through Dist Administration) (D)

In the process of eco-development IGA as described in para 9.5 of chapter 9 will be undertaken by the respective DRDAs and line departments. Infrastructures like Water Harvesting Structures, community halls, training halls, rural connectivity, upgradation of village roads etc. will be created by the district administration. Ashram schools can be opened by Tribal welfare department. Housed can be constructed in Indira Awas Yojana (IAY). Anganwadi centres can be opened by social welfare department.

10.4 Tourism (D)

Community-based eco-tourism will be promoted at Tikarpada, Labangi, Baliput, Badamul and Sitalpani to add to the livelihood of the local people. Infrastructural support will be obtained from tourism department to improve visitors' facilities. Marketing of tourism facilities can be enhanced jointly with the Orissa Tourism Development Corporation (OTDC). International tourists can be attracted if a website is opened furnishing upto date information on ecotourism complexes developed.

10.5 Fisheries (D)

The Water Harvesting Structures, village ponds created under EPA of FDA and Eco-development activities by the TCF will be utilized for pisciculture. Besides, regulated fishing in river Mahanadi and scientific fish farming in Sisupathar dam will improve the economy of the inhabitants of the park.

10.6 Tea / coffee estates (affects incidentally) (I)**

There is no Tea or Coffee estate in the park as the climate is not suitable for the purpose.

10.7 Road / Rail transport (D)

Besides the forest roads in the reserve there are PWD roads connecting the villages of the reserve with the nearest towns like Angul, Nayagarh, Boudh and Cuttack. The roads will be maintained annually by the respective departments to improve transportation facility so that quick marketing can be ensured. Upgradation of Roads and creation of new roads inside reserve requires prior approval of the NWLB. Hence such projects will not be encouraged. Projects with minimum impacts may be allowed subject to the guidelines of the NTCA and the Govt. Of Orissa issued from time to time.

10.8 Industry (D)

No big industry will be allowed. Only cottage industries / small scale industries will be encouraged with the help of District Industry Centre through PMRY.

10.9 Mining (D)

As such no mining area is there in the buffer zone of the reserve. Further no mining shall be allowed within the reserve.

10.10 Thermal power plants (I)

No thermal power plants shall be allowed within the reserve.

10.11 Irrigation projects (D)

No large irrigation project shall be allowed within the reserve.

10.12 Temple tourism (D)

There hardly exists any important pilgrimage centre/temple inside the reserve and hence these shall also not be promoted.

10.13 Communication projects (D)

Communication being a vital link in the tiger reserve management, the telephone, optical fibre cables (OFC) will be permitted as per the NTCA guidelines.

*** D = Affects wildlife directly**

****I = Affects wildlife incidentally**

Chapter-11

Research, Monitoring & Wildlife Health

11.1 Research Priorities

The research priorities in the buffer area are as follows:

1. Identifying hotspots and key areas and calculating their diversity index and mapping them on a GIS domain
2. Identifying the cause of decline in population of Gharial, wilddog and nilgai from forest.
3. NTFP items and their contribution to livelihood security of local people.
4. Study on ethnobotany of local tribes of Satkosia TR.
5. Study and analysis of cultural diversity prevailing in the region and cultural linkages between the communities and the forests in Reserve.
6. Comprehensive study on availability, extraction and market linkages of medicinal plants of Satkosia TR.
7. Working out an integrated model of livelihood development package for the local people.
8. Exploration of alternative livelihood options for local communities.

11.2 Monitoring Framework

The monitoring framework as regards the core and the buffer areas remain the same.

11.3 Training Needs Assessment

The training needs assessment as regards the core and the buffer areas remain the same.

11.4 HRD Plan

The training needs assessment as regards the core and the buffer areas remain the same.

11.5 Wildlife Health Monitoring

Wild animals will be visually screened during routine field inspections/patrols and also when they visit waterholes and saltlicks for any sign of ill-health/abnormality. Any suspected case of disease outbreak will be promptly dealt with by more observations, and if required, tranquilization and treatment. Prophylactic measures can be taken in shape of vaccination to domestic cattle.

11.6 Mortality Survey

Mortality survey will be done in a two-pronged manner:

1. Any unnatural death of wild animal will be promptly investigated into followed by a post-mortem and collection of relevant samples in case of suspected poisoning etc. Services of the VAS of the respective area will be sought for this.
2. For all elephant mortality, the guidelines issued by the Chief Wildlife Warden will be adhered to. A senior officer at the level of the ACF or above shall need to be present at the spot.

Chapter-12 :Tiger Population and Habitat Assessment

12.1 Daily Monitoring Protocol

Monitoring of the Tiger population and the prey base will be done on a daily basis in the buffer area as is done in case of the core area. All direct sightings/indirect evidences of Tiger will be reported to the respective range offices as well as main VHF Control Room at Angul with GPS locations where the information will be compiled and passed on to the GIS Cell at PCCF office for mapping and analysis. The evidences so collected will also be recorded in respective individual files opened for each tiger territory. Evidences of stray cases will be matched with existing files to ascertain immigration and emigration. A synopsis of all wildlife sightings during daily patrol shall also be informed on a daily basis.

12.2 Tiger Population Estimation Framework (Phase I, II and III)

Population estimation shall be done with the collaboration of Wildlife Institute Of India, following the guidelines prescribed by NTCA and followed in the All-India Tiger Monitoring Operations carried out during 2006-07. The Research Officer who shall be engaged on a contractual basis will plan, execute and carry out these operations.

12.3 Spatial Database Development

The information received from the field, both on a daily as well as periodic basis shall be entered into a GIS domain where further mapping and analysis of habitat occupancy, movement patterns etc shall be worked out. The Research Officer who shall be engaged on a contractual basis will analyse the data collected from the field with the assistance of the personnel of the GPS lab .

12.4 Analyses and Reporting Framework

There will be a monthly compilation of all sightings and indirect evidences of Tiger and Leopard apart from a yearly report, which shall collate and analyze the month-wisedata.

Chapter 13

Protection and Intelligence Gathering

13.1 Deployment of Native workforce

Every anti poaching camp will be fortified with local youth mustered from the villages located inside the Tiger Reserve. In all the camps 3-4 such persons will be deployed. In anti smuggling camps there will be 8 local youth per camp stationed at vulnerable places to protect the forest wealth from the illicit felling. The duty of such squad men will be to go round the area assigned to each camp for the purpose of patrolling and will prevent entry of poachers and woodcutters inside the Tiger Reserve. They will be deployed for entire 12 months in a year.

13.1.1. Rehabilitation of reformed poachers and timber smugglers

Special emphasis will be provided in rehabilitating oldtime poachers and timber smugglers, now struggle for their daily livelihood. Special rehabilitation package will be taken up so that this section of the community are brought to the mainstream, as result timber felling in park will be reduced and they will be under surveillance.

13.2 Patrolling Strategy including Joint Patrolling

The workforce will patrol round the forest and collect information on entry of poachers and tree cutters which will be conveyed to their Administrative Heads. 4 Tiger Protection Forces (TPF) will be formed consisting of 1 Haviladar, 6 Constable per squad from among the Ex-army personal to be procured from the Zilla Sainik Board. In each camp 1 casual labourer will be deployed as camp watcher. The TPF will be stationed in the following places.

Name of Division	Name of Places
Satkosia Division	Purunakote, Jillinda
Mahanadi Division	Chhamundia, Banigochha

They will strike at the point as per information and intelligence collect by the respected DFOs and during other days they will take up routine patrolling along the routes prone to use by the timber smuggler and poachers.

13.3 Maintenance of Village level Crime Dossiers

In each Range the village level crime dossiers lists will be maintained and their activities will be kept under vigilance. Similarly a dossier will be maintained for the WL criminals of adjoining divisions and they will be under constant surveillance by the respective division staff or by the informers set by the park authority.

13.4 Fire Protection

The fire protection will be enforced as per procedure discussed earlier.

13.5 Intelligence gathering and Coordination

Several persons will be deployed in the buffer and adjoining areas of the Tiger Reserve for collection of intelligence on movement of poachers/ timber smugglers and illegal storage of timber/ wild animals and their body parts. Based on the information action will be taken immediately with the help of strike force stationed under the disposal of respective Divisional Forest Officers.

Chapter 14

Eco-tourism, Interpretation and Nature Education

14.1 Tiger Conservation Foundation and Management of Community Based Eco-tourism Programmes.

Community-based eco-tourism programmes will be taken up in places like Tikarpada, Labangi, Baliput, Pampasar, Purunakote, Chhamundia, Buguda, Banigochha, Kuanria, Dhipisahi and other places.

14.1.1. Rehabilitation of reformed poachers and timber smugglers

Special emphasis will be provided in rehabilitating oldtime poachers and timber smugglers, now struggle for their daily livelihood. Special rehabilitation package and livelihood enhancement through ecotourism activities will be taken up so that this section of the community are brought into the mainstream and visitors take advantage of their skill in jungle trekking as well.

14.2 Eco-tourism guidelines and Constitution of Park Welfare Funds

Promotion and development of eco-tourism in the Reserve will be done in tune with Eco-tourism : Policy & Guidelines – 2002 pronounced by Govt. of India. The reserve will constitute its welfare fund when the Satkosia Tiger Conservation Foundation will be formed. But at present the entry fees collected at the entry places to the park partially goes to "Wildlife Orissa" a govt operated society, which in turn is made available to the park for promotion of ecotourism within it.

14.3 Interpretation Programme

14.3.1. Attended Interpretation.

- a) **Information centre:** 5 information centers at entry gates of Pampasar, Baliput, Tikarpara, Buguda and Banigochha will be established, where one Forest Guard will be posted to provide necessary information to the visitors about important places, features of the reserve, admission charges and available facilities etc.
- b) **Eco-Guides:** The literate youths of Tikarpara, Baliput, Labangi, Purunakote and Kuanria will act as Eco-guides. They will accompany the group of visitors either on vehicle or on Nature camp or in trekking and explain about significance of Satkosia and its elements. Payment to Eco-guides will be made through the registered societies to be formed.

- c) **Audio visual show:** At Tikarpada Audio visual systems are already available. Film shows on wildlife will be displayed on Amphitheater which will be created. One LCD Projector with large screen will be purchased for film show to large group of visitors. A documentary film on Satkosia Tiger Reserve will be prepared by reputed Film Makers / Photographers. CDs of the film will be sold to the visitors. Generator sets will be purchased for all the tourist places. Video film shows will be displayed in night where the visitors make night halts.
- d) **Ecotourism Cell :-** Two ecotourism cells in the office of DFO, Satkosia Wildlife Division, Angul and Mahanadi Wildlife Division, Nayagarh will be opened being well furnished with office stationeries, computer, phone, fax, internet etc. 2 naturalists and one tourism manager will be posted in each cell to provide information to the visitors. Printed brochures, stickers, leaflets, pamphlets, eco-tourism guide book etc. will be made available there. Booking of rest houses, tents, dormitories and log huts will be made by them even through internet and phone.

14.3.2. Non attended Interpretation.

14.3.2.1. Signages:

i) Outside the Reserve:

Signages of large hoarding say 8' x 4' or 10' x 8' will be erected at Bus stand, Railway station and N.H. road side of Angul, Dhenkanal, Boinda, Puri, Konark, Nayagarh, Bhubaneswar and Sambalpur.

ii) Inside the Reserve:

On the sides of main PWD / Forest Roads within the reserve, at the entry places signages of 5' x 3' or 4' x 3' size will be displayed narrating various features of the reserve and administrative instructions or traffic regulations and Relief map of the Tiger Reserve.

iii) At tourist camping sites :

Administrative instructions, details of available facilities with direction, map of tourism zone will be displayed with signages of 3' x 2' or 2' x 1'-6" size.

14.3.2.2. Publications:

Colourful, attractive and informative posters, leaflet, hand bill, brochures will be printed and circulated to all the visitors, hotel owners, tourism offices of Angul, Cuttack, Dhenkanal, Sambalpur, Bhubaneswar, Nayagarh Puri

and Konark. These publications will be made available at Divisional Office, Range Office and Information centres. Every year there should be a publication. Souvenirs like caps, T-shirts, Vanity bags, purses, local crafts can be made available at those tourist places.

14.3.2.3. Nature trail.

There should be at least one nature trail in each tourism zone. The length of a trail will be 1.5 – 2.0 kms. Speaking signages near the important features will make the trail lively. Sit outs will be constructed on the trail sites. A parking space will be made at the entrance of the trail.

14.3.2.4. Interpretation Centre.

The existing interpretation centre at Tikarapara is inadequate and underdeveloped. Therefore it is proposed to have 2 modern Interpretation Centres one at Tikarpada and other at Kuanria in consultation with Centre for Environmental Education (CEE), Ahmedabad or Wildlife Institute of India, Dehradun. The important items in the interpretation centre will have exhibits of pictorial, 3 dimensional diorama, question-answer type. The hall should be well lighted and well ventilated.

14.3.2.5. Amphitheatre.

An amphitheatre will be constructed with brick masonry in front of the Forest Rest House, Tikarapara facing towards river Mahanadi. Audio visual display, camp fire, cultural programme will be arranged there for creating awareness.

14.3.2.6. Reptile Rescue Centre.

Gharial Research and Conservation Unit (GRACU) cum Mini zoo of crocodile at Tikarpada is now changed to Reptile Rescue Centre by the Zoo Authority of India for rescue and rehabilitation of fresh water reptiles and terrapins. Injured, recovered and rescued reptiles from different locations and ponds of adjoining areas will be kept here for treatment & quarantine purpose. After their satisfactory health improvement, they will be released to water of river Mahanadi.

The enclosures, fencing, water supply system and all other infrastructure will be repaired and maintained. There will be provision for feed and medicine for the rescued animals.

This rescue centre will be more educative in gathering knowledge on different aquatic reptiles and their behaviour. This will be an attraction for the visitors.

14.4. Nature Education

14.4.1. Hill trekking.

Many young visitors, students, NCC cadets are showing interest in hill trekking. Simultaneously they will also gather knowledge on various flora and fauna of the tiger reserve.

There are 3 such sites near tourist complex.

1. Baigani pahad – 3 km trekking from Kamaladiha to Baigani deity. It is located in Baliput zone.
2. Sua sari damak/ Ranabili – 4 km hill trekking from Labangi in Labangi tourism zone.
3. Labangi-Chuanri-Tulka- 14 km. in Labangi tourism sub-zone.

The local people (Eco-guides) will accompany them with all equipments of hill climbing/ trekking.

14.4.2. Nature Camp.

Group of visitors from different Institutions, organisation are showing interest in spending time well inside the natural forest, to get rid of all interference and disturbances. Such sites near Majhipada nalla and near Ramgaon nalla in Tikarapara range and near Langalkhola nalla of Mahanadi division are available where nature camps can be organised. They can be taken for trekking to nearby areas. All logistic supports will be provided to them.

14.4.3. Jungle Safari.

Tourists are using hired jeeps from taxi stands of Angul, Nayagarh, Cuttack or Bhubaneswar to visit the reserve. But after reaching at entry gates they are not getting any suitable conveyance to go to interior areas to enjoy the nature. No vehicle is available with the park authority to carry tourist to interior places.

Therefore, 6 Jungle Safari vehicles (petrol driven gypsy/ mahindra vans) will be purchased by the local community with bank finance and with subsidy from the park authority and will be stationed at Pampasar, Purunakote, Tikarpada, Kuanria and Chhamunia for the visitors to use them on hire.

- One vehicle at Pampasar will cover Labangi, Kantarasingha, and Rasanda area.
- One vehicle at Purunakote will cover Purunakote, Hatigirija, Baghamunda and Pointiri .

- Two vehicles at Tikarapara will cover Kandhaida, Kadalikhola, and Baliput, areas.
- One vehicle at Chhamundia will cover the route Chamundia- Kuturi- Marada and back
- One vehicle at Kuanria will cover the routes Banibiri- Damaghati-Langalkhola =30 kms. and Buguda-Bariapaju-Geregedi = 23 kms.

Chapter 15: Organization, Administration and Budget

15.1 Buffer Areas Coordination Committee and its Linkages with Tiger Steering Committee & Tiger Conservation Foundation

A buffer area co-ordination committee will be formed with the following members:

1. Conservator of Forests, Angul Circle & Field Director, Satkosia Tiger Reserve - Chairperson
2. Divisional Forest Officer, Satkosia Wildlife Division & Deputy Director -I, Satkosia Tiger Reserve, Angul - Convener
3. Divisional Forest Officer, Mahanadi Wildlife Division & Deputy Director –II, Satkosia Tiger Reserve - Member

15.2 Coordination with EDCs, Confederation and other Line Agencies/ Departments/ Production Sectors

The respective DFOs will have regularly liaise with the various line agencies/departments and the EDCs. The summary of these meetings shall be reduced to writing and shall be furnished to the Field Director during the monthly Core-Buffer co-ordination meeting.

15.3 Staff Deployment

Deployment of staff will be as per the details mentioned earlier. Besides , there will be additional front line staff for protection, monitoring, surveillance, intelligence gathering, forensic study, crime & investigation cell, study and research. A set of staff will be deployed exclusively for ecotourism and Ecodevelopment.

15.4 Fund Raising Strategies

At present, the revenue from the entry gates, accommodation of tourists in FRHs and ancillary eco-tourism activities under the aegis of the Tikarpada Parivesh Paryatan Samiti (TIPPS) is being ploughed back into the maintenance and upkeep of the infrastructure. In addition, once the Foundation is formed, more options will be explored to raise funds from national and international donor agencies like Ford Foundation, UNEP, NGOs like WWF and corporate groups.

15.5 Schedule of Operations

The schedule of operations for 5 years starting from 2008-09 to 2012-2013 are being given in **Table No.2.**

15.6 Activity Budget

The activity budget for the buffer area for 5 years is being given in **Table No.2**.

Appendix-1

DESCRIPTION OF BOUNDARY OF THE CORE AREA OF THE TIGER RESERVE

The boundary line of core zone starts from tri junction of Siloti -Baliput revenue village, Jorum R.F. Block II and River Mahanadi and runs East ward along the southern, Eastern and Northern boundary of Jorum R.F. Block II till it meets Katrang R.F. boundary. Then it goes along the common boundary of Compt.No.9 & 10 of Katrang R.F. till it meets the boundary of Katrang revenue village. Then it follows the Southern, Western and Northern boundary of Katrang revenue village excluding the village. It follows the common boundary between Compt.No.8 & 9 of Katrang R.F., then it turns North-Easterly along the Eastern boundary of Katrang R.F., Southern boundary of Tulka R.F. till it meets the Compt. No.,11 of Tulka R.F. Then it follows the common boundary between Compt. 10 & 11 of Tulka R.F., Western & Northern boundary of Tulka revenue village excluding the same, common boundary between Compt.No.4 & 12 of Tulka R.F. till it meets Raigoda R.F. Then it follows the forest road from Tulka to Bhurkundi and Northern, Eastern boundary of Bhurkundi Forest Village and then runs along the Southern & then Eastern boundary of Raigoda R.F. Then follows the Northern boundary of Raigoda R.F., Balanga R.F. (Compt.No.11 & 12), Jocub R.F., Takarsinga R.F. Compt.No.2 excluding the revenue villages like Labangi, Jocub, Talasira & Pampasar. Then it turns South ward along the common boundary of Compt.No.1 & 2 of Takarsinga R.F., Northern boundary of Compt. No 4 & 3 of Takarsinga R.F., and Western boundary of Compt.No.3 & 2 of Purunakote R.F. Then it runs East ward along the common boundary between Compt.No.2 & 4, No.18 & 5, No. 17 & 5 of Purunakote R.F. Eastern & Southern boundary of Chhotkei revenue village excluding the same. Then it runs along the common boundary between Compt.No.7 & 13, 7 & 8, 8 & 9, 10 & 11 of Purunakote R.F. Then it turns Westward and runs along the Northern & western boundary of Tikarpada R.F. till it meets River Mahanadi and then it turns North-Westerly along the Northern bank of River Mahanadi including the bank till it meets Majhipada R.F. and runs along the South Eastern boundary of Majhipada R.F., Southern, Eastern, Northern and Western boundary of Kuru R.F. till it meets Baghmunda Compartment-12. Then it follows the Northern and Western boundary of Baghamunda R.F., then it turns South wards and runs along the Western boundaries of Majhipada R.F., and Compt. No.23, 27, 26 of Hatidhara R.F. Then follows Southern boundary of Compt.No.26, 24 & 25 of Hatidhara R.F. till it meets Doruha-Tikarpada forest road close to river Mahanadi where it crosses the Mahanadi River and touches the Northern boundary of Padmatola R.F. at Compartment 10. Then it follows the boundary of Padmatola R.F. along compartments P-10, P11, P4, P3, P2 and P1 till it meets the boundary of Mahanadi R.F. Then it proceeds south westerly along the Western boundary of Compt.No.1 of Mahanadi R.F., then the Southern boundary of Mahanadi R.F. till it meets Sagadabhanga revenue village. Then it follows the Northern boundary of Sagadabhanga and Malasapadar revenue village, Eastern & Southern boundary of Malasapadar revenue village, Southern boundary of Sagadabhanga revenue village till it meets Mahanadi R.F. boundary excluding both the revenue villages. Then it runs along the Southern, Eastern & Northern boundary of Mahanadi R.F. till it meets river Mahanadi near Malisahi where it crosses the river and meets the tri junction point

between Jorum R.F. block No. II, Mahanadi river bank and Siloti -Baliput revenue village, where it started.

FOREST BLOCKS AND COMPARTMENTS INCLUDED IN THE CORE AREA

Name of the forest block included in the core area	Compartment Nos., included in the core area	Area of the compartments included in the core area (ha)
Tikarpada	1 to 9	2760.45
Purunakote(Part)	2,3,8,11 to 20	4915.50
Tulka(Part)	1 to 10	3275.612
Balanga(Part)	11 & 12	675.98
Jocub	1 to 6	1514.79
Takarsinga(Part)	2,3 and 4	1559.352
Raigoda(Part)	1 to 15 & 16(Part)	4056.65
Katrang(Part)	1 to 8, 10 & 11	4088.157
Jorum(Part)	Block II	886.06
Majhipada	1 to 17	4890.80
Baghamunda	1 to 13	3812.67
Kuru	1 to 9	2116.98
Hatidhara(Part)	23 to 27	1397.98
Padmatola	1 to 11	4674.00
Mahanadi	1 to 17	10283.70
Mahanadi River (Part)		1037.05
Total are of compartment		51945.731

Appendix-2

Minutes of the meeting of the Expert Committee for Satkosia-Baisipali Tiger Reserve held on 12.11.2007.

The 'Expert Committee for Satkosia-Baisipali Tiger Reserve' met in the office of the Chief Wildlife Warden, Orissa on 12.11.2007 at 11.30 AM to discuss on the said Tiger Reserve proposal and delineation of its core zone, in terms of the provisions of Chapter-IV-B of the Wildlife (Protection) Act 1972. The names of the members who participated in the deliberations are as follows:

1. Sri S.C.Mohanty, Chairman.
Principal CCF (Wildlife) &
Chief Wildlife Warden, Orissa.
2. Sri S.K.Patnaik, IFS (Retd), Ex-CWLW, Orissa.
3. Dr S.N.Patra, Retd. Professor of Botany and
acting President of the 'Orissa Environmental Society'.
4. Sri Anup Kumar Nayak, Professor,
Wildlife Institute of India, Dehradun
(Although Sri Nayak could not make it to the meeting in time,
he has been fully apprised of the discussions held in the
meeting when subsequently he arrived a little later at
the office of the CWLW).
5. Sri B.K.Swain, Conservator of Forests
(Ex-Silviculturist, Orissa)

The Expert Committee did interaction during the meeting with the Conservator of Forests, Angul Circle; Sri S.S.Srivastava, Chief Conservator of Forests (Wildlife); and Dr L.A.K. Singh, Senior Research Officer in the office of the Principal CCF (Wildlife). The DFO, Satkosia WL Division and the DFO, Mahanadi WL Division, the two DFOs having jurisdiction over the proposed Tiger Reserve area, were also present during the meeting.

The relevant facts which emerged in course of the deliberations of the Expert Committee are as follows:

(1) (a) The State Government vide their letter No.8547/F&E dated 22.5.2002 had furnished a proposal to Government of India for setting up of Satkosia-Baisipali Tiger Reserve with area of 1038.30sq.kms The proposed Tiger Reserve comprised of two contiguous sanctuaries, namely Satkosia gorge sanctuary and Baisipali sanctuary; the Hatidhara RF of Boudh Forest Division and Makarprasad RF of Nayagarh Forest Division.

(b) Government of India have accorded in-principle approval of the competent authority for inclusion of Satkosia sanctuary under Project Tiger vide letter No.3-1/2003-Pt dated 5.8.2006 of the IGF and Director, Project Tiger.

(2) The forests surrounding the Satkosia gorge of Mahanadi river including the stretch of river flowing through the gorge, were notified as Satkoshia Gorge sanctuary in May, 1976. The contiguous area to the south of this sanctuary in Nayagarh District was notified as the Baisipali sanctuary in the year 1981. The wild fauna of these sanctuaries comprise of Tigers and Leopards, Elephants, Gaur, Sloth Bear, Sambar,

Spotted Deer, Barking Deer, Mouse Deer, Pangolin, Giant Squirrel, Malabar Pied Hornbill, Gharial and Mugger crocodiles, fresh water turtles, freshwater rays, etc.

The tiger and leopard population in these two sanctuaries have been recorded as follows:

<u>Year</u>		<u>No. of tigers</u>		<u>No. of leopards</u>
2000	...	12	...	10
2002	...	11	...	19
2004	...	18	...	34

(3) The landscape surrounding the two sanctuaries has extensive forest areas, particularly on the north-west, south-west and north-eastern sides. These surrounding forest areas are equally good habitats for wild animals, including tigers.

(4) The two RF blocks, namely Hatidhara RF (63.89 sq. kms) in Boudh District and Makarprasad RF (10.54sq.kms) in Nayagarh District, are outside, but adjacent to the boundaries of the two sanctuaries. These two Reserve Forest Blocks were included in the original proposal for the proposed Tiger Reserve submitted to MOEF, Govt. of India; as their inclusion gave a compact shape to the Tiger Reserve. On these two forest blocks, however, there is heavy incidence of people's usage and pressures of multiple use of forestry resources, notably intensive collection of kenduleaf. Within the sanctuary area, however, there is no multiple use forestry. A PWD road also cuts through Makarprasad RF. For these reasons, it would be advisable to exclude the area outside the two sanctuaries from the proposed Tiger Reserve. By exclusion of the said two forest blocks, the compactness of the proposed Tiger Reserve would diminish marginally in the southern flank, but in the context of the ground realities, such modification is both desirable and reasonable.

(5) The sign survey of carnivores which was carried out during dt.18.1.2006 to dt.20.1.2006 as part of the exercise for estimation of tigers, co-predators, etc. has yielded the following result in respect of the forest beats comprising the two sanctuaries.

Sl. No.	Name of the Beat	No. of tiger and leopard signs during 3 days of monitoring	Number of villages in the Beat
1	Tuluka - A	6	1
2	Tuluka - B	3	0
3	Tuluka - C	2	0
4	Tuluka - D	1	0
5	Tuluka - E	2	0
6	Tuluka - F	2	0
7	Chhotkei - A	4	0
8	Chhotkei - B	3	1
9	Purunakote - A	4	2
10	Purunakote - B	5	2
11	Baghamunda - A	1	0
12	Baghamunda - B	2	0
13	Baghamunda - C	1	0
14	Pampasar - A	3	2
15	Pampasar - B	3	2
16	Jagannathpur - A	2	1

17	Jagannathpur - B	2	1
18	Labangi - A	3	0
19	Labangi - B	2	0
20	Labangi - C	2	1
21	Kumuri - A	1	0
22	Kumuri - B	2	0
23	Tarava - A	0	2
24	Tarava - B	1	0
25	Baliput	0	1
26	Kamaladiha	0	11
27	Jillinda	1	9
28	Sisupathar	1	0
29	Katrang -A	1	1
30	Katrang -B	2	0
31	Katrang - C	2	0
32	Siaribhundi	5	0
33	Tikarpada - A 33	4	1
34	Tikarpada - B 34	4	3
35	Majhipada - A 35	2	3
36	Majhipada - B 36	2	0
37	Naleswar	0	0
38	Raigoda - A	2	1
39	Raigoda – B	2	0
40	Raigoda – C	2	0
41	Raigoda – D	4	0
42	Raigoda – E	2	0
43	Raigoda – F	4	0
44	Bhurkundi – A	2	1
45	Bhurkundi – B	5	0
46	Chhamundia	0	7
47	Geregedi	1	0
48	Kuturi	2	1
49	Dhipisahi	2	0
50	Malasapadar	5	1
51	Purunapani	2	2
52	Khandadhua	1	1
53	Malisahi	3	2
54	Badmul	1	1
55	Muduligadia	2	2
56	Rajingi	1	7
57	Atalasara	2	1
58	Sitalapani	1	1
59	Marada	3	1
60	Sunakhania	5	0
61	Kumari	3	2
62	Nuapada	4	3
63	Kusanga	4	3
64	Nandagadu	3	1
65	Hinjala	4	4
66	Siripaju	2	2

67	Padmatola	6	0
	Nilamara	0	10
1	Takara	1	1
2	Makarprasad	2	1
3	Dusingi	7	1
4	Badasilinga	0	3
5	Buriapaju	1	4
6	Dhipisahi	4	3
7	Senaperi	4	1
8	Banigochha	5	1
9	Buguda	16	0
10	Damaghati	8	3
11	Jamusahi	3	0
12	Salabhanga	1	0
13	Turangi	12	0
14	Durgaprasad	3	0
	TOTAL	228	111

The result of sign-survey of tigers and leopards in respect of the forest beats just outside the boundaries of the two sanctuaries is as follows.

Sl. No.	Name of the Beat	No. of tiger and leopard signs during 3 days of monitoring
1	Labangi-I	2
2	Labangi-II	2
3	Pampasar	0
4	Balanga	1
5	Kanja	2
6	Karabira	1
7	Nuakheta I	2
8	Nuakheta II	2
9	Saruali	2
10	Hinsrida I	0
11	Hinsrida II	0
12	Manikjodi	0
13	Kantamegha-II	0
14	Balikiari	0
15	Barsinga	0
16	Nuagarh	2
17	Brahmani	0
18	Chakrapada	0
19	Khola	0
20	Kharuani	0
21	Sardhapur	0
22	Rathipur	2
23	Bipradihi	2
24	Koraba	2
25	Maimura	0
26	Dankarisahi	0

27	Kusanga	0
28	Kankanmendhi	0
29	Banigochha	0
30	Baijhari	0
31	Takara	0
32	Ghurudipada	1
33	Gandapaju	1
34	Satakhanda	0
35	Ranisahi	0
	TOTAL	24

(6) Tiger Reserve would include the core or critical tiger habitat and buffer zone. Inclusion of any area in the buffer zone of Tiger Reserve would require consultation with the concerned Gram Sabha. However, 'Tiger Reserve' does not introduce any extra control, regulation or restriction on the people over and above what is already there in respect of any sanctuary. Therefore, in respect of villages which are already within the sanctuary, it would make no difference for the inhabitants to be included within the Tiger Reserve. However, for villages which are outside the sanctuary, any proposal to include them in the buffer zone of Tiger Reserve may not be acceptable to the villagers in the present day situation. A pragmatic approach would be to delineate the boundary of the Tiger Reserve to be co-terminus with the boundary of both the sanctuaries. The Tiger Reserve would thus have an area of 963.87sq.kms.

(7) There are 116 number of villages within the two sanctuaries, i.e. within the proposed Tiger Reserve. All these villages are surveyed and settled villages. The total area of these villages as per revenue records is 285.64sq.kms Most of these villages (93 in number) are, however, located in 3 clusters within the Satkosia gorge sanctuary. There are 18 villages within the Baisipali sanctuary. The three village clusters in Satkosia gorge sanctuary and the entire Baisipali sanctuary area, together comprising of 111 number of villages may be designated as the buffer zone of the Tiger Reserve. The peripheral area extending from the north-eastern, north-western and south-western face of the proposed Tiger Reserve are suitable habitats for tiger and its prey species, and these areas have the potential to be designated as additional buffer. These areas comprising of the following forest blocks may therefore be covered under the 'Tiger Conservation Plan' for the proposed Satkosia Tiger Reserve, although not formally included in the buffer zone of the Reserve.

(a) Cuttack District: (i) Balikiary RF, (ii) Nuagarh RF; (b) Angul District: (iii) Nuakheta RF, (iv) Bolong RF, (v) Krishnachakra RF, (vi) Hatidhara RF; (vii) Taleipathar RF (c) Boudh district: (viii) Arakhpadar RF, (ix) Hatidhara RF; and (d) Nayagarh district: (x) Bankamunda RF, (xi) Makaraprasad RF. Some of these blocks can also be considered for constitution as a Conservation Reserve.

(8) The core zone/ critical habitat/ inviolate area of the Tiger Reserve may include the compartments given in the Annexure. Its boundary is described in the Annexure and it is shown in the annexed map. The core zone as proposed is a compact area of 523.61sq.kms within which there are presently 5 number of villages. The total area of these villages is 4.17sq.kms only. The total population of these villages is estimated to be around 200 persons. The management efforts obviously will be towards making the core zone fully inviolate by formally settling the rights of these villagers and providing them appropriate and attractive resettlement package outside the Tiger Reserve.

(9) Under the norms laid down by the NTCA the core zone should comprise of an area 800 to 1200sq.kms so as to provide adequate habitat for 20 breeding female tigers. The proposed Tiger Reserve as per the latest tiger census of 2004 has already 8 number of female tigers. Therefore, the relatively smaller area of the Tiger Reserve and its core zone may not be inappropriate at present.

The members of the Expert Committee critically analysed the above factual information and fully agreed to the proposed boundaries of the Satkosha-Baisipalli Tiger Reserve and its core zone, which comprise of 963.87sq.km and 523.61sq.km, respectively.

(Sri S. K. Pattnaik)

(S. C. Mohanty)
Principal CCF (Wildlife) &
Chief Wildlife Warden, Orissa.

(Sri Anup Kumar Nayak)

Co-opted Members:

(Dr S. N. Patra)

(S. K. Popli)
Conservator of Forests, Angul

(Sri B. K. Swain)

(S. S. Srivastava)
Chief Conservator of Forests (Wildlife)

Appendix-3

Government of Orissa Forest & Environment Department

NOTIFICATION

Dated, Bhubaneswar, the 31st December, 2007.

No.8F(S)- 32/2006/20807 /F&E. In exercise of the powers conferred by Section 38-V of the Wildlife (Protection) Act, 1972 and with prior in principle approval of National Tiger Conservation Authority, State Government do hereby notify the two contiguous wildlife sanctuaries namely Satkosia Gorge Sanctuary and the Baisipali Sanctuary described in the Schedules A, B1, B2 as the "**Satkosia Tiger Reserve**", with the area described in Schedules C, D and E as the "**Core Area or Critical Tiger Habitat of Satkosia Tiger Reserve**".

SCHEDULE - A:

LOCATION OF THE AREA OF THE TIGER RESERVE

The Satkosia Tiger Reserve is located in the districts of Angul, Cuttack, Nayagarh and Boudh, and the geo-coordinates of the extreme points on the Tiger Reserve boundary lie on 20^o 23' 40" N and 20^o 45' 36" N latitudes and 84^o 32' 35" E and 85^o 05' 24" E longitudes. The area of the Tiger Reserve is the total area of Satkosia Gorge

Sanctuary and Baisipalli Sanctuary, i.e. 963.87 sq. kms inclusive of the Core area or critical Tiger Habitat of 523.61 sq. kms.

SCHEDULE – B1:

DESCRIPTION OF OUTER BOUNDARY OF THE TIGER RESERVE

The outer boundary of Tiger Reserve starts from junction of river Mahanadi & Orasingha Nalla (Known as Suhagi nala in upper reaches), under PS- Narsinghpur in Cuttack district & follows the Orasingha Nalla in north westerly direction till it meets Tulka RF boundary line. Then the boundary follows the inter district boundary line between Cuttack & Angul district in north easterly direction up to village Bhurkundi & there after runs along the boundary line of Raigoda RF in a anti clock wise direction up to Rasanda. From there it goes along the Raigoda- Pampasar forest road in north westerly direction till it meets Angul – Tikarpada P.W.D. road at Pampasar & follows the P.W.D. road up to Jagannathpur till it meets the Tainsi RF boundary line. After that the boundary follows in north westerly direction and then south-westerly direction along Tainsi RF boundary till it meets Baghamunda RF boundary line at Baghamunda & then follows the RF boundary line in anti clock wise direction till it meets Chanagodi Nalla of Majhipada RF. Then it follows the Chanagodi Nalla along the downstream till it meets Athamallik- Doruha road & follows the road westerly till it meets Kusumkuhuri Nalla of Athamallik sub-division. There after the boundary follows the Kusumkuhuri Nalla along the downstream southward, till it meets the river Mahanadi, where it crosses the river Mahanadi as well as the inter district boundary between Angul & Boudh district in a southerly direction & meets the junction point of Badajora Nalla & river Mahanadi in Harbhanga PS of Boudh district. Then it follows Badajora Nalla in southward direction till it meets the Hatidhara RF boundary line & then follows the same in a north easterly direction ad touches the inter-district oundary line of Boudh and Nayagarh districts; then follows along the southern boundary of Mahanadi RF of Nayagarh district till it touches the boundary of Baisipalli RF. Then the boundary of the Tiger Reserve follows the boundary of Baisipalli RF touching Doisinga village, Ragum Parbat, Sulia Parbat, Mundali Parbat, Ambadhari Parbat, Patadei Parbat, and villages of Banigochha, Durgaprasad, Makarprasad, Shikhargochha, Badasilinga, Gochhabari and Dhipisahi to proceed upto Khalkhala nalla on the boundary of Mahanadi RF. Then the boundary of the Tiger Reserve follows the southern boundary of Mahanadi RF in an easterly direction till it meets Brutanga Nalla. The boundary thereafter runs along Brutanga Nalla in a northerly direction till it meets the river Mahanadi. Then it crosses the river Mahanadi as well as the inter district boundary between Nayagarh & Cuttack district in a north westerly direction to meet the junction point of Orasingha Nalla with river Mahanadi. (The starting point).

SCHEDULE - B2

(DESCRIPTION OF THE OUTER BOUNDARY OF THE TIGER RESERVE DISTRICT-WISE AND DIVISION-WISE)

I. SATKOSIA WILDLIFE DIVISION.

1. **Angul District** (Area: 453.25 sq.kms.)

(i) Angul Sub-Division:-

The boundary line in the South-East follows the inter district Boundary line between Angul and Cuttack Districts upto village Bhurkundi and then runs along the boundary line of Raigoda R. F. up to village Rasanda and then along the Raigoda-Pampasar forest road till it meets Angul-Tikarpada P.W.D.Road and follows the same up to Jagannathpur till it meets the Tainsi R.F.boundary line and follows the same in a north – westerly direction till it meets Baghmunda R.F. boundary line and then follows the same in the North westerly direction till it meets Chanagodi nala and follows the same till it meets the Majhipada R.F. boundary line and follows the same till it meets the River Mahanadi and follows the inter district boundary between Angul and Boudh

district and Angul and Nayagarh districts till it meets the trijunction point of Cuttack , Angul and Nayagarh districts.

(ii) Athamallik Sub-Division:-

It starts from the junction of River Mahanadi and Kusumkهوري Nala (Athmallik P.S.) and follows the Nala till it meets the Athamallik - Daruha Road and follows the road till it meets the Chanagodi Nala and follows the Nala in a north-easterly direction till it meets Majhipara R.F. boundary line of Angul Sub-Division and follows the same till it meets the River Mahanadi and follows the River along the inter-district boundary of Angul and Boudh Districts

2. Cuttack District (Area: 76.76 sq.kms.)

(i) Athagarh Sub-Division: -

It starts from the junction of the River Mahanadi and Orasinga Nala (known as Suagi nala in the upper reaches) under P.S. Narsinghpur in the Athagarh Sub-Division and follows the said nala till it meets the Tulka R.F. boundary line, and then follows the inter district boundary line between Cuttack and Angul districts in the westerly direction till it meets the River Mahanadi and follows the inter district boundary between Cuttack and Nayagarh districts.

II. MAHANADI WILDLIFE DIVISION

(i) Boudh District (Area: 117.84 sq.kms.)

The boundary starts from the junction of river Mahanadi and Badajora Nala in Harbhanga P.S. of Boudh Sub-division and runs along the Nala till it meets the Hatidhara R.F. boundary line and follows the same in a North- Easterly direction till it meets the inter district boundary line of Boudh and Nayagarh districts and follows the same till it meets the river Mahanadi and follows the river in the downstream along the inter district boundary line of Boudh and Nayagarh districts._

(i) Nayagarh District (Area: 316.02 sq.kms.)

(a) Area within Satkoshia Gorge Sanctuary (Area: 147.67 sq.kms.)

It starts from the junction of River Mahanadi and Burtanga Nala in the Gania P.S. of Nayagarh and follows the Burtanga nala in the upstream in a South-Westerly direction till it meets the boundary line of Mahanadi R.F. Then it follows the boundary line of Mahanadi RF first in a westerly direction, then in a northerly direction and again in a westerly direction till it meets the inter district boundary of Boudh and Nayagarh Districts and follows the same in the North-Easterly direction till it meets the river Mahanadi and follows the inter district boundary between Angul, Nayagarh and then Cuttack and Nayagarh districts.

(a) Entire area of Baisipalli Sanctuary (Area: 168.35 sq.kms.)

The area of Baisipalli sanctuary which is entirely within Nayagarh District, starts in its north-west corner from a point at a distance of about 1km south of the inter-district boundary of Nayagarh and Boudh district which is also the trijunction point of Padmatola RF, Mahanadi RF and Baisipalli RF. Then the boundary of the Tiger Reserve within Nayagarh district follows the boundary of Baisipalli RF in an anticlockwise manner touching Doisinga village, Ragum Parbat, Sulia Parbat, Mundali Parbat, Ambadhari Parbat, Patadei Parbat, and villages of Banigochha, Durgaprasad, Makarprasad, Shikhargochha, Badasilinga, Gochhabari and Dhipisahi to proceed upto Khalkhala nalla on the boundary of Mahanadi RF. Then the boundary follows the boundary of Mahanadi

RF in a westerly direction till it meets the trijunction point of Padmatola RF, Mahanadi RF and Baisipalli RF.

SCHEDULE-C

DESCRIPTION OF BOUNDARY OF THE CORE AREA /CRITICAL TIGER HABITAT OF THE TIGER RESERVE

The boundary line of core zone starts from tri junction of Siloti -Baliput revenue village, Jorum R.F. Block II and River Mahanadi and runs East ward along the southern, Eastern and Northern boundary of Jorum R.F. Block II till it meets Katrang R.F. boundary. Then it goes along the common boundary of Compt.No.9 & 10 of Katrang R.F. till it meets the boundary of Katrang revenue village. Then it follows the Southern, Western and Northern boundary of Katrang revenue village excluding the village. It follows the common boundary between Compt.No.8 & 9 of Katrang R.F., then it turns North-Easterly along the Eastern boundary of Katrang R.F., Southern boundary of Tulka R.F. till it meets the Compt. No.,11 of Tulka R.F. Then it follows the common boundary between Compt. 10 & 11 of Tulka R.F., Western & Northern boundary of Tulka revenue village excluding the same, common boundary between Compt.No.4 & 12 of Tulka R.F. till it meets Raigoda R.F. Then it follows the forest road from Tulka to Bhurkundi and Northern, Eastern boundary of Bhurkundi Forest Village and then runs along the Southern & then Eastern boundary of Raigoda R.F. Then follows the Northern boundary of Raigoda R.F., Balanga R.F. (Compt.No.11 & 12), Jocab R.F., Takarsinga R.F. Compt.No.2 excluding the revenue villages like Labangi, Jocab, Talasira & Pampasar. Then it turns South ward along the common boundary of Compt.No.1 & 2 of Takarsinga R.F., Northern boundary of Compt. No 4 & 3 of Takarsinga R.F., and Western boundary of Compt.No.3 & 2 of Purunakote R.F. Then it runs East ward along the common boundary between Compt.No.2 & 4, No.18 & 5, No. 17 & 5 of Purunakote R.F. Eastern & Southern boundary of Chhotkei revenue village excluding the same. Then it runs along the common boundary between Compt.No.7 & 13, 7 & 8, 8 & 9, 10 & 11 of Purunakote R.F. Then it turns Westward and runs along the Northern & western boundary of Tikarpada R.F. till it meets River Mahanadi and then it turns North-Westerly along the Northern bank of River Mahanadi including the bank till it meets Majhipada R.F. and runs along the South Eastern boundary of Majhipada R.F., Southern, Eastern, Northern and Western boundary of Kuru R.F. till it meets Baghmunda Compartment-12. Then it follows the Northern and Western boundary of Baghamunda R.F., then it turns South wards and runs along the Western boundaries of Majhipada R.F., and Compt. No.23, 27, 26 of Hatidhara R.F. Then follows Southern boundary of Compt.No.26, 24 & 25 of Hatidhara R.F. till it meets Doruha-Tikarpada forest road close to river Mahanadi where it crosses the Mahanadi River and touches the Northern boundary of Padmatola R.F. at Compartment 10. Then it follows the boundary of Padmatola R.F. along compartments P-10, P11, P4, P3, P2 and P1 till it meets the boundary of Mahanadi R.F. Then it proceeds south westerly along the Western boundary of Compt.No.1 of Mahanadi R.F., then the Southern boundary of Mahanadi R.F. till it meets Sagadabhanga revenue village. Then it follows the Northern boundary of Sagadabhanga and Malasapadar revenue village, Eastern & Southern boundary of Malasapadar revenue village, Southern boundary of Sagadabhanga revenue village till it meets Mahanadi R.F. boundary excluding both the revenue villages. Then it runs along the Southern, Eastern & Northern boundary of Mahanadi R.F. till it meets river Mahanadi near Malisahi where it crosses the river and meets the tri junction point between Jorum R.F. block No. II, Mahanadi river bank and Siloti -Baliput revenue village, where it started.

SCHEDULE-D

**FOREST BLOCKS AND COMPARTMENTS INCLUDED IN THE CORE AREA/
CRITICAL TIGER HABITAT OF THE TIGER RESERVE**

Name of the forest block included in the core area	Compartment Nos., included in the core area	Area of the compartments included in the core area (ha)
Tikarpada	1 to 9	2760.45
Purunakote(Part)	2,3,8,11 to 20	4915.50
Tulka(Part)	1 to 10	3275.612
Balanga(Part)	11 & 12	675.98
Jocub	1 to 6	1514.79
Takarsinga(Part)	2,3 and 4	1559.352
Raigoda(Part)	1 to 15 & 16(Part)	4056.65
Katrang(Part)	1 to 8, 10 & 11	4088.157
Jorum(Part)	Block II	886.06
Majhipada	1 to 17	4890.80
Baghamunda	1 to 13	3812.67
Kuru	1 to 9	2116.98
Hatidhara(Part)	23 to 27	1397.98
Padmatola	1 to 11	4674.00
Mahanadi	1 to 17	10283.70
Mahanadi River (Part)		1037.05
Total area		51945.731 hectares

**SCHEDULE - E
SCHEDULE OF THE REVENUE VILLAGES
PRESENTLY SITUATED IN THE CORE AREA.**

Name of the village	District	Area of the village (as per revenue records) (ha)
Raigoda	Angul	172.00
Marada	Boudh	64.66
Kuturi	Nayagarh	119.00
Salapaganda	Nayagarh	27.82
Musuguda	Nayagarh	33.26
Total area of villages in the core area		416.74

BY ORDER OF GOVERNOR

H.S.CHAHAR
PRINCIPAL SECRETARY TO GOVERNMENT.

Memo No.210808/F&E ,Dated- 31.12.2007

Copy forwarded to Director, Printing, Stationary and Publication, Orissa, Cuttack with a request to publish the Notification in the next issue of the Orissa Gazette.

500(Five hundred) copies of the Gazette Notification may please be sent to this Department for reference & Use.

Sd/-31.12.07

Additional Secretary to Government.

Memo No.210808/F&E ,Dated- 31.12.2007

Copy forwarded to Private Secretary to Chief Secretary/All Departments of Government / All Heads of Department / Collector, Angul / Collector, Boudh / Collector, Cuttack / Collector Nayagarh / D.F.O. Satkosia Wildlife Division / D.F.O. Mahanadi Wildlife Division / D.F.O., Athagarh / D.F.O. Athamallik / D.F.O. Angul / D.F.O. Boudh / D.F.O. Nayagarh / C.F, Angul Circle / C.F. Berhampur Circle / C.F. Bhubaneswar Circle / C.F. Development Circle for favour of information.

Sd/-31.12.07

Additional Secretary to Government.

Appendix-6

SATKOSIA TIGER CONSERVATION FOUNDATION (Formed under the National Tiger Conservation Authority (Tiger Conservation Foundation) Guidelines, 2007).

1. Name of the Foundation:-

Whereas under Section-38 X of the Wildlife (Protection,Act,1972 (53 of 1972), and the National Tiger Conservation Authority (Tiger Conservation Foundation) Guidelines, 2007 it is necessary to establish a Tiger Conservation Foundation in Satkosia Tiger Reserve in order to facilitate and support its management for conservation of tiger and bio-diversity and to take initiatives in eco-development and eco-tourism by involvement of people in such process.

The Satkosia Tiger Conservation Foundation (STFC) is hereby formed.

2. Definitions:-

In these rules unless the context otherwise requires:

- 1) "Act " means the Wildlife (Protection,Act,1972 (53 of 1972);
- 2) "Executive Committee" means executive committee of the Foundation constituted by its trust of deed;
- 3) "Foundation" means the Satkosia Tiger Conservation Foundation (STFC) established under section 38 X of the Act.
- 4) "Government " or "State Government" means Government of Orissa.
- 5) "Governing Body" means governing body of the Foundation as constituted by its trust of deed;
- 6) "Implementing agency" means the tiger reserve notified under section 38 X of the Act or a tiger reserve already notified by the Government of Orissa under Project Tiger Scheme.
- 7) "Operations Foundation Manual" means the administrative code of the Foundation approved by Government.
- 8) "Rules of the Foundation" means the approved trust of deed and Operations Foundation Manual
- 9) "Staff" means any employee of the Foundation appointed by appropriate authority and shall include consultants, professionals engaged on contract, staff on deputation , daily wages worker , etc.;
- 10) "Tiger Conservation Authority" means the National Tiger Conservation Authority constituted under section 38L of the Act;
- 11) "Tiger reserve" means the areas notified as such under section 38 V of the Act
- 12) "Tiger reserve state" means a state having tiger reserve.

3. Location and area of operation:-

- 1) Location of the Registered Office and Head Office of the Foundation:
Office of the Conservator of Forests, Angul and Field Director, Satkosia Tiger Reserve, and Executive Director, Satkosia Tiger Conservation Foundation (STFC),At/PO:- Hakimpada, Angul – 759143, Dist. Angul, Orissa State.
E-mail ID-dfosatkosiawl@yahoo.co.in
- 2) Area of operation/jurisdiction
Satkosia Tiger Reserve and its adjoining landscape (STRAL) forming the impact zone with possible corridor value for dispersal of wild animals from the tiger reserve.

4. Aims and objectives of the Foundation:-

- 1) The aim of the Foundation shall be to facilitate and support Satkosia Tiger Reserve management for conservation of tiger and biodiversity, through multi-stakeholder participation as per approved management plans, and to support similar initiatives in adjoining landscapes, consistent with the national and state legislations.
- 2) For furtherance of the said objectives, the functions of the Foundation shall be undertaken through the implementing agency and its staff and or sponsored or supported by it or through other institutions, agencies or individuals collaborated by the implementing agency.

- 3) To achieve the above said aim, the Foundation shall have the following objectives ,namely:-
- To facilitate ecological, economic, social and cultural development in Satkosia Tiger Reserve and adjoining landscape.
 - To provide support to safeguard the natural environment in the Satkosia Tiger Reserve and relevant places.
 - To facilitate the creation of , and or maintenance of such assets as felt necessary for fulfilling the above said objectives.
 - To solicit technical, financial, social and other support required for the activities of the Foundation for achieving the above said objectives from different sources permitted by law.
 - To support ecotourism, eco-development, research, environmental education, training, management and advisory aspects in the above and related fields to support the implementing agency; and
 - Anything incidental or ancillary to the above for furthering the above said objectives.

5. Government Body of the Foundation:-

- The State of Orissa shall have a Governing Body for giving overall policy guidance and direction to the Satkosia Tiger Conservation Foundation.
- The Governing Body of the Satkosia Tiger Conservation Foundation shall consist of the following members, namely:-

i)	Chief Minister or Minister in-charge of Wildlife in the Govt. of Orissa.	President.
ii)	Principal Secretary, Forest & Environment, Govt. of Orissa.	Vice-President
iii)	Principal Chief Conservator of Forests, Orissa.	Member
iv)	Field Director, Satkosia Tiger Reserve, Angul cum Conservator of Forests , Angul Circle	Member
v)	Deputy Director-I, Satkosia Tiger Reserve, Angul cum D.F.O.,Satkosia Wildlife Division,Angul.	Member
vi)	Two prominent Scientists or qualified Experts in the field to be nominated by Government. (a) Dr.L.A.K.Singh, Sr.R.O (b)Dr.Sudhakar Kar,Sr.R.O.	Member
vii)	M.L.A., Angul/Athamallik/Hindol/ Nayagarh/Phulbani/Athagarh	Member
viii)	Chairman, Zilla parishada,Angul	Member
ix)	Two members of the executive committee of the Foundation (other than the Field Director /Deputy Director).	Member
x)	Principal Chief Conservator of Forests (Wildlife) & Chief Wildlife Warden, Orissa.	Member Secretary
xi)	Deputy Director-II, Satkosia Tiger Reserve, Nayagarh cum D.F.O., Mahanadi Wildlife Division,Nayagarh	Member
xii)	Chairman, Narsinghpur Block	Member
xiii)	Chairman, Gania Block	Member
xiv)	Chairman, Harbhanga Block	Member

- A member of the Governing Body shall, upon ceasing to be a Member of Legislative Assembly or as the case may be , the Zilla Parishad, cease to be a member of the Governing Body.
- The tenure of nominated member shall be for a period of three years from the date of nomination.
- The Governing Body shall have the following powers and perform the following functions, namely:-

- a) make over all policy of the Foundation in consonance with the provisions of the Act;
 - b) consider and approve of the balance sheet and audited accounts of the Foundation;
 - c) consider and approve of the Annual Report of the Foundation
 - d) approve the work plan, fund flow, Annual Budget of the Foundation
 - e) make amendment in the deed of trust, which may be necessary, subject to the approval of the government;
 - f) approve the "Operational Manual" of the Foundation ;
 - g) coordinate between different departments and other institutions and non Governmental organization to achieve the objectives of the Foundation;
 - h) frame rules and regulations under the provisions of the trust of deed for managing the affairs of the Foundation;
 - i) take all policy decisions regarding fund raising, investment and budget of the Foundation;
 - j) suspend , terminate or effect any other procedures on any Project or activity undertaken by the Foundation;
 - k) perform such other functions as may necessary to achieve the objectives of the trust.
- 6) The Executive Committee shall have the following powers and perform the following functions, namely;
- i) the meetings of the Governing Body shall be held at least once in a year preferably in the first month of the financial year;
 - ii) every meeting of the Governing Body shall be called in writing by and under the signature of the Member Secretary of the Governing Body through a prior notice of 15 days containing a summary of the business to be transacted in such meeting;
 - iii) any inadvertent omission to give to, or the non-receipt of notice of any meeting by, any member shall not invalidate the proceedings of the meeting;
 - iv) if the President is not present in the meetings of the of the Governing Body ,the vice-President shall preside over the meetings;
 - v) one third of the members of the Governing Body present shall form a quorum of the Governing Body provided that no quorum shall be necessary in respect of any adjourned meeting;
 - vi) all disputes in a meeting of the Governing Body shall be determined by the division of vote;
 - vii) the member who is unable to attend the Governing Body meeting may send his views on the agenda in writing and such expression of opinion shall be taken to be his vote on the matter concerned; and
 - viii)the minutes of the proceedings of the meeting shall be recorded and such minutes after approved and signed by the Member-Secretary , Governing Body shall be the conclusive proof of the business transacted in the meeting

6. The Executive Committee:-

- 1) The foundation shall have an Executive Committee to look after its day-to day management.

- 2) The affairs of the foundation shall be administrated subject to the rules of the Foundation by Executive Committee.
- 3) The Executive Committee shall consists of –

a) Field Director, Satkosia Tiger Reserve Conservator of Forests, Angul Circle, Angul	Chairman
b) Two representatives of Eco-development Committees working in the Satkosia Tiger Reserve to be nominated in the Governing Body.	Members
c) Two members of front line staff of the Satkosia Tiger Reserve	Members
d) Deputy Director, Satkosia Tiger Reserve-I	Members-Secretary
e) Deputy Director, Satkosia Tiger Reserve-II	Members
- 4) The tenure of the nominated member shall be for a period of two years from the date of nomination.
- 5) A member of the Executive Committee, other than nominated members, shall cease to be a member as such , if he ceases to hold that office of post by virtue of which, became the member of the committee.
 - a). the affairs and funds of the Foundation in accordance with the rules and regulations of the foundation;
 - b). make endeavour to achieve the objectives of the foundation and discharge all its functions.
 - c). exercise administrative and financial powers including power to engage any person of one description and make appointment thereon in accordance with the rules and regulations of the foundation;
 - d). enter into arrangement with other public or private organizations okr individuals for furtherance of its objectives and in accordance with the rules and regulations of the foundation.
 - e). Endowments, grants-in-aid, donations or gifts to the Foundation not inconsistent with the rules and regulations of the foundation and interest of the Government;
 - f). Take over or acquire in the name of the foundation by purchase, gift or otherwise from Government or other public bodies or private individuals or organizations, any movable and immovable property in the state or elsewhere in conformity with the rules and regulations of the foundation; and
 - g). Perform such others functions as are assigned to it by the Governing Body.

7. Proceedings of Executive Committee

- 1) Every meeting of the Executive Committee shall be presided over by the Chairperson. Provided that in the absence of the Chairperson, the executive committee shall elect a Chair man to preside over the meeting.

- 2) One half of the total members of the Executive Committee present in the meeting shall constitute the quorum, provided that no quorum shall be necessary in respect of any adjourned meeting.
- 3) Not less than seven days notice of every meeting of the Executive committee shall be given to each member of the said committee, provided that the Chairman may call an emergency meeting if the situation so warrants.
- 4) Any inadvertent omission to give notice to or the non-receipt of notice of any meeting by any member shall not invalidate the proceedings of the meetings.
- 5) The Executive Committee shall meet as and when necessary but at least once in every month.
- 6) All disputed issues in the Executive Committee meeting shall be determined by vote among members
- 7) Any member who is unable to attend the Executive Committee meeting may send his views on the agenda in writing and such expression of opinion shall be taken to shall be taken to be his vote on the matter concerned.
- 8) The Executive Committee shall refer any issue for the advice or recommendation to a Sub-Committee constituted by it for the purpose and the Executive Committee shall have the right to over ride the recommendation or advice given by the Sub-Committee, and in doing so its shall record reasons thereof.
- 9) The Annual General Body Meeting of the Executive Committee shall be conducted every year and the audited accounts of the previous year and the budget for the current year shall be presented, discussed and approved.
- 10) The Minutes of the proceedings of the executive committee meetings shall be recorded and such minutes after due approval shall be issued by the Secretary.

8. Office and Authorities of the Executive Committee:-

- 1) The Field Director, Satkosia Tiger Reserve shall be the Executive Director of the Foundation and he or she shall carry out all administrative and day-to-day functions of the Foundation on behalf of the Executive Committee and he shall be the custodian of all records, assets and belongings of the foundation.
- 2) The Executive Director shall have the following powers in conformity with the rules of the Foundation; namely:-
 - a. to accept contributions on behalf of the Foundation either in cash or in kind from a persons or institutions.
 - b. to purchase ,acquire, take on lease any movable and immovable property for the purpose of the achieving the objectives of the Foundation.
 - c. to have control and authority on the general administration of the Foundation.
 - d. to open and operate accounts with banks.
 - e. to prosecute, sue and defend all actions at law for and on behalf of the Foundation.
- 3) The Executive Director shall have the powers to convene seminars, workshops etc. , and to oversee publications of research materials and books of the Foundation.
- 4) The Executive Director shall initiate appropriate actions for the preparation and submission of project proposals on different programmes to be undertaken by the foundation to various agencies for support.
- 5) The Executive Director shall have the powers to interact with National and International Agencies for furthering the objectives of the Foundation.

9. Property, Assets and Liabilities:-

- 1) The income and property of the Foundation , howsoever derived, shall be applied solely towards the promotions of the objectives thereof as set-forth above.
- 2) No portion of the income and property of the Foundation shall be paid or transferred directly or indirectly, by way of dividend, bonus or otherwise , howsoever, by way of profit, to the persons who at any point of time have been members of the Foundation or to any of them or to any persons claiming through them.
- 3) Provided that nothing herein contained shall prevent the payment of remuneration to any member or any persons in return of any service rendered to the Foundation or for any administrative expenses as stipulated in the Operations Manual.

10. Powers of the Government.

The State Government may time to time review the functioning of remuneration to any member or any persons in return of the affairs of the foundations. All such directions shall be binding upon the Foundation.

11. Financial Regulations:-

A) Funds of the trust:

- a). the income generated from levying tourist entry fees and other charges for the services generated out of the Tiger Reserve;
- b). contribution from other source in terms of specific projects from national as well as international agencies as permitted by law;
- c). grant-in-aids, donation or assistance of any kind from any individual ;or organizations including foreign Governments and other external agencies as permitted by law; and
- d). any other activities as permitted by law and in conformity with the rules of the trust.

B) Accounts & Audit.

- a. The Foundation shall maintain proper accounts and prepare annual accounts comprising the receipts and payment, statement of liabilities, etc. in such form as may be determined.
- b. The accounts of the Foundation shall be audited annually by the qualified Chartered Accountant, empanelled by the Comptroller & Auditor General of India, approved by the Governing Body.
- c. The audited accounts shall be discussed and approved by the Governing Body in its annual meetings held for the purpose; and
- d. The accounts of the Foundation shall be subjected to the general provisions and directive of the Comptroller & Auditor General of India.

12. Dissolution of the Foundation:-

The Foundation is irrevocable, however, in the event of any circumstance in which it is decided to terminate or dissolve the Foundation after the satisfaction of all its debts and liabilities, any assets and property , whatsoever be the same, shall not be paid to or distributed among members of the Foundation but shall be dealt with in such manner as the State Government may determine in that behalf.

13. **Miscellaneous:-**

- a). As and when there is any change in the nomenclature of Ministries , Departments, or institution and designation mentioned, such changes shall automatically stand incorporated in the rules of the Foundation.
- b). Every staff of the Foundation may be sued or prosecuted by the Foundation for any loss or damage caused to the Foundation or its property for any thing done by him detrimental to the interests of the Foundation.

Divisional Forest Officer
Satkosia Wildlife Division, Angul.

APPENDIX-7

LIST OF ROADS INSIDE CORE

A) SATKOSIA WILDLIFE DIVISION

Sl. No.	Name of the road	Length of Road (in Kms.)			
		Forest	P.W.D.	Panchayat	Hilly
	Pampasar-Raigoda-Lembuchali (Angul/Athagarh border)	20.6	--	--	7
2	Raigoda-Sanctuary border (on Nuakheta road)	1.0	--	--	7

3 .	Rasanda-Bhurkundi	11.5	--	--	7
4 .	Bhurkundi-Tulka	6.4	--	--	6
5 .	Tulka-Chhotkei-Purunakote	15.0	--	--	2
6 .	Tulka-Labangi (via-Chuanri)	14.0	--	--	10
7 .	Chhotkei-Katrang	17.0	--	--	3
8 .	Katrang-Hatibari	50	--	--	3
9 .	Katrang-Jurum(Athagarh border)	4.0	--	--	-
10 .	Purunakote-Baghmunda	9.0	--	--	-
11 .	Baghmunda-Tarava(via-Kumuri	10.0	--	--	3
12 .	Baghmunda-Majhipada	15.0	--	--	6
13 .	Karadapada-Bipradihi	14.0	--	--	-
14 .	Tikarpada- Katrang(river view)	15.0	--	--	-
15 .	Tikarpada- Tikarpada FRH	1.0	--	--	-
16 .	Jagannatghpur-Tainsi	--	--	10	-
17	Pampasar-Tikarpada	--	30	--	-

18.	Tikarpada-Jamudoli	14.0	--	10	-
19.	Baliput-Angul border(river view)	5.0	--	--	-
20.	Kumuri-Sahajbahal chhak	6.5	--	--	-
21.	Asanbahali link road	4.25	--	--	-
TOTAL		174.25	30	20	54

B) MAHANADI WILDLIFE DIVISION

Sl. No.	Name of the road	Length of Road (in Kms.)			
		Forest	P.W.D.	Panchayat	Hilly
	Sansilinga-Badmul	12.0	--	--	--
	Gergeri-Doising	13.0	--	--	--
	Gergeri-Sulia Parbat (Boudh border)	18.0	--	--	--
	Bhabapur-Padmatola	15.0			--
	Satakhanda-Kutibari	5.0			--
	Kusang-Tikarpada	--	10	--	--
	Burudiha-Nayagarh border	--	--	3.5	--
	Nandagaru-Bankajhari	--	--	10.0	--
TOTAL		63	10	13.5	--
GRAND TOTAL		237.25	40	33.5	54.0

APPENDIX-8

LIST OF BUILDINGS WITH LOCATIONS. IN SATKOSIA WILDLIFE DIVISION (CORE)

Place	Name of Building	Year of Construction	Plinth Area (in Sft)	Condition
Angul	Division Office building	Transferred from Silviculturists, Orissa	2090	Good
	Store room	-do-	665	Good

	Garage	-do-	198	Good
	Cycle Stand	-do-	216	Good
	Clerks Qtr.inside Office premises	-do-	680	Good
	D.F.O.s Residence	Transferred from Angul Division	2340	Good
	A .C.F.s Residence	1991	1851	Good
	F.G. Qtr. near DFOs Res.	1991	517	Good
	Choukidar Qtr.	1986	352	Good
	Mobile Barrack`	1994	1144	Good
	Anti-poaching shed	2005-06	400	Good
Pampasar Range	Range office cum res.		1200	Good
	Foresters Qtr at Pampasar		700	Good
	FRH at Pampasar		600	Manageable
	FRH at Pampasar		500	Manageable
	Ticket house at check gate		150	Good
	Barrack at Pampasar		450(M)	Good
	WFP god own		225	Good
	VHF shed		300	Good
	Marking shed at Pampasar	1983-84	-	Good
	FRH at Labangi		1913	Good
	F.G. shed at Labangi		416	Good
	Forester Qtr at Jagannathpur		400	Good
	R.I.shed at Jagannathpur		200	Good
	F.G.Qrs at Tarava		222	Damaged
	School cum Medial centre at Tarava		800	Good
	-do at Asanbahal		800	Good

	F.G. shed at Kumuri		350	Damaged
	Anti-poaching shed at Kumuri		400	Good
	F.G. qrs at Hinjadoli		300	Damaged
Raigoda Range	FRH at Raigoda		900	Manageable
	F.G.Qrs at Raigoda		400	Manageable
	Range office cum Res.			Good
	Mobile Barrack at Raigoda			Manageable
	Garage at Raigoda		150	Manageable
	F.G shed at Bhurkundi		300	Manageable
	R.I.Shed at Raigoda		120	Manageable
	Gate shed at Bhurkundi		300	Good
Purunakote Range	Range Office cum Res.		1200	Good
	F.R.H.at Purunakote		1400	Damaged
	Foresters Qrs.At Purunakote		600	Damaged
	F.G .Qrs at Purunakote		350	Damaged
	Barrack at Purunakote(DWT)		1500	Damaged
	F.G. Qrs at Chhotkei		300	Good
	FRH at Tulka		1400	Manageable
	F.G.Qrs at Tulka		300	Good
	Store house at Tulka		300	Manageable
	Foresters Qrs at Tulka		400	Good
	Kitchen to FRH Tulka		300	Damaged
	FRH at Baghamunda		1600	Manageable
	Kitchen to FRH Baghamunda		150	Damaged
	Foresters Qrs at Baghamunda		450	Manageable
	F.G.Qrs at Baghamunda		300	Manageable

	Barrack at Baghamunda		350	Damaged
Tikarpada Range	FRH at Tikarpada (New)		1500	Good
	-do- (Old)		1717	Manageable
	Research Officers Res. (FRH) at Tikarpada		1200	Good
	Kitchen to FRH Tikarpada		1000	Manageable
	Interpretation Hall		800	Good
	Store Room		600	Good
	Garage		150	Manageable
	Range Officers Rest house at Tikarpada	1930-31	243	Manageable
	Kitchen to Range Office	1930-31	226	Manageable
	F.G.Shed at Tikarpada		300	Manageable
	-do- -do-		300	Manageable
	-do- -do-		400	Manageable
	Foresters Qrs at Tikarpada		650	Manageable
	F.G.Shed at Majhipada		300	Manageable
	F.G.Shed at Majhipada		437	Manageable
	F.G.Shed at Naleswar		450	Good
	Range Office-Cum-Res		1200	Good
	Seed godown			Good
	Rescue centre			Good
	Laboratory			Good
Jillinda Range	Range Office- cum – Res		1050	Good
	Rest Shed at Jillinda		320	Good
	Office at Jillinda		525	Good
	Foresters Qrs at Jillinda		720	Manageable
	F.G.Shed at Jillinda		437	Manageable
	F.G.Shed at Kamaladihi		525	Manageable

	F.G.Shed at Siaribhundi		456	Manageable
	F.G.Sed at Sisoopathar		270	Manageable
	G.G. Shed at Baliput		540	Manageable
	-do-		540	Manageable
	C.G.Shed at Baliput		266	Damaged
	A.P.Shed at Sisoopathar		266	Manageable
	Foresters Qrs at Katranga		680	Good
	F.G.Qrs at Katranga		320	Good

LIST OF EXISTING BUILDING IN MAHANADI WILDLIFE DIVISION. NAYAGARH

Place	Name of the building	Year of construction	Plinth area (in Sft)	Condition
Kusang Range	Beat house at Kusanga	Transferred from Boudh Divn.	20.35	Manageable
	Beat house at Marada	-do-	36.89	Needs Repair
	Beat house at Sitalpani	-do-	50.11	Good
	Beat house at Kumuri	-do-	25.00	Needs Repair
	Beat house at Padmatola	-do-	58.80	Good
	Foresters Qrs At Kusanga	-do-	37.17	Needs Repair
	Foresters Qrs At Sitalpani	-do-	73.42	Good
	Range Office –cum-Res at Kusang	1991	114.82	Needs Repair
	Food Distribution centre at Kusanga		59.20	Good
	Protection shed at Kalarabank		21.553	Needs Repair
	Protection shed at Sunakhania		22.437	Needs Repair
	Antipoaching check gate at Sitalpani		12.077	Good
	Antipoaching check gate at		33.444	Good

	Marada			
Chhamundia Range	FRH at Chhamundia	Transferred from Nayagarh Division	175.62	Needs Repair
	Beat house at Chhamundia	-do-	41.52	Manageable
	Beat house at Badmul	-do-	59.53	Needs Repair
	Beat house at Kuturi	-do-	54.93	Manageable
	Foresters Qrs at Chhamundia	-do-	42.73	Manageable
	Gate house at Chhamundia	-do-	21.85	Needs Repair
	Protection shed at Salapaganda	-do-	28.43	Damaged
	Protection shed at Khandadhua	-do-	34.00	Damaged
	Antipoaching shed at Kuturi	-do-	21.36	Needs Repair
	Kithen house at Chhamundia	-do-	46.81	Needs Repair
	Antipoaching shed at Chhamundia	-do-	52.69	Good
	Protection Barrack at Chhamundia	-do-	36.73	Good
	Protection Barrack at Badmul	-do-	53.97	Needs Repair
	Protection shed at Chhamundia	-do-	51.374	Needs Repair
	F.G.Qrs at Kumbhirakhani	-do-	64.42	Good
	Antipoaching shed at Purunapani	-do-	32.515	Good

APPENDIX-9

STATEMENT SHOWING LENGTH OF BOUNDARIES OF THE RESERVE FORESTS & PROTECTED FORESTS IN THE CORE

Sl.No	Name of the Blocks	Compartment	No. of boundary pillars existing	Length of existing boundary line (in Kms)	Length of common boundary (in Kms)	Block on the side of it	Length of inter division boundary (in Kms)
1	2	3	4	5	6	7	8
1	Bolongo (Part) RF	11 & 12	-	9.0	-	Raigoda, Tulka, Jocub	
2	Jocub RF	1 to 6	60	7.33	14.84	Bolong, Tulka, Purunakote, Takarsingha	
3	Takarsingha RF	1 to 9	103	10.34	16.04	Jocub, Purunakote, Chhotamunda	
4	Chhotamunda RF	1 to 5	81	9.33	8.64	Tainsi, Kuru, Purunakote, Baghmunda, Takarsingha	
5	Kuru RF	1 to 9	20	3.74	17.94	Tainsi, Chhotamunda, Purunakote, Majhipada	Pampasar-3.0 Purunakote-0.74
6	Tainsi RF	1 to 10	150	17.04	17.65	Chhotamunda, Kuru, Baghmunda	
7	Baghamunda RF	1 to 13	69	20.18	17.95	Majhipada	10.1Athamallik - (4.48 Natural)

8	Purunakote RF	1 to 20	178	18.7	28.8	Chhotamunda, Takarsingha, Tulka, Katrang, Tikarpada	
9	Majhipada RF	1 to 17	94	23.4	17.36	Baghamunda, Kuru	12.0 Athamallik (4.48 Natural), Tikarpada- 14.4 Purunakote- 9.0
10	Tuluka RF	1 to 12	55	12.34	15.00	Raigoda, Bolong, Jocab	6/9 Athagarh
11	Tikarpada RF	1 to 9	21	14.4	8.6	Purunakote, Katrang	
12	Hatidhara RF	23 to 27	-	14.4	-	Majhipada	
13	Raigoda RF	1 to 16	25	22.25	18.00	Tulka, Bolong	14.25 Athgarh
14	Katrang RF	1 to 11	72	21.71	14.56	Tikarpada, Purunakote, Tulka	
15	Jodum BRF	Block I & II		13.85	-	Katrang	
16	Padmatola RF	1 to 11	247	32.00	-	-	
17	Arakhapadar RF	1 & 2	-	-	-	-	
18	Mahanadi RF	1 to 17	425	68.750	-		10.00 Mahanadi Division

Part A: The Existing Situation

Chapter 1: Introduction of the Area

1.1 Name, Location, Constitution & Extent

1.1.1 Name Satkosia Tiger Reserve BUFFER

1.1.2 Location

The Geo-coordinates of extreme points of the Buffer is as follows

	Latitude	Longitude
North	20° 45' 36" N	
South	20° 23' 40" N	
East		85° 05' 24" E
West		84° 32' 35" E

The buffer zone spreads over 4 revenue districts of the state namely Angul, Cuttack, Boudh and Nayagah.

1.1.3 Constitution

Entire Baisipalli buffer has been included as buffer. Peripheral area of Satkosia Gorge buffer as per following description has been taken under buffer. It includes Reserved Forests and villages of the reserve.

FOREST BLOCKS AND COMPARTMENTS INCLUDED IN THE BUFFER OF THE TIGER RESERVE

Name of the forest block included in the core area	Compartment included in the core area	Nos.,	Area of the compartments included in the core area (ha)
*Tikarpada	5A		20.00
*Purunakote(Part)	1,4-7,9,10		1916.261
*Tulka(Part)	11, 12		848.37
*Takarsinga(Part)	1		319.151
*Raigoda(Part)	16(Part)		237.35
*Chhotamunda	1 to 5		1501.941
*Katrang(Part)	9		470.367
*Jorum(Part)	Block I		125.94
*Tainsi	1 to 10		2259.05
*Mahanadi River (Part)			1972.95
**Baisipalli	1 to 20		13910.2
Total Forest area			23581.58

* Forest blocks belong to Satkosia Gorge buffer

** Forest block belong to Baisipalli buffer

Name of the villages/hamlets with area and population and year of settlement of the villages of Satkosia Gorge Buffer.

SATKOSIA WILDLIFE DIVISION, ANGUL .ANGUL DISTRICT.

Sl.No.	Name of the village/Hamlet village	District	Area in Ha.	Population	Year of settlement
1	2	3	4	5	6
1	Takarsinga	Angul	347.65	498	1962
2	Kulangi	-do-	176.85	300	1962
3	Jagannathapur	-do-	688.75	1171	1962
4	Hinsirida	-do-	156.37	269	1962
5	Kumbharabhuin (Hamlet)	-do-	0.0	-	1962
6	Ramimunda	-do-	517.00	138	1962
7	Pampasar	-do-	172.49	171	1962
8	Jocub	-do-	205.62	74	1962
9	Badakheta	-do-	90.24	100	1962
10	Salor	-do-	123.40	90	1962
11	Purunakote	-do-	358.39	766	1962
12	Chhotkei	-do-	234.61	434	1962
13	Tulka	-do-	225.01	455	1962
14	Majhipada	-do-	383.87	170	1962
15	Beherasahi	-do-	237.87	177	1962
16	Goindi	-do-	82.74	308	1962
17	Karadapada	-do-	150.91	415	1962
18	Hatibari	-do-	281.80	443	1962
19	Tikarpada	-do-	152.07	684	1962
20	Katrang	-do-	397.39	276	1962
21	Gopalpur	-do-	140.66	316	1962
23	Tarava (F.V.)	-do-	--	250	1910
24	Asanbahal (F.V.)	-do-	--	114	1933
25	Bhurkundi (F.V.)	-do-	--	189	1914
26	Doruha	-do-	216.91	101	1962
27	Malisahi	-do-	84.58	201	1962
28	Jamudoli	-do-	242.81	640	1962
29	Kudasinga	-do-	54.63	93	1962
30	Nilamara	-do-	55.04	76	1962
31	Limbadihi	-do-	162.68	488	1962

32	Luhasinga	-do-	359.36	771	1962
33	Dolamundi	-do-	89.44	191	1962
34	Karadasinga	-do-	78.51	267	1962
35	Ragudisahi (Hamlet)	-do-	0.0	-	1962
	Total Angul dist.		6471.65		

CUTTACK DISTRICT .

1	2	3	4	5	6
36	Baliput	Cuttack	199.36	284	1995
37	Silati (Hamlet)	-do-	0.0	-	1995
38	Kamaladihi	-do-	220.08	2181	1995
39	Ranibhuin	-do-	189.32	511	1995
40	Panchama	-do-	901.89	713	1995
41	Kaintara	-do-	170.65	215	1995
42	Nuagaon	-do-	406.00	265	1995
43	Paikaregeda	-do-	748.87	418	1995
44	Satyajayapur	-do-	686.47	530	1995
45	Dhanurjayapur	-do-	638.97	412	1995
46	Sampur	-do-	221.42	130	1995
47	Kunjabanapur	-do-	40.70	192	1995
48	Janisahi	-do-	156.74	1149	1995
49	Regeda	-do-	182.26	1512	1995
50	Talasaahi	-do-	138.53	786	1995
51	Chikanakhandi	-do-	139.34	363	1995
52	Sanagaon	-do-	217.16	991	1995
53	Jillinda	-do-	327.00	1159	1995
54	Mahigarh	-do-	100.36	692	1995
55	Mandania	-do-	245.24	560	1995
56	Ambakhola (Hamlet)	-do-	0.0	-	1995
	Total of Cuttack Dist.		5934.36	13063	

MAHANADI WILDLIFE DIVISION, NAYAGARH ,

BOUDH DISTRICT.

57	Ghungurpada	Boudh	141.24	111	1989
58	Hatigarh	-do-	91.68	250	1989
59	Nuapada	-do-	95.54	132	1989
60	Kumari	-do-	755.39	1203	1989
61	Bhapur	-do-	399.65	389	1989
62	Budhamba	-do-	77.88	144	1988
63	Semiguda	-do-	59.03	14	1988
64	Siripaju	-do-	189.55	78	1988
65	Geredisahi	-do-	166.33	279	1989
66	Nandagadu	-do-	152.57	75	1989
67	Satakhanda	-do-	384.82	451	1990
68	Hinjal	-do-	109.74	206	1989
69	Kutibari	-do-	140.84	246	1989
71	Atalasara	-do-	420.44	281	1990
72	Sitalapani	-do-	294.56	295	1989
73	Sunakhania	-do-	0.0	-	1988
74	Ghatgaon	-do-	0.0	-	1988
	Total of Boudh District		3479.26	3,916	

NAYAGARH DISTRICT

76	Malisahi	-do-	80.55	180	1985
77	Badamul	-do-	323.86	207	1985
78	Bethiasahi	-do-	66.48	247	1985
79	Muduligadia	-do-	0.0	97	1985
80	Kandhajilinda	-do-	345.04	57	1985
81	Chhamundia	-do-	412.42	1069	1985
82	Haripur	-do-	156.82	414	1985
83	Kanipokhari	-do-	196.44	105	1985
84	Khalisahi	-do-	0.0	161	1985
85	Bantapada	-do-	216.32	391	1985
86	Iswarpur	-do-	202.85	526	1985
87	Maskajholi	-do-	46.39	96	1985
88	Raigadia	-do-	34.08	216	1985

89	Mohanpada	-do-	0.0	232	1985
90	Dasipur	-do-	0.0	48	1985
91	Rajingi	-do-	69.79	534	1985
92	Dhobabarei	-do-	50.30	170	1985
93	Kumbhirakhani	-do-	117.04	565	1985
96	Malasapadar	-do-	27.52	24	1985
97	Sagadabhanga	-do-	20.64	25	1985
98	Bahali	-do-	23.47	-	1985
	Total of Nayagarh Dist.		2390.01	5,528	

SI No	Name of the villages inside Baisipalli buffer	Area	Settlement year
01	Gahandi		1985
02	Serenda		1985
03	Janakjhola		1985
04	Damaghati		1985
05	Bedadi		1985
06	Kumuni		1985
07	Turungi		1985
08	Rekadi		1985
09	Sekatapalli		1985
10	Idei		1985
11	Buriapaju		1985
12	Raguda		1985
13	Dimiripati		1986
14	Indagadu		1985
15	Kuchumara		1985
16	Osamaska		1985
17	Senapari		1985
18	Nekarganda		1985
	Total	2924.80	

Abstract

District	Area of villages in Ha.
Angul	6471.65
Cuttack	5934.36
Boudh	3479.26
Nayagarh-Satkosia	2390.01
Nayagarh- Baisipalli	2924.80
Total	20444.00

1.1.4 Extent

The extent of forest area as well as village area are indicated in above paragraph along with constitution

Forest area = 235.82 sq. km

Village area = 204.44 sq. km.

Total Buffer area = 440.26 sq. km.

1.2 Approach & Access

The area is relatively unapproachable even today and is one of the reasons for housing a variety of wild animals and birds. The headquarters of Mahanadi Wildlife Division is at Nayagarh in the District of Nayagarh which is 87 KMs. away from State capital Bhubaneswar. The Baisipalli buffer area is approachable via Chhamundia, which is 60 KMs. away from Nayagarh town. From Dasapalla, the Baisipalli buffer is also approachable via Takara village which is about 135 KMs. from the state capital Bhubaneswar along the national highway No.224. The area is also accessible via Charichhaka and Madhapur. The nearest rail head is Khurda Road which is 125 KMs. away and Airport at Bhubaneswar is about 135 KMs. away from the Baisipalli buffer.

Pampasar, the entry point of Tiger reserve from Northern side is 188 Kms from the State capital and 30 Kms from the Tiger reserve headquarters Angul. Jagannathpur is the entry place for buffer from Northern side which is 5 km after Pampasar. Tikarpada being the main attraction place in buffer situated at 30 km from Pampasar.

1.3 Statement of Significance

Buffer zone in Baisipalli sanctuary is having a continuous patch of forests of Mahanadian Hilly Sal adjoining to Satkoshia Gorge sanctuary. Biogeographically the buffer comes under the Gargat hills Sub-division of Chhotnagar Plateau biotic province (6D) of Deccan Peninsular zone (6) as per Rodger's and Panwar's (1988) Biogeographic classification of India. The buffer is of tremendous genetic and ecological importance with variety of flora and fauna like Tiger, Leopard, Bison, Sambar, Barking deer, Mouse deer, Pangolin, Snakes and birds. The presence of endangered species like Elephants, Tiger,

Mouse deer, Pangolin makes it significant having global concern. The avifauna with varied resident birds like Doves, Hornbills, Falcon, Hill Myna etc. also have got values of global significance. The buffer itself has a unique feature of typical habitat of three bamboo species i.e. *Cephalostachyum pergracile*, *Bambusa arundinacea* and *Dendrocalamus strictus*. The area also covers a unique habitat of hilly Sal Forests of the region. This is an issue of National significance.

1.4 Geology, Rock and Soil

The Buffer area displays a promiscuous broken mountain system interspersed with numerous small plains and valleys. It comprises mainly of formations belonging to Archaean system. Alternating hard and soft rocks give rise to overhangs and caves which form denning areas for several species of wildlife.

Khondalite are the oldest and highly metamorphosed rock in this area represented by quartz-garnet-Sillimanite-schist and garnetiferous quartzites. They are grayish to purple or grayish to reddish brown in colour. The constituent minerals are quartz, feldspar, garnet, sillimanite and occasionally graphite.

Basic Pyroxene granulite rocks are dark coloured and medium grained. The rock displays granulitic texture consists of pyroxenes and feldspar.

Acid and Intermediate charnockite are fine to medium grained, greenish grey in colour, showing gneisses texture. The essential composition is quartz, feldspar.

Khondalites are usually deeply weathered giving rise to a soil varying from sandy to heavy red loam. The red colour is due to the presence of hydrated oxides of irons. On account of high iron content, it is not so suitable for agriculture.

Recent deposits of alluvium soil are very much limited in this area and are mainly confined to the banks of river and other water sources.

Calcareous concretion known as Kankar or ghootin are found in many places of the buffer area. The exposures are very small and locally used for lime making.

Laterite, Khondalite are used as building stones in the adjoining localities.

The rocks have been succeeded directly by sub-recent and recent deposits such as laterite and alluvium soil. Based on field evidence, the rock formation occurring in this area has been arranged in the following stratigraphical order.

Recent:- Alluvium & Soil.

Sub-Recent:- Laterite

Pagmatite and quartz vein

Garnetiferous granite gneisses granulites

Acid and intermediate charnockites

Basis hypersthene granulite

Khondalite Quartz garnet

Khondalite Series

Quartz-Grnet-Sillimanite-Schist

Diopside-Granulite.

1.5 Hydrology and Water Sources

Most of the rainfall in the buffer area is due to the south-west monsoon and a little rainfall comes from the retreating monsoon. The highest and lowest rainfall recorded near buffer area i.e. Dasapalla is as follows:-

Highest: 1930 mm in the year 1933

Lowest: 906 mm in the year 1920.

Natural:

There are no reservoirs, canals and other wetlands in the buffer. In the buffer area there are two prominent nalas.

- a. Khalakhala Nala: It passes through Baisipalli North block compartment No.20 in between village Duising & Dhipisahi forming boundary line of the buffer and drains into river Mahanadi near Malisahi after passing through Mahanadi RF of Satkosia Gorge sanctuary.
- b. Langalkhol Nala: This nala is located in Baisipalli South Block compartment no.5 and 6 and finally draining into river Mahanadi via Brutanga nala situated east of the Baisipalli buffer.

Besides, there are number of streams inside the buffer. These however, do not carry any water during the dry period in May and June.

Artificial:

There are number of water sources created in and around buffer area as follows:

- a. Game tank at Takara-Comptt., No.6
- b. Game tank at Osamaska- near Landia Kutibari
- c. Dugwell at Dhipisahi
- d. Masonry check dam in Compt. No.6 near Buguda
- e. WHS at Nekarganda
- f. Check dam in Compt. No.5 near Langalkhola nala.
- g. WHS in Comptt. No.1 near Takuda
- h. WHS in Comptt. No.1 near Banigochha
- i. Game tank in compt. No.2.

Apart from the above, there are no. of tube well, open dug well and ponds created under Anti- Poverty Developmental Programme to combat drought situation in and around the P.A. Various course of action has been prescribed in plan period to maintain sustained water flow regime for mitigation of water stress in the P.A. and to store enough water in summer.

1.6 Vegetation Types

Type.1: Moist Peninsular Sal Forests- 3C/C2e

This type is having pure patches of Sal in the places where soil depth is high and is widely spread over the area where natural water sources prevail. The principal associates are Asan, Kurum, Dhaura and Jamun. Species like Kusum, Sisoo, Piasal, Mai, Kasi, Bara, Aswasth, Mitikinia, Simuli, Patuli formed the top canopy. Trees found in the underwood are Chara, Sidha, Kendu, Katranga and Sunari. Anla, Kamalagundi, Halda, Behenta, Kumbhi, Kapasia, Achu and Kantabamboos occurs frequently only on nala banks. The shrubs mainly comprises of Nalbeli, Keruan, Dhatki. Among the climbers, Atundi, Siali,, Buduli and Manda are the prominent ones. Regeneration of principal species are adequate in favourable area. A list of grasses which are generally associated with the forest is furnished below:

Sl.N o.	Perennial Grasses	Sl. No.	Annual Grasses
1	<i>Aristida setacea</i>	1	<i>Arthraxon species</i>

2	<i>Arundinella khasiana</i>	2	<i>Arundinella pumila</i>
3	<i>Arundinella setosa</i>	3	<i>Dimeria species</i>
4	<i>Bothriochloa pertusa</i>	4	<i>Eragrostis uniolooides</i>
5	<i>Bothriochloa bladhii</i>	5	<i>Eragrostis viscosa</i>
6	<i>Cymbopogon martini</i>	6	<i>Eulalia species</i>
7	<i>Cynodon dactylon</i>	7	<i>Setaria glauca</i>
8	<i>Chrysopogon gryllus</i>	8	<i>Themeda species</i>
9	<i>Chrysopogon montanus</i>		Herbs
10	<i>Dicanthium annulatum</i>	1	<i>Desmodium species</i>
11	<i>Dicanthium carricosum</i>	2	<i>Desmodium latifolium</i>
12	<i>Eragrostis coarctata</i>	3	<i>Ocimum species</i>
13	<i>Eulaliopsis binata</i>		
14	<i>Heteropogon contortus</i>		
15	<i>Iseilema prostratum</i>		
16	<i>Imperata cylindrical</i>		
17	<i>Imperata arundinacea</i>		
18	<i>Ichaemum rugosum</i>		
19	<i>Panicum species</i>		
20	<i>Sporobolus indicus</i>		
21	<i>Sachharum Spontaneum</i>		
22	<i>Themeda triendra</i>		
23	<i>Thysanolaena maxima</i>		

This forest sub-type covers catchment area of river Mahanadi and provides vegetation cover to hills, prone to erosion. It is very important from ecological point of view. Localised edaphic variations are also noticed.

Type.2. Moist mixed deciduous forest 3C/C₃

The Forest tends to result in a dry mixed deciduous forest where drier conditions prevail. Occurrence of Sal is few and regeneration of useful species is inadequate. Top canopy consists of Kusum, Mitkunia, Dhaura, Mahula, Barbakulia, Chara, Kendu, Bahada, Jamun, Arjuna, Kochila, Kasi, Kansa, Genduli, with a few Sal. Katrang, Karada, Harida, Anla, Sidha, Kapasia, are found in lower story. The more common species found in the undergrowth are Sunari, Kamalagundi, Dhatki, Nalbeli, Tilai. The climbers like Atundi, Buduli, Siali and Muturi are conspicuous.

Type.3: Bamboo Brakes: 3c/2c, 5B/e9 and 2e3

It occurs in pure patches and also intermixed with sal and miscellaneous species. Salia Bamboo is the lone member of this subtype. The ground floor is usually devoid of any tree species where dense clumps are noticed. The brakes of *Bambusa arundinacea* is observed in few patches along the banks of prominent nalas.

Type.4: Northern dry mixed deciduous forests : 5B/C₂

This type occurs mostly in dry patches of western slopes of P.A. Sal is almost absent from these patches. The most common tree species are Dhaura, Asan, Anla, Chara, Kendu, Mahula, Karada, Kusum, Mundi and Katrang. Climbers like Atundi and Siali are occasionally found. Regeneration is very much inadequate.

Type.5: Riverine Forest (4 RS1) Riparian Fringing Forest:

This Sub-type is found in very small patches along the bed and banks of the streams inside P.A. draining to River Mahanadi which constitutes short and narrow fringes. A few solitary trees of large dimension are also found. Among the tree species found are Phasi, Arjuna, Panigombhari, Kochila, Barun, Karanja, Kendu, Mankadkendu etc. along with variety of under growths in patches. Occasionally jamun tree are noticed. A number of climbers abound in the locality. In addition to the natural forests described above some manmade forest listed below are also found:

Year of plantation	Area planted (Ha.)	Comptt. No.	Name of important species planted	Present status
1965	12.5	6 of Baisipalli R.F.	Teak	Entire area is now full with forest cover

1.7 Wild Fauna and Habitats

One of the Key areas of conservation is the riparian vegetation. The species growing in riparian forest harbour giant squirrel. The Hinjal tree (*Barringtonia acutangula*) and Kochila (*Strychnus nux-vomica*) are of great conservation value. The Malabar pied hornbill likes Kochila fruit very much. Hence all riparian fringe forests must be protected as they often serve as crucial corridor links for migration of elephant herds due to easy availability of water and food base.

There are Carnivorous animals such as Tiger, Leopards, Jungle Cats, Indian mongoose, wolf, Jackal, Bear, Hyena, Wild dogs in the buffer area. Among herbivorous animals, , Langur, Sambar, Chital, Mouse Deer, Barking deer, Wild boar, Gaur, Nilagai, Fruit bats are commonly found. Rodents like Malabar Giant Squirrels, Indian common hare and porcupines along with a small group of elephant are often seen in the buffer.

South Baisipalli is very much remote and hilly and is suitable for peace loving wild animals. Large herds of herbivores are not seen except wild pigs. Population however appears to be on moderate side. Tiger is the target species among Carnivorous and elephant among herbivores in the area.

Threatened species of the P.A. are Tiger, Leopard, Elephant, Chausingha and Nilagai. In the last census conducted during the year 2004 one tiger was found in the area. Leopard population was 04. During the Monitoring of Tigers, co-predators & their prey animals conducted during January 2006, the sign of tiger was located in Durgaprasad beat area and sign of leopard in all the beats of the Baisipalli sanctuary except Badasilinga beat. There are 17 nos. of elephants as per the census conducted during April 2005.

Compartment no.10,11,17,18 and 19 are the habitats and breeding areas of common and rare species due to its inaccessible characteristics and less biotic interference.

1.8 Major Conspicuous Changes in the Habitat Since Inception

Due to managerial intervention and interpolation of various forest conservation practices the habitat has undergone changes like availability of water holes and salt licks. The meadows have been developed. Due to fire protection measures and protection of the forests against illicit felling the ground floral have become conspicuous and the canopy is being recouped. The positive and negative changes can be summarized as follows:

Positive:

5. The total lack of large waterbodies have been addressed by construction of several small waterbodies.
6. Due to active management of salt-licks, animal visitation and sightings near water bodies have improved.
7. Continued and effective fire protection in the buffer has resulted in luxuriant and moisture-loving ground flora.

Negative:

Since lots of villages are there in the buffer, biotic pressure, illicit felling and poaching are immense. Illicit felling has created open patches, which have been occupied by weeds limiting the fodder availability.

Chapter 2: Status of Tiger and Co-Predators

2.1 Distribution

In the last census conducted during the year 2004 one tiger cub and 4 leopards were found in the Baisipalli area. During the Monitoring of Tigers, co-predators & their prey animals conducted during January 2006, the sign of tiger and leopard were located in all the beats of the buffer zone.

2.2 Abundance Status

COMMON	MODERATE	RARE
Wolf	Leopard	Tiger
Wild Dog		
Sloth Bear		

2.3 Prey-Predator Relationships

The available prey base in the buffer areas is much lesser when compared to the core area. Large prey favoured by the Tiger, like Sambar, barking deer remain confined to a few pockets. However, Wild pig is abundant

2.4 Assessment of Threats

- Subsistence hunting of wild animals by the local tribals for meat is present in this area.
- Poaching for the purpose of selling is occasional and confined to the forest fringes.
- Targeted poaching for ivory by people coming from outside, with the help of local people.
- Gradual loss of habitat by way of illicit felling of trees.
- Grazing of cattle inside the buffer area, especially around villages.
- The incidence of fire during summer.
- Human settlements and consequent biotic pressure inside the buffer zone.

Chapter 3

History of Past Management and Present Practices

3.1 Conservation & Forest Management History

First consolidated working plan comprising all the ex-states of Nayagarh, Dasapalla and Khandapada was prepared for the period from 1960-61 to 1979-80 subsequently revised and written by Sri N.C.Bal,OFS-I , WPO-II, Bhanjanagar for a period from 1983-84 to 2002-03 . Prior to the Notification of Baisipalli sanctuary vide No.25335/8f (w) 16/81 dt.07.11.81 of FF & AH Department, the area was a Reserve Forest comprising of an area of 168.35 Sq.KMs. having 20 nos. of compartments. Shifting cultivation by tribal people, irregular and unsupervised cutting of trees by the timber contractors from 1890 to 1910 for construction of East Coast Railway caused extensive damage to the forest cover of the area. Till then no silvicultural operation was carried out and the staff existed only to collect revenue. During the year 1911, light improvement felling was introduced in the area. Also successful teak plantations were raised during the year from 1907 to 1924 scattered in patches and discontinued subsequently. Remarkable improvement was noticed after thinning operation was successfully carried out in the area.

During princely regime, the prerogative of shooting animals was exclusively available to the members of royal lineage only. After merger of states with Orissa Province (i) Elephant preservation Act, 1879 (ii) Wild birds and animals preservation Act, 1912 (iii) Orissa Reserve Forest shooting rules, 1938 and (iv) Indian arms act, 1959 were applied to the area. Gun license was liberally issued for crop protection which encourages the covetous poachers to indulge in wanton and indiscriminate holocaust of a number of innocuous animals to satisfy their avarice by selling venison, skin, trophy and other products which had ready markets for dainty food, drawing room decoration and souvenirs. The killing of animals outside RF did not constitute an offence in that time though the same was treated during durbar administration. As a result, large scale massacre of wild animals had happened and could not be detected whether inside or outside RF due to close secrecy of offence and inadequate personnel. The primitive custom of 'Akhanda Paridhi' practiced by the local tribes had also caused considerable reduction of wild animals' population in the area. The Wildlife Protection Act, 1972 enactment created an era in the field of wildlife conservation and management. The Orissa Forest Shooting Rule,1973 repealed by the Wildlife (Protection) Orissa, Rules ,

1974 and creation of a separate post of Chief Wildlife Warden for the state and designating DFOs as Wildlife Warden of their Divisions had facilitated the management of wildlife in a positive angle. Further, creation of separate wildlife division with separation of territory from the traditional Forest Division to solely concentrate on wildlife management is also a remarkable historic step taken by the Govt. to protect the wildlife from various internal and external threats

After enactment of wildlife protection Act on 9th September, 1972 to provide protection to wild animals, birds and plants for ecological and environmental security of the country, the status of the area has been considerably changing. Also the rules like Wildlife Protection Rules 1974, The Wildlife (Transactions and Taxidermy) Rules,1973, The Wildlife (Protection) Licensing (Additional matters for consideration) Rules,1983, The Wildlife (Specified plants- conditions for possession by license) Rules, The declaration of Wildlife stock Rules,2003 made there under, helps in the mission of protecting wild animals and the plant species in the area. Presently all the above rules under the Act has been rigidly enforced. Also legal settlement of enclosed villages is under process.

3.2 Protection of Tiger, its Prey and Habitat

As such there was no concrete data regarding poaching of animals in the past years before declaration of the area as sanctuary. But due to insufficient legal provision, poaching of animals occurred frequently in the past which has been stopped in the area now. Creation of anti-poaching gate and squad in the area has made poaching a halt at present. Even the persons if found moving with a gun in and around the PA are dealt severely in accordance with law. Now there are one check gate at Takara and three anti-poaching gate at Dhepasahi, Buguda and Buriapaju with frequent mobility of squad to check the wildlife office the wildlife offence in the P.A.

With an increase demand for timber and firewood the adjoining area having tree growth could not meet the requirement of the people especially for fuel-wood consumption. Naturally they used to enter RF for meeting their requirement earlier which has been reduced at present on declaration of sanctuary. Illicit felling of the timber has been appreciably reduced in the area. The villagers of enclosed villages and of few fringe villages depend on the PA for fuel-wood only.

3.3 Other Land use – Villages, Agriculture, Developmental Programmes, Tourism etc.

Other land use

The inhabitants are mostly tribes based on agriculture like cultivating Rice & Pulses and animal husbandry. Almost entire population are poor and below poverty line. In the off season they used to collect MFP from forests and in general they collect fire wood also. Earlier their entire man power was engaged in extraction of timber and mainly bamboo.

Developmental Programmes

To boost the economy of the people in the enclved villages as well as the people in fringed villages they are being financed under self employment programmes where they are supplied with milch animals, goats, pigs, poultry etc. by the Govt. PWD roads , panchayat roads, and village roads have been constructed by the respective departments. WHS and Minor Irrigation projects have been constructed a Jagannathpur, Chhotkei to improve irrigation potential.

Tourism

Tikarpada, labangi, Purunakote, Baliput, Sapapathar, Banigochha and Kuanria are the Places in buffer, which attracts tourists to the reserve. Although the reserve has the potential for tourism, no such development has been made so far. The present infrastructures available for tourism are (1) Deer park at Kuanria (2) 23 KM long trekking path from Buguda to Gergedi and 30 KM trekking path from Banibiri to Langalkhola for Jungle patrol, sighting of wild animal and wilderness experience (3) Watch tower at Sapapathar in Comptt.No.5,(4) Sighting of elephant in Game tank at Banigochha etc. Tikarpada has already established its name and fame as crocodile research centre.

3.4 Research, Monitoring and Wildlife Health

Tikarpara Crocodile Project :

Government of Orissa decided to protect Gharials and Muggars left in Satkosia during March 1974. Dr. H.R. Bustard, an F.A.O. Consultant on crocodiles visited the place during June 1974 and recommended for a Conservation Project. The Project started during March 1975. Dr. H. R. Bustard worked as Chief Technical Advisor in the project till 1980. The project had a three phase plan : Collection of wildly laid eggs for hatching, incubation and rearing of hatchlings up to 1m. long size and releasing the hatchlings in Satkosia Gorge for rehabilitation.

There is no other identified research in any range of activities carried out earlier. However the events inside PA is regularly monitored like annual record of cattle

population, encroachment, location and extent of fire, detection of offence and disposal of materials as per law, livestock and wild animal's disease out breaks and consequent morbidity and mortality wildlife census, control of weeds, water and food sources for wild animals, activities of anti-socials and smugglers etc. The census of tigers & elephants is also conducted and monitored time to time. Monitoring of research oriented results is not being carried out inside P.A. which is proposed in the plan period. Health of wild animals has been monitored through out the year near waterholes, when the animals use to come there to drink water. It has been observed that all the wild animals have sound and vigour health.

3.5 Nature Education and Interpretation

Present attraction of the reserve is Tikarpara for its natural beauty, Rescue Centre, Gharials and Muggers, Picnic spots and sighting Wildlife from the watch towers. Nature trailing inside deep forests of the reserve near Purunakote is really refreshing.

Apart from the local visitors, a lot of Bengali tourists usually visit Tikarpara, Labangi, Tulka and Baghmunda. They prefer to stay in 2 to 3 nights and visit inside the reserve for sighting of the wild animals. Now the F.R.H. at Tikarpara, Labangi, Chhamundia and Badamul are fitted with solar lights. Best time for visiting the reserve is winter.

Recently one society named Tikarpara Parivesh Paryatan Samiti (TIPPS) has been organised taking youths of Tikarpara village. They have committed for all types of services to the ecotourists. They also arrange cooked food for the tourists. They take them to various scenic places, along the nature trails, conduct adventurous trek, take them for animal sighting, and help boat riding. They also arrange displaying of traditional folk dances to the tourists.

One Interpretation centre is there at Tikarpada to provide interpretive services to the visitors, but it requires improvement. Signages are there on road side to educate the people.

3.6 Administration and Organization

River Mahanadi nearly divides the tiger reserve into two parts, north of river Mahanadi is managed by D.F.O. Satkosia WL Division and South by D.F.O. Mahanadi W.L. Division. D.F.O. is the head of the Division and one A.C.F. in each division assists the D.F.O. in overall supervision of the buffer of the reserve. The details of field set up in buffer are given below:

Satkosia Wildlife Division, Angul		
Range	Section	Beat

1. Purunakote	1. Tulka (S)	1. Tulka (F)-
	2. Purunakote	2. Chhotkei (B)- 3. Purunakote (A)-
2. Pampasar	3. Pampasar	4. Pampasar (B)- 5. Jagannathpur (A)-
	4. Kumuri	6. Kumuri (B)-
	5. Tarava	7. Tarava (A)- 8. Tarava (B)-
	6. Jodum	9. Kamaladihi- 10. Jillinda- 11. Sisoopathar-
3. Jillinda	7. Katrang	12. Katrang (B)-
	8. Tikarpada	13. Tikarpada (B)-
4. Tikarpada	9. Majhipada	14. Naleswar-
	10. Bhurkundi (W)	15. Bhurkundi (A)-
5. Raigoda		
Mahanadi Wildlife Division, Nayagarh		
Range	Section	Beat
1. Chhamundia	1. Badamul	1. Badamul- 2. Malisahi-
	2. Chhamundia	3. Chhamundia- 4. Rajingi-
2. Kusanga	3. Kusanga	5. Kusanga- 6. Nuapada- 7. Kumari-
	4. siripaju	8. Siripaju- 9. Nandagadu- 10. Hinjala-

Baisipalli buffer

Name of the Range	Name of the Section	Name of the Beat	Compartment
BANIGOCHHA EAST RANGE	1.Dhipisahi	1.Dhipisahi	Baisipalli R.F. Comp.No.20 & 16
		2.Duisingh	Baisipalli R.F. Comp.No.19 & 17

	2.Badasilinga	1.Badasilinga	Baisipalli R.F. Comp.No.15 & 14
		2.Sanpari	Baisipalli R.F. Comp.No.12 & 13
		3.Buriapaju	Baisipalli R.F. Comp.No.18 & 11
	3.Takara	1.Makarprasad	Baisipalli R.F. Comp.No.07 & 08
		2.Takara	Baisipalli R.F. Comp.No.06
	BANIGOCHHA WEST RANGE	1.Banigochha	1.Banigochha
2.Jamusahi			Baisipalli R.F. Comp.No.02
3.Durgaprasad			Baisipalli R.F. Comp.No.03
2.Buguda		1.Salabhanga	Baisipalli R.F. Comp.No.04
		2.Buguda	Baisipalli R.F. Comp.No.05
		3.Turungi	Baisipalli R.F. Comp.No.09
		4.Damaghati	Baisipalli R.F. Comp.No.10

The existing pattern of staff by hierarchical levels in both the Wildlife Divisions with sanctioned strength, vacancy position is as follows:.

Name of the Division	Name of the post	Sanctioned strength	Staff in position	Vacancy position
Satkosia Wildlife Division, Angul	DFO	1	1	-
	ACF	1	1	-
	R. O.	7	4	3
	DY.R.O.	1	1	-
	FORESTER	22	14	8
	F.G.	59	25	34
	G.G.	6	3	3
	Bungalow Choukidar	4	4	-

	Pool Attendant	1	1	-
	Pumpman	1	1	-
	Jr. Vet Officer	1	-	1
	V.A.S.	1	-	1
	Head Clerk	1	1	-
	Accountant	1	1	-
	Sr. clerk	4	4	-
	Jr. clerk	7	6	1
	Stenographer	1	1	-
	Amin	1	1	-
	Driver	2	2	-
	F.E.O.	1	1	-
	V.F.W.	5	5	-
	Office Choukidar	1	1	-
	Office peon	1	1	-
	Mali	1	1	-
	Sweeper	1	1	-

Name of Division	Name of the post	No. of post
Mahanadi Wildlife Division	DFO	01
	ACF	01
	Forest Rangers	02
	Foresters	08
	Forest Guards	18
	HeadClerk	01
	Jr.Accountnt	01
	Sr.Clerk	04
	Junior Clerk	07
	Jr.Stenographer	01
	Driver	02
	Mali	01
	Sweeper	01

Chapter 4 : Production Sectors in the Landscape

4.1 Forestry (affects directly) (D*)

Forestry operations like harvest of timber, bamboo and collection of NTFP is not taken up inside buffer. Seized timbers, though kept in custody, are not sold off due to ban imposed by the honourable Supreme Court of India. Hence, as such the forestry operations have no adverse effect.

4.2 Agriculture (D)

The people residing inside the buffer area are agrarian. They harvest two crops in a year. The main crop is paddy, ragi, maize, sugar cane etc. They also raise vegetables mostly brinjal, tomato, cabbages, banana and oilseeds like sesamum, mustard and sunflower for their consumptions.

4.3 Integrated Development (eco-development, development through Dist. Administration) (D)

Integrated approach through eco-development along with amelioration of the livelihood option of the people is resorted to through the forest deptt. Other developmental works like communication, health and live-stocks are being taken up through the District Administration. Different schemes like NREGS, SGSY of DRDA are being executed through forest department to provide employment to the local labourers. Plantation like Jagannath Van Prakalp has been taken up with DRDA funding. Cattle immunization and health camps are being organized by the forest department with active participation of respective departments.

4.4 Tourism (D)

Community based ecotourism has started in Tikarpada, wherein the local youth are engaged to provide services to the tourists staying in tentage accommodations at Ramgaon nalla sand. Earlier they were either sitting idle or engaged in traditional fishing in Satkosia gorge. Now they have learnt to use ecotourism as their means of livelihood. This has added to the strengthening of protection mechanism because of support of the local community.

4.5 Fisheries (D)

Fishing by traditional fishermen in the Mahanadi gorge is an integral part of their livelihood. Fishes caught from the river by hooks and baits are sent to the nearest town for sale. The catfishes from the catch are sent to Kolkata through middlemen. Ponds have been dug in EDCs Villages with NAEB funding as EPA activity. Fishery in those ponds have provide livelihood to the EDC members. Earlier Fishery department was leasing the Sisoopathar dam for fishing. But now that has been stopped as illegal hoarding and smuggling of timber took place there in the name of fishing. However, regulated fishing by the traditional fishermen will earn the support of local people for protection of the reserve.

4.6 Tea/Coffee Estates (affects incidentally) (I)**

There is no Tea or Coffee plantation in the reserve.

4.7 Road / Rail transport (D)

There is no Railway line within the reserve. But state highways are passing through the reserve and National highway No. 42 is passing near the reserve. These roads are lifeline of the people residing inside the reserve. Peoples economy, market linkage, business, health and education fully depends on these road network. However, the roads inside the reserve are mainly for protection purpose only. Hence as such there is no adverse effect.

4.8 Industry (D)

There is no industry established within the reserve.

4.9 Mining (D)

No mining operation is going on inside the park.

4.10 Thermal power plants (I)

There is no thermal power plant inside the tiger reserve.

4.11 Irrigation projects (D)

Suhagi Medium irrigation project is constructed year back near Sisupathar village, which irrigates a large chunk of Agriculture land in Jillinda area of the reserve. Minor irrigation projects at Jagannathpur, Chhotkei and Tulka irrigate to a small ayacut area. WWS constructed at Asanbahal, Bhurkundi and Tarava forest villages irrigate 40-60 ha. of crop field during Khariff and 10-20 ha. in Rabi season. This has even added to the water availability for the wild animals particularly during summer/ pinch period.

4.12 Temple tourism (D)

There is no such temple inside the reserve to attract tourism. But Binikei and Kankei deities on Mahanadi river bank attract local pilgrims during particular season of a year.

4.13 Communication projects (D)

The telephone network is not sizeable in the reserve and hence, as such there is no adverse impact.

*** D = Affects wildlife directly**

**** I = Affects wildlife incidentally**

Chapter 5: Land use Patterns and Conservation-Management Issues

5.1 Land use Classification

Major portion of the buffer is under forest cover. Out of total 440.26 sq. km of buffer, reserved forest occupies 235.82 sq.km area, which are full of vegetation and forms suitable habitat for Tiger and its prey base. 204.44 sq. km. of revenue area consists of mostly habitation, cultivation land, culturable fallow land and forest land. People grow mostly paddy, maize and ragi during khariff season and pulses and oilseeds in rabi season. Sugarcane and vegetables are grown wherever irrigation potential or natural water sources are there. As such the present landuse pattern is not of much concern for conservation and management issues.

5.2 Socio-economic Profile of Villages

Almost all the people are poor and are below poverty line. They are not getting much from agriculture production to sustain their livelihood though they have some cultivable land. Some of the households do not have the land also. They depend only on daily wages works whose conditions are very precarious during lean period. Particularly after crop season when there is no work for them, to meet the economic stability they move to the urban and semi-urban areas in search of work leaving their family in the village.

Though some of them are financed under anti-poverty programme of Govt., their economic conditions have not substantially improved. The communities are also not aware and mobilized to access Govt. services or services in private sectors. But villagers keep unproductive cattle, which graze in the forests and give only cow dung which is used as manure and fuel. Very little milk is produced. Goat population is high in buffer area. For the villagers goat rearing is highly profitable as they get around Rs. 1000 to 1500 per animal. People get income without investment and labor. But goats compete with browsers like sambar and barking deer.

5.3 Resource Dependence of Villages

They mostly depend on forest for collection of firewood, MFP and grazing of their cattle. They collect mahua flowers, mushrooms, bamboo shoots, tubers and rhizomes, fruits and nuts for their consumptions. Earlier they were engaged in departmental extraction/dragging of fallen timbers and in extraction of bamboo (when bamboo working was prevailing) and getting their wages. They also earned by collecting kendu leaf, sal seed and selling them to authorized dealers. But after the area was notified as a sanctuary the communities could not derive their livelihood and ultimately switched over to the adjoining forest areas all along the periphery. In fact the very existence of above 115 number of villages in the buffer area speaks volumes about peoples dependence on natural resources.

5.4 Human-Wildlife Conflicts

Human- wild animal conflict is a serious problem in the buffer zone, for which the relationship between people and park manager is becoming worse. Crop production decreases due to depredation of crops by elephants and wild pigs. Though reports on human death and injury caused by wild animals are at less, instances of cattle killed by wild animals are reported.

5.5 Assessments of Inputs of Line Agencies/ Other Departments

A number of development programmes for improving the socio-economic conditions of the people are being taken by Govt. through district administration and D.R.D.A. In these programmes, emphasis is given for ensuring assured income for the people so that they do not depend on forest. Funds provided are quite meager and uncertain. Although the govt. has introduced various schemes for all round development of people under SGRY / MP LAD / GGY / IAY /SGSY the said schemes have constraints in full implementation in the villages inside the PA due to inadequate communication facilities and non-availability of labour. Hence, the works executed so far by other line departments has little influence on the PA.

Part B: The Proposed Management

Chapter 6: Visions, Goals, Objectives and Problems

6.1 Vision

The importance of Satkosia has been spelt out in the previous chapter on statement of significance. The people living inside and on the fringes are mostly tribes and inextricably associated with the forest. The present enactment of Govt. of India to confer on the tribals the rights of forests plays a vital role in visualizing the future shape of the PA. The management aims at preservation of the natural heritage through a process of ameliorating the socio-economic condition of the people gradually, simultaneously interpolating the management principles congenial to the forests and its denizens as well as acceptable to the people. In short, the vision is to have an ecologically viable buffer area which will suitably safeguard and supplement the core area, the critical core natal habitat for the Tiger, its co-predators and prey base and which shall be managed intensively both for the betterment of wildlife and local communities based on sound principles of sustainability.

6.2 Management Goals

1. Ecological security for the forests with sustainable livelihoods for local people.
2. To complement the core area by maintaining the buffer area as a viable wildlife habitat.
3. Prevention of any encroachments and restoration of degraded forest.
4. Complete protection to floral and faunal biodiversity through strict protection measures in association with the JFM institutions.
5. Reduction of dependency on forest by the local people.

6.3 Management Objectives

With the vision and goals as stated above, long term objectives are set forth as under:-

- To protect and conserve the flora and fauna by maintaining and protecting biodiversity-rich patches.
- To enhance the capacity of the management for effective management by infrastructural development and capacity building.
- To enhance the efficiency to work of the local people by educating them and providing health care benefits to the human being as well as cattle.

- To augment the propensity of the people to accept various poverty alleviation programmes taken up by other Agencies by associating the NGOs and engagement of local youth on forest protection measures.
- To manipulate the habitat with the aim of fully restocking it without ignoring the interest of the local people.
- To mainstreaming of conservation through Ecodevelopment, staff welfare, visitor regulation, field research, facilitating EDCs for market access, conducting capacity building programme, ecotourism and Joint Forest Management.

6.4 Problems in Achieving Objectives

- Extreme socio-economic backwardness of the people.
- Lack of confidence of the people on the management.
- Inhospitable climate, terrain and proneness to malaria.
- Lack of Trained staff in the line of ecotourism and Ecodevelopment.

6.5 Strengths-Weaknesses-Opportunities-Limitations (SWOT) Analyses

Strengths

- Extensive largely intact forests rich in biodiversity and forestry resources
- Ecosystem services if quantified will be substantial in terms of money
- No mining or large industry detrimental to ecological security

Weakness

- Extremely backward socio-economic conditions
- Increasing population inside the enclaved villages with strident demand for more facilities
- High population of unproductive cattle and livestock

Opportunities

- Untapped potential for sustainable eco-tourism
- Potential for developing a model multi-pronged strategy for rural development .
- Scope for development of a sustainable model of NTFP harvesting & marketing

Limitations/ threat

- Very low levels of literacy and complacent tribal population with limited aspirations
- Inhospitable terrain, climate and endemic malaria-prone area.
- Heavy biotic pressure.

Chapter-7: Management Strategies

7.3 Delineation of Buffer Areas and Other Zones within the Buffer Area (e.g. Eco-development Zone, Forestry Zone, Production Sector zone, etc.)

The Constitution and extent of the Buffer Area has already been described in para 1.1.3 and 1.1.4 of Chapter 1.

- Forest area = 235.82 sq. km
- Village area = 204.44 sq. km.
- Total Buffer area = 440.26 sq. km.

Forest area consists of RFs and places of tourism importance. Similarly village area includes habitations, tourism places and a part of Mahanadi gorge. These are the places from where people derive their bread and butter. Hence it is proposed to divide 440.26 sq.km area into 4 distinct zones to provide exclusive treatments. They are as follows:

5. **Eco-development Zone:** It includes village areas excluding the portion covered in eco tourism zone and production sector zone
6. **Forestry Zone:** It includes reserved forest areas of Satkosia and Baisipalli WL sanctuary excluding that included in eco tourism zone
7. **Eco-tourism Zone:** It includes Tikarpada RF Comp. No. 5A of 20.00 ha., Tikarpada village, Purunakote village and adjoining forest, Labangi village, Baliput, Badamul village, river Mahanadi in between both the villages, Banigochha and Buguda
8. **Production Sector Zone:** It includes Mahanadi gorge portion of 19.73 sq.km in buffer where traditional fishermen community use to catch fish for sale. It includes Sisupathar Medium irrigation dam and village tanks where fishery is one of the livelihood of local community. Agriculture lands in each village constitute the zone as they are the primary source of income for the inhabitants of the reserve.

7.4 Zone and Theme Approaches to Management Strategies.

7.4.1 Zone Plans

7.2.1.A. Eco-development Zone (EDZ) :-

Broad Strategies.

- Need of the villagers will be permitted, where regulated livestock grazing is allowed, and collection of NTFPs and firewood is permitted for the bonafide use of the villagers.
- Eco-developmental activities like construction of water body for the benefit of both animal and people need to be permitted.
- Resource use regulations *prima facie* need to be tied to wildlife habitat needs.
- As in core zone steps to be taken to develop refuges and shelters for wild animals and all the available nesting dens of different animals may be surveyed, identified and protected.
- Fire needs to be prevented by involving the people of the villages.
- Compartment or part of the compartment needs to be earmarked for villagers for the grazing of their cattle.
- Steps will be taken to improve the economic condition of the people.
- They will be provided with alternate livelihood in order to reduce the dependency on reserve.
- Infrastructural development will be made in the villages to improve their social status.
- Steps will be taken to reduce Man-Animal conflict.
- Activities to be undertaken to gain the confidence of the people living in the reserve.

Detail is being discussed in Chapter 8

7.2.1.B. Forestry zone:- Forests in buffer are vulnerable to all sorts of pressures and interference. Development in this zone is essential to counter the adverse impact of grazing, lopping, illicit felling, fire, unsustainable removal of NTFP and poaching so that wild animals from core may use this zone frequently to meet their habitat requirements.

7.2.1.B.1. Activities proposed

7.2.1.B.1.1. Silvicultural Operation of Bamboo in Elephant passages

Elephants move in two migratory paths passing through Baisipalli sanctuary. One path starts from Buguda and passes all along Langalkhol Nala in comptt. No.5, 6, 8, 9, 10, 11 till it reaches the boundary of central RF of Nayagarh Division and another starts from Hatidhara R.F. of Boudh Division and passes through comptt. no.1 of Baisipalli RF to towards Chakapad area of Phulbani Division. For development and maintain of this corridors following prescriptions are suggested. The quality of habitat will be maintained all along the paths with special attention to riparian zone, mixed deciduous forest and bamboo forests. Because of suspension of bamboo working consequent upon declaration of sanctuary, the area has led to congestion of bamboo crop which reduces the forage availability for elephants. The dead culms in bamboo clump are also prone to fire hazards. Hence selective bamboo working by removing dead culms from the congested clumps is needed to reduce fire hazards as well as to improve the forage availability.

7.2.1.B.1.2 Weed eradication:

Eradication of Weeds is also highly essential for proper management of habitat.

7.2.1.B.1.3 Creation Water bodies and maintenance:

There are ample scope and justification to restore, create and maintain water bodies in the compt. No.1, 7, 12, 15, & 16, Comp. no 1 of Takarsingha RF, Tainsi RF and Chhotamunda RF. In summer days there happens to be scarcity of water in those Comptts. in particular places. The limited availability of nalas in rainy season can be exploited to create permanent water sources for wild animals. Except seasonal streams, at present there exist three nos. of WHS at Nekarganda, Banigochha and Takuda and two check dams at Buguda & Sapapathar and one water hole at Atharmile. These are not sufficient to meet the need of the PA. So few more WHS, Check dams, Game Tanks and small Water holes are proposed to be created in the area. The sites proposed for creation of water bodies during the plan period are given below.

Type of Water Body	No.	Location	Compt. No.
WHS	02	Near Garsa & Raguda	Compt. No.01
	01	Near Chillipathar	Compt. No.07
	01	Near Senapari	Compt. No.12

	02	Near Kuchumara & Dimiripati	Compt. No.15
	02	Near Osamaska & Sektapalli	Compt. No.16
Checkdam	01	Near Garsa	Compt. No.01
	01	Near Jamusahi	Compt. No.02
	02		Compt. No.7
	01		Compt. No.12
	02		Compt. No.15
Waterhole-Big	01		Compt. No.16
	02		Tainsi RF
	03		Chhotamunda RF
	01		Compt. No.15
	01	Near Chillipathar	Compt. No.07
Waterholes (small)	10		@ 2 each in Compt. No.1.7.12.15,& 16

Apart from the above existing water bodies created in compt. No.2,5,1,6,of Baisipalli RF and Comp. No. 1 of Takarasingha RF are to be renovated for perennial water sources for wild animals during scarcity season for their sustenance.

7.2.1.B.1.4 Improvement of catchment through Soil & Moisture Conservation measures:

Effective and appropriate soil conservation measures need to be taken in sloppy areas of Compt. No.1, 14, 15, 16 & 20.of Baisipalli RF, all comp. of Tainsi RF and Chhotamunda RF All the gullies & ravines in these areas will be treated with effective plugging of the same.

Unless the run off is checked, it will lead to heavy soil erosion which may affect the tree growth in the sleep areas which will ultimately affect the wild animal habitats. The above compartments are well known for the existence of herbivores like Sambar, Barking deer, Elephant, and major carnivores like Leopard & Tiger. Within the above compartment six enclosed villages are there having crop field which are expected to be affected by the gullies. Hence Soil moisture conservation measures will be undertaken.

7.2.1.B.1.4.1. Steps to be taken for control and reclamation of gullies and ravines in the Compartments under prescription:

Step.1.: The area must be closed to grazing and other biotic interference.

Step.2.: **Contour Bunding:** Elongated bunds created along the contour line on the slopes at an interval of 100 mt.in order to

- (d) Increasing the time of accumulation and thereby allowing more run off water to be absorbed and held in soil profile.
- (e) Intercepting a large slope into several short ones so as to maintain less than a critical velocity for the run off.
- (f) Protections against damage owing to excessive run off.

As applicable to the area of treatment there may be additional bunding if required i.e Side bunds, Lateral bunds, Supplemental bund and marginal bunds.

Step.3: Gully plugging:-

This is achieved by constructing temporary and semi-permanent structures and nala bunding. One such structure is check dam to check the velocity of run off through a barrier constructed to hold back water and raise its level. These are the important structures invariably accepted for control of gullies to facilitate vegetative growth. The Check dams break the erosive velocities of the run off by flattening out the steep uniform gradient. A series of check dams constructed across the gullies transform the longitudinal gradient into a series of steps with low risers and long flat treads. In the compartment prescribed for the treatment, only loose Boulder check dams may be constructed. The check dam should be vertically spaced in such a way that the crest elevation of one should be the same as the bottom elevations of the adjacent dams on the upstream side. Check dams should be extended far enough into the bottom and sides of the gully to prevent under mining by water forcing through the bottom and ends. To prevent the scour, if noticed, an apron of sufficient width and length should be provided. Usually the dam is taken 30 cm into the bed of the gully and the ends are taken about 60 cm. into the stabilized sides of the gully.

Hence, all the gullies formed in afore mentioned Compartments will be plugged in phased manner during the entire plan period to check soil erosion and loss of habitat and also for moisture conservation.

7.2.1.B.1.5. Rehabilitation of Degraded Forest Plantation

Though Baisipalli sanctuary as a whole is covered with dense flora and fauna, there are some degraded patches in Compt. No.1, 7 & 19. Natural regeneration in these compartments is very poor due to biotic and other factors. Similarly there are patches in the fringe of enclosed villages' boundaries in compt. No.11, 12, 14, 15 & 17 of Baisipalli RF, which have been degraded due to constant biotic influence. These areas are required to be rehabilitated. Only protection and some plantations in gaps in the compt. No.11, 12, 14, 15 and 17 of Baisipalli and forest patches near villages like Tarava, Badakheta, Purunakote, Gopalpur and comp. no. 11,12 of Tulka RF are enough to meet the objective

at this present juncture. Tree fodder and Fruit bearing trees should get priority for plantation in these areas. While rehabilitating the areas weeding operation shall be made in identified patches which should not be below 2 Ha. Post planting care is very vital in these areas which can be managed by separately engaged labourers for the purpose.

During the plan period it is proposed to take up 100 ha. of RDF plantation of fruit bearing species as well as species of Leguminosae and Malvaceae in those compartments @ 20 ha. per year. The area proposed to be planted in each compartment is reflected in Annual plan of operation for each year.

7.2.1.B.1.6. Meadow development:

Compt. No.8,9 & part of vacant portion of Compt. No.19 of Baisipalli RF are proposed to be covered under Meadow development in this plan to improve the habitat quality and to conserve the soil & moisture. In the present context a 'grass land' means the area raised normally with perennial grasses primarily and specifically to save the soil from erosion and permit only safe and conservative use of the forage crop to ensure improvement and build up soil component of the habitat.

This part of the reserve is covered with 'Sehima-Dichanthium type' of grass land having 24 predominant grass communities of which *Themeda* and *Ischaemum* are most under spread. These grasslands hold high potentiality to produce up to 6300 KG per ha. of hay. When subjected to grazing the dominant perennial communities are degenerated to annual ones in the order of Dicanthium – Bothriochloa – Heteropogon – Eremopogon – Aristida – Eragrostis - Melanocenchris. Lopping the forest tree species, Fire and unregulated grazing are the main factors of degradation of grassland in the area.

During the plan period it is proposed to create 5 ha. of grass lands in the Compt.No.8,9 & 19 of baisipalli RF in identified open patches which are generally surrounded by tree growth. In addition to this it is also proposed to create grasslands in the open areas near by enclosed villages i.e 2ha. in each village periphery.

7.2.1.B.1.7. Regulation of grazing:

Apart from reducing cattle population the available resource of grazing should be properly managed to ensure high sustained yield and animal growth. This includes:-

j. Closure	o. Periodic grazing
k. Ceiling on grazing incidence	p. Penning the cattle
l. Rotational grazing	q. Allowing free cutting of grass
m. Deferred grazing	r. Conservation of forage for the lean period.
n. Deferred rotational grazing	

7.2.1.B.1.7. Fire Control measures.

The buffer zone is highly fire prone. Villagers deliberately lit fire in the reserve in the process of collection of Mahua flower, sal seed, kenduleaf, honey, and karanj seed. Villagers of Purunakote set fire to kill tick, an ecto-parasite of livestock. Fire in the reserve pose a serious threat to it as it damages nearly 60 % of ground cover during fire season from Feb. to May every year.

It is proposed to take up following preventive and curative measures to avoid damages caused due to fire.

- .1. Fire map: A fire map of the buffer will be prepared basing on the previous 3 years' data indicating low intensity and high intensity areas.
2. Fire line tracing: Fire lines will be traced as a preventive measure. No burning is required. The dried leaf litters will be swiped to one side leaving gap of 15' exposed earth. This will prevent fire to spread to other side of the forest. Fire lines will be drawn parallel to roads, foot paths being used frequently by the villagers on both sides after a gap of 3 chains from them to avoid deliberate firing by the passers. Fire lines may also be drawn around the habitations, around the prime NTFP collection areas inside the reserve and on Tiger reserve boundary to avoid fire spreading from outside.
3. Firefighting squad: A squad consisting of 5 local persons under the leadership of Forest guard will be stationed at each vulnerable beat in buffer zone. It will be better if separate squads are deployed for day and night duty. There are 40 such vulnerable beats in the reserve.

4. Fire fighting equipments Helmets and gloves are more useful to the squad at the time of extinguishing fire. They may also be supplied with First aid medicines to cure their burn and injuries.

5. Fire watching manchans: At 25 vantage points straw thatched manchans will be constructed where 2 villagers will stay from dawn to dusk to watch the fire over a large landscape. They will inform the squad stationed at beat Hq about first appearance of fire over VHF hand sets. This will facilitate curbing fire at preliminary stage.

6. VHF hand sets: Nearly 60 VHF walkie talkies with solar charging apparatus are required for the squad and observers to have better communication among themselves.

7.2.1.C. Ecotourism zone:-

Ecotourism activities will be restricted within the buffer zone only. The places like Tikarpada, Purunakote, Labangi, Baliput, Badamul, Buguda and Banigochha and their adjoining forests are the most attractive places in the reserve who attract large number of tourist flow into the reserve. Being one of the finest and the second largest Protected Area of the State, it not only attracts the visitors from places like Cuttack, Bhubaneswar, Sambalpur and Rourkela inside Orissa but also tourists from other states of India. A significant number of foreign tourists also visit the Reserve. Both the Sanctuaries remain open to visitors round the year. But Ideal season of visit is from November to February. Arrival of tourists reaches peak during December and January. Picnicking within this buffer has been allowed and camping facilities have been developed in Ramgaon sand of river Mahanadi at Tikarpada.

Places of Tourist Interest

The places of tourist interest inside the PA is given below:

Places	Attraction
Tikarpada	For river Mahanadi, Boating, Angling, Elephant ride, Children's park, Crocodile rescue centre, Gharial, Tentage accommodation on Ramgaon sand.
Purunakote	For Nature trail, watch tower, Nandini nalla, water hole at Hatigirija, Elephant sighting
Labangi	Picnic spot, landscape viewing, Animal sighting near water holes and watch tower at Kantarsingha
Baliput	River Mahanadi, Boating, Crocodile sighting, Adventure trekking to

	Baigani hill top. Picnic.
Badamul	River Mahanadi, Boating, Crocodile sighting, Picnic
Buguda	Sighting elephant, picnic
Banigochha	Sighting elephant, picnic

Community based ecotourism is seen at Tikarpada, where local youth of Tikarpada village have been engaged to manage tourists by providing services to them.

The detail activities to be undertaken in this zone for promotion of Ecotourism, interpretation and nature education are being discussed in chapter 14.

7.2.1.D. Production sector zone:

Agriculture and fishery are the 2 primary sectors of production in the buffer zone. Interventions required to promote production in these sectors may be as follows.

1. Enhancing irrigation potential by construction of WHS, MI projects, and diversion weirs alongwith irrigation channels.
2. Supply of modern agricultural/ horticultural inputs and subsidy on them..
3. Providing technical knowhow on agricultural / horticultural practices.
4. Creation and renovation of fishery ponds in villages.
5. Supplying fish fry/ fingerlings and other inputs on subsidized rate.
6. Maintenance of cold chain and market linkages for quick and profitable disposal of production.

7.2.2. Theme plans

7.2.2.1. Anti poaching and Anti smuggling activity

Protection from professional timber smugglers, poachers is badly needed for the area. Well organized squad at different identified sensitive pockets within the buffer and its periphery and their intelligent movement in the peak hours is necessary to cope with the situation and to combat smuggling and poaching. Due to development of fast moving vehicles and developed communication system like Cell Phone, VHF etc. the smugglers are well equipped and tries to do the smuggling in a planned manner. The Forest staff and other anti-poaching squad engaged for the purpose need to be one step ahead of the smugglers to combat the situation.

It has been experienced in the past that the engagement of anti poaching squad at different strategic locations involving local youth yielded good result. To continue the process it is essential that the engagement of such squad be continued. It is proposed to

engage daily wage persons in squads to be stationed at Tarava, Buguda, Banigochha, Makarprasad, Dhipisahi etc initially with subsequent change of locations as per need for the whole year through out the entire plan period. These squads will act as striking force for every unwarranted situation that may arise in the area. Though their main station will be fixed for a particular year, but they will move in the buffer area as per requirement and as per direction of the Range Officer.

Proper co-ordination is also required in the VHF networking and communication system. The VHF stations are required to be kept open round the clock and in each VHF station 3 daily wage workers will be engaged on 8 hourly basis to be in constant touch with neighboring stations to tackle all sorts of illegal activities. The entire planning and implementation of anti-smuggling/ anti-poaching activity will be planned and organized by the concerned Range Officers with proper mobility in the area.

7.2.2.2. Animal Rescue Centre:

Animal rescue center is an important aspect of wildlife management. Very often it is seen that, some people keep animals like spotted deer, barking deer, wild boar, peacock, etc. at their home. In the forest also the animals get injured at times due to in fighting or accident or any other reason. These animals need rescue and extra care. So it is proposed to construct 4 such Animal Rescue Centers at different locations to take special care of such rescued animals.

7.2.2.3. Barriers and Check gates:

The barriers and check gates have been installed as a measure to control Smuggling & poaching activity. Inadequate staff position makes it difficult to maintain them. So it has been prescribed that at least 3 daily wage persons be engaged in each check gate and VHF stations so that those can function properly.

7.2.2.4. Salt Lick

In addition to the general feeding habits of the animals, the minerals and salts are highly essential for their wholesome development. They get the salts in nature at few places. But that is not sufficient for a protected area where animal population is more. It is necessary that some salt lick points are made near the water sources, so that animals get those in relatively adequate quantity. It is proposed to make 100 such Salt Licks in the entire plan period. Natural and artificial salt licks have to be maintained.

7.2.2.5. Wildlife Health Surveillance and Vaccination.

Wildlife health is to be kept under closed watch and the surveillance should be in regular manner. Mainly the herbivores are susceptible to epidemics such as FMD, RD, Anthrax from the domestic Cattle of the near by villages. So to have a check over the matter immunisation / vaccination of Cattle, Goats, Sheep etc. in regular interval is necessary so that there is no out break of epidemic and consequential attack on wild animals.

7.2.2.6. Maintenance & Construction of Forest Roads:

There are different Forest Roads inside buffer zone, which need to be repaired annually for movement of anti-poaching staff as well as villagers The roads are as follows: -

1. Gergedi to Duising -- 13.0 KMs,
2. Gochhabari to Buriapaju -- 9.8 KMs,
3. Duisingh to Janakajhola -- 7.0 KMs
4. Gergedi to Suliaparvat -- 18.0 KMs
5. Sanasilinga to Badmul – 12 KMs
6. Bhurkundi to Tulka -- 6.4 km
7. Purunakote to Chhotkei -- 5.0 km
8. Baghamunda to Tarava via Kumuri-- 10.0 km
9. Tikarpada to Tikarpada FRH -- 1.0 km
10. Baliput to Angul borderon river bank-5.0 km

During the plan period it is proposed to convert the trekking path from Buguda to Gergedi for 23 Km. to a jeepable road for better monitoring and supervision of the reserve.

7.2.2.7. Relocation Plan:

Baisipalli buffer has got 18 enclosed villages having a total area of 11.05 Sq. Km. The villages are having a population of 991 as per 2001 Census. As per the provisions of section 19 to 25 of Wildlife Protection Act 1972, the Collector, Nayagarh vide his Letter No. 803 dt. 24.08.1998, addressed to the Principal Secretary, F & E Department Govt. of Orissa, has recommended for final notification of the sanctuary stating that the enquiry report has already been submitted to the Government by Old District Office, Puri vide Letter No. 338 dt. 28.07.1989 addressed to Joint Secretary to Govt., F & E Department

Govt. of Orissa. And as the entire sanctuary is a legally constituted reserves forest, there is no need to again go for enquiry. He has mentioned that there are 18

villages inside the sanctuary area. Due to absence of specific recommendation, a high level decision is required to be taken for relocation of villages. The villages situated inside the buffer are debarred from general benefits and side by side there is possibility of their involvement in illegal activity. Hence it is required that the villages need to be relocated out side the reserve as per the provisions of "National Rehabilitation and Resettlement Policy 2007". During discussion with many a villagers also they have volunteered for relocation.

7.2.2.7.1. Specific Objective:

1. To identify suitable land for relocation of villages in consultation with District Administration.
2. To organize Motivation camps for the villagers.
3. To make a relocation package in consultation with villagers and as per the advice of District Compensation Advisory Committee.
4. To make necessary follow up action of rehabilitation.
5. To develop grassland for wild animals in the evacuated area and rehabilitate the forest areas.
6. To create some water holes, water bodies on the area to recharge ground water as well as for the purpose of drinking water to animals.

7.2.2.7.2. Land Acquisition and Payment of Compensation:

The procedure prescribed by the Govt. shall be followed in acquiring land and other property and for payment of compensation. All compensation money due to the displaced families shall be paid through A/c payee Cheque.

As regards public property like School Building, Club Houses, Hospitals, Panchayat Ghar etc., value of such property affected shall be deposited with the concerned District Collector. Either Project Authority or functionaries of District Administration shall take up construction of the place as would be determined in consultation with representatives of displaced persons.

Site for the resettlement habitat shall be selected by the "Rehabilitation & Periphery Development Advising Committee" (RPDAC) in consultation with the displaced families. No physical displacement shall be made before the completion of resettlement work as approved by RPDAC. The certificate of completion of resettlement work will be issued by the collector.

Motivation camps are to be organized in every village in regular intervals to make the people aware regarding the benefits they are likely to get in the process and how they will be economically uplifted in the programme. As far as possible the field functionaries shall be directed that at no point of time their sentiments be affected while conducting such motivation camps and to give examples of other villages situated outside P.A. boundary during such camps. A special training programme for this purpose shall be organized at Division Headquarters to train the staff with involvement of revenue authorities of the District.

7.2.2.7.3. Rehabilitation Assistance or Package:

The NTCA has proposed package of 2 options

Option I: Payment of entire package amount (Rs. 10.0 lakh per family) to the family in case the family opts so, without involving any rehabilitation / relocation process by the forest department.

Option II: Carrying out relocation/ rehabilitation of village from protected area/ Tiger reserve by the forest department.

APPENDIX-10
LIST OF BUILDINGS WITH LOCATIONS

Sl. No .	Name of the building	Location	Plinth area in Sqm.	Year of Constr uction	Amount spent on construc tion	Type of building	Cond ition
1	FRH	Kuanaria	151.3	-	-	A.C. sheets	M
2	Nursery Shed	Kuanaria	21.20	--	--	-do-	D
3	Range Office - Cum-Residence	Kuanaria	143.80	2003-04	3,50,000	R.C.C.	G
4	C.I., Office	Kuanaria	68.7	--	--	A.C. sheets	M
5	C.I.'s Qrs.	Kuanaria	112.9	--	--	A.C. sheets	M
6	Instructor's Qrs.	Kuanaria	76.7	--	--	A.C. sheets	M
7	Hazzat	Kuanaria	28.8	2005-06	1,00,000	R.R.C.	G
8	Forester Qrs.	Badasilinga	49.16	--	--	-do-	M
9	Beat House	Badasilinga	34.20	1965-66	5,900	R.C.C.	M
10	Beat house	Dhipisahi	37.56	--	--	R.C.C.	M
11	Anti poaching Shed	Dhipisahi	48.02	2003-04	1,00,000	G.C.I. Sheet	G
12	Forester's Qrs.	Takara	43.57	2003-04	1,80,000	R.C.C.	G
13	Protection Camp	Takara	19.79	2002-03	25,000	G.C.I. sheets	G
14	F.G. Qrs.	Takara	59.04	2005-06	1,00,000	R.C.C.	G
15	Marking Shed	Takara	46.8	1979-80	10,000	A.C. Sheet	D
16	Anti poaching Shed	Banigochha	42.64	2003-04	1,02,000	R.C.C.	G
17	Anti	Banigochha	44.40	2003-	1,10,000	R.C.C.	G

	poaching Shed	a (Exten.)		04			
18	F.G. Qrs.	Banigochha	61.90	2003-04	1,20,000	GCI sheets	G
19	Protection Shed at	Banigochha	23.80	2002-03	18,000	G.C.I. Sheets	M
20	Anti poaching	Buriapaju	44.68	2005-06	1,00,000	GCI sheets	G
21	Watch Tower	Sapapatheer	18.13 (3Tier)	2005-06	2,50,000	R.C.C.	G
22	Protection shed	Nayagarh	48.959	2003-04	1,60,000	R.C.C.	G

G :- GOOD

M :- MANAGEABLE

D :-DAMAGE

APPENDIX-11

LIST OF WIRELESS STATIONS

Sl.No.	Location	Division
1	Kuanria	Mahanadi WL
2.	Takara	-do-
3.	Banigochha	-do-
4.	Dhipisahi	-do-
5.	Badasilinga	-do-
6.	Tikarpada	Satkosia WL
7.	Purunakote	-do-
8.	Pampasar	-do-
9.	Tulka	-do-
10	Baghamunda	-do-
11	Kumuri	-do-
12	Jagannathpur	-do-
13	Katrang	-do-
14	Jilinda	-do-
15	Labangi	-do-

APPENDIX-12
LIST OF ROADS WITHIN BUFFER

Sl.No	Name of the Road	Length (KM)	Status	Type of Road
01	Geregedi-Duisingh	13.0	Forest Road	Earthen
02	Gochhabari-Buriapaju	9.8	-do-	WBM
03	Duisingh-Jankajhola	7.0	-do-	Earthen
04	Geregedi-Suliaparat	18.0	-do-	-do-
05	Sansilinga-Badmul	12.0	-do-	WBM
06	Takara-Sansilinga	11.0	-do-	WBM
07	Gania-Kusanga (Old Jagannath Road)	-	Old PWD Road	B.T (Part) WBM(Part)
08	N.H.-224	-	N.H.	B.T.
09	Pampasar to Tikarpada	30.0	Old PWD Road	B.T
10	Tarabha to Kumuri-Baghamunda	12.0	Forest Road	Earthen

B.T.- Black Turffed

WBM- Water Bound Macadam

APPENDIX-13

LIST OF NATURAL AND ARTIFICIAL PERENNIAL WATER SOURCES BY CATEGORY AND BY COMPARTMENT NO.

Category	Natural		Artificial	
	Name	Compartment No.	Name	Compartment No.
Stream	Langalkhola Nala	5,6	-	-
	Khalakhala Nala	20	-	-
Game Tank	-	-	Takara	6
	-	-	Osamaska	15
	-	-	Jamusahi	2
WHS	-	-	Nekarganda	6
	-	-	Banigochha	1
	-	-	Takuda	1

INDICATIVE PLAN FOR ADJOINING AREAS PROVIDING CONNECTIVITY/ CORRIDORS

PART- A : The existing situation

Chapter 1: Introduction of the Area

1.1.1 Natural Habitat Corridors:

Forest areas surrounding the Tiger Reserve also have evidences to support presence of Tiger, Leopard, other co-predators and their prey. Presence of Tiger has been evidenced from direct sighting by local communities through pugmarks and call. This was also recorded at the time of animal monitoring during January, 2006. The R.Fs contiguous to Tiger Reserve in adjoining divisions are given below:

Name of Adjoining Division	Name of the R.F.
Athagarh	- Balikiari RF - Nuagarh
Dhenkanal	- Nandinia R.F.
Angul	- Nuakheta R.F. - Kurudu R.F. - Pokunda R.F. - Bolanga R.F. - Krushnachakra R.F. - Burti R.F. - Chandanpur R.F. - Kulasingha R.F. - Kalapat R.F.
Athamallik	- Hatidhara R.F. - Taeipathar R.F.
Boudh	- Hatidhara R.F.
Nayagarh	- Central R.F. - Chhadesh R.F. - Matia R.F. - Makarprasad R.F. - Bankamaunda R.F.

1.1.5 Disturbances in Habitat Corridors (railway lines, cleared transmission line, etc.)

Movement of Tiger in the landscape is disrupted due to vehicular traffic on Highways like. Boinda-Athamallik, Narsinghpur-Hindol, Daspalla-Madhpur, Angul to Boinda. There is no railway line passing through the adjoining area. But High Tension electric transmission lines are passing through Maidharpur-Narsinghpur,

Athamallik-Boinda, Gania to Dasapalla. The vegetation under the transmission lines are cleared regularly by electricity Department, thereby resulting permanent fragmentation of the habitat.

1.3.2.- Villages/Towns etc.

Revenue villages coming within Adjoining area of the Reserve:

Satkosia Wildlife Division:- Hinjadoli, Nuapada, Olaberi, Kantabeda, Tainsi, Hinjagola, Baragot, Badathaila, Bhagatpur, Dandasinga, Lakshmanpur, Bhalumunda, Ganjada, Kadalibereni, Kothabhuin, Sankrida, Dalki, Dalasinga, Thukuli, Kumuri, Baghmunda, Tentulipada, Nuakheta, Balanga, Talisira, Labangi, Pampasar, Hinsirida, Burti, Jagannathpur, Kulsar, Krushnachakra, Hidsing, Sinsaloi, Sorisapal, Karunakarpur, Hinjili, Dadar, Dhauragoth, Kuthbhuin, Jankartaila, Laimunda.

Year of settlement of all above villages is 1962

Athagarh Division:- Barabhaya, Kusal, Balikiari, Chakamunda, Sisupathar, Mardamukha, Kharuani, and Marudiha.

Year of settlement of all above villages is 1995

Nayagarh Division:- Dhipasahi, Kendudhipi, Purunapani, Gochhabari, Dhuapaju, Badasilinga, Sikhargochha, Jamjhula, Sakeni, Tulukutapia, Khalighati, Janisahi, Raimada, Khalisahi, Khajuridih, Siligardi, Champadali, Sansilinga, Dumuduma, Tailasahi, Parhasahi, Barhasingha, Tailasahi, Parhasahi, Khalighari, Tulukutapia, Sakeni, Jamjhola, Dhuapaju, Doisinga, Bankajhari, Banigochha, Phalpaju, Takura, Kulurukumpa, Garasa, Banibiri, Jamusahi, Salabhanga, Durgaprasad, Baskipadar, Gamariganda, Bankadola, Buguda, Rathipur, Takara, Chilipathar, Pehelaju, Makarprasad, Sikhargochha,

Gochhabari, Dumduma, Nodhapanka, Maradabari, Ostia,
Ghunguripara, .Basantapur, Champadali, Siligarhi,

**1.2 Map Showing landscape beyond Core and Buffer
Areas. : *Enclosed.***

PART B . The Proposed Management.

5. Management Interventions

5.1 Redressing man-Animal Conflict.

The communities living in fringe area of the Tiger Reserve suffer from frequent depredation of their crop on account of damages caused by wild herbivores especially by wild pig, elephant, spotted deer etc. As a result people sustain a great loss and become revengeful, which may even lead to retaliated killing, electrocution, poisoning etc. Hence to reduce the conflict between man and wild animals following measures are proposed to be under taken in adjoining areas.

5.1. A) Timely payment of compassionate amount.

There is a provision of payment of compassionate amount to the victims of depredation under provision of the Orissa Wildlife (Protection) Rules. This amount will be paid as early as possible after quick completion of field enquiry and sanction of amount by respective DFOs. Timely and early payment can be possible if funds are made available from the NTCA in time.

5.1. B) Creation of Enclosures

Conflicts can be avoided if enclosures are created around the human habitation and their crop fields. Such enclosures include

- i) Solar power fencing
 - ii) Elephant proof trench
 - iii) Elephant proof stone wall
- i) Solar power fencing will be installed where the villagers shoulder the responsibility of protecting them and maintaining them. Solar power fencing is more useful to prevent even the herbivores like spotted deer and wild pig.

- ii) Elephant proof trenches of cross section 3 mt. top width 1mt. bottom width and 2 mt. vertical depth can be excavated on RF lines, putting the excavated soil on village side for a long stretch of boundary to arrest the elephant movement in to village.
- iii) Elephant proof stone wall is constructed on the boundary of forest where the highly populous area is located very close to forest or protected area. But the cost could be very high. The cut stones are arranged the wall with bottom width of 5' and top width of 2' and height of 6'. The top 1' is made with cement mortar and cement concrete.

The enclosures will be selected as per the specific requirement.

5.1.C) Anti depredation squad (ADS)

Anti depredation squads will be constituted in the most vulnerable villages taking the able bodied youthS from the same village. They will drive the wild animals away from their village with the help of search lights, crackers, masals and hooters. They may use drums and tins to make sound to drive the animals. The ADS will be paid incentives collectively for rendering the services in assisting the field staff. Solar street lights, lanterns can also be supplied to the villages at entry places of the animal to the village. The respective divisions may be supplied with POL to run their vehicles in depredation work.

5.1. D) Alternate crop:

Alternate crops, not preferred by the wild animal, will be grown in the crop fields and back yards so that crop depredation will be avoided. Choice of crop will be so selected that it will be accepted by the local community and can be easily marketed to earn better price. Oil seeds, vegetables can be included under alternate crops. The interested cultivators will be supplied with seeds/ propaguls on free of cost and other inputs on subsidized rate to facilitate adoption.

5.2. Capturing Problematic/Aberrant wild animals:

5.2. A) Physical immobilization:

Cages and traps, nets and ropes will be supplied to the adjoining divisions to physically restrain the problematic or aberrant wild animals causing damage to life as property.

5.2. B) Chemical immobilization:

Tranquilizing chemicals/drugs can be administered by expert team with the prior permission of the Chief Wildlife Warden to restrain the animals before translocation to safer places. Tranquilizing equipment with drugs can be made available with the respective conservators for their use at the time of need.

5.3.C) Training :-

Skill to capture wild animal alive requires special training. Interested staff in adjoining areas can be selected and given training, so that their support can be taken at the time of urgency.

5.3. Monitoring of wild animals:

The intension behind the adjoining area management is to support a viable tiger population of 20 breeding females in the landscape and to support spill over population. Their number and prey base in the corridors and adjoining areas will be periodically monitored by using various census methodologies. Successful monitoring will require training to field staff and use of modern gadgets, tools and equipments, collection of data, building data base and analysis. One data entry operator in each division will be provided to develop the data base and analysis. .

5.4. Antipoaching operation.

Prey poaching makes a habitat hostile for Tiger. Since territorial divisions mainly focus on antismuggling activities prevention of poaching is neglected. The adjoining divisions should also carry out antipoaching activities to support tiger in their area. Therefore it is suggested to have following interventions.

5.4. A) Antipoaching Squad:

Every territorial division in the adjoining area should have at least one anti poaching squad consisting of 1 Forester, 2 FGs and 10 daily waged squad man equipped with arms and ammunitions, VHF sets and one jeep. They will have regular patrolling in the forests bordering to the tiger reserve to protect wild animals. They will also conduct raids and search operation in border villages to seize country made guns, its repairing workshop & wild animal trophies.

5.4. B) Mobility:

Each adjoining division will be supplied with a jeep for antipoaching purpose along with the cost of POL and maintenance. Till the vehicles are purchased and supplied they

may be allowed to hire vehicles during poaching season, which varies from place to place.

5.4. C) Arms & Ammunition:

The anti poaching squad will be supplied with gun and cartridges.

5.4. D) VHF sets /Mobile telephone:

The anti poaching squads will be equipped with VHF sets and mobile cell to have better communication among themselves. Their movement can also be monitored by respective range officer or DFO.

5.4 E) Barriers and Check gates:

The roads leading towards the Tiger Reserve require regulation on vehicular movement. Every vehicle should be checked at border to see whether they are involved in any illegal activity. It is proposed to erect barriers & check gates on these roads. These may be manned or unmanned depending on the pressure of traffic. The people engaged in managing the gates will be paid on daily wage basis.

5. 5. Habitat Improvement:

Restorative measures will be taken up in the adjacent forest blocks and corridors to make them suitable for living of wild animals. Satellite tiger population will have similar habitat as their counterparts are getting in core zone. Therefore following measures are suggested to be undertaken in adjoining area.

5.5. A) RDF Plantation:

The forest density can be improved to harbour high density of herbivourers providing them adequate shelter and fodder. Hence it is proposed to go for plantations of fodder & fruit bearing species like Terminalia tomentosa, Aegle marmalos, Zyzyphus, Neem, Ficus benghalensis, Ficus religiosa, Anogeissus latifolia, Kydia, Grewia, Gmelina, Bauhinia, bamboo, Mango, Jack fruit etc. in the gap areas. Initially the saplings will be protected by tree guards made up of bamboo given around the planted saplings.

5.5 B) Water body:-

Water is an essential commodity to make an area habitable for wild animals. Therefore it is proposed to dig large water bodies within the forested areas where abundance of wild animals is high.

Even the existing water bodies can be renovated to harvest rain water.

5.5 C) Bamboo Silviculture Operation:

Bamboo is a good fodder for many wild animals, who prefer new shoots than old one. New bamboo shoots will come up if the rhizome is properly protected and covered with soil and if clump gets water and devoid of congestion. The silvicultural operation will be carried out in the areas where bamboo is available in large scale.

6. Eco development:

People of fringe area also depend on forest to cater their needs. Many of them also use forest as their livelihood means. Ecodevelopment activities will be undertaken to improve the socio economic status of the people so as to reduce their dependency on forest. Activities will be mostly non forestry base and decided by the community. Micro planning will support in identifying community needs through use of various PRA tools.

Since adjoining area is managed by respective territorial DFOs the specific plan of operation will be prepared by them and would be implemented only after due approval of the Chief Wildlife Warden. Hence lump sum yearly budgetary provision as mentioned below is proposed in the Tiger Conservation Plan.

8. 5. Activity Budget:

The budget for 5 years with physical and financial requirement is given in

Table -1.

8.5.1. The consolidated activity budget for core, buffer and adjoining Area is given in Table -2.

List of map:

Map showing core, buffer and adjoining Area is enclosed herewith.