

**MASTER PLAN
OF
NORTH BENGAL WILD ANIMALS PARK,
SILIGURI**

2016-2017 TO 2036-2037



**WEST BENGAL ZOO AUTHORITY
KB-19, SECTOTR - III, SALT LAKE CITY
KOLKATA - 700098**



GOVERNMENT OF WEST BENGAL
DEPARTMENT OF FORESTS

West Bengal Zoo Authority



F. NO. 476/WBZA/T-4/16-17

Date : 03.10.2016

PREFACE

As per the National Zoo Policy, 1998, the main objective of zoos in India is to complement and strengthen the national efforts in conservation of the rich biodiversity of the country, particularly the fauna. The policy also emphasised (vide 3.1.2) with every zoo to prepare long term Master Plan for its development to ensure optimum utilisation of land, water, energy and finance.

The master plan is a comprehensive document to guide systematic and planned development of an existing and new zoo for a reasonably long period of 10 to 20 years with a provision to review the plan on every 5 years and in conformity with the conceive objectives of the Zoological Park. It is prepared to provide holistic nature conservation education with wholesome recreation and also to help in optimum utilisation of the zoo resources in a planned manner.

The North Bengal Wild Animals Park (Bengal Safari), Siliguri was established to provide a glimpse of wild animals and birds of North Bengal plains to the general public for developing a healthy relationship between animals and human beings to promote conservation of our invaluable faunal resources through display, care and awareness. The Safari Park was inaugurated by the Hon'ble Chief Minister, Government of West Bengal on 21st January, 2016.

Accordingly, a comprehensive Master Plan has been prepared for the North Bengal Wild Animals Park (Bengal Safari), Siliguri for its long term development and scientific management. The Master Plan conceptualises and design depicting future activities in Zoological Park giving stress on the conservation of biodiversity of the region.

V. K. Yadav, I F S
Member Secretary



GOVERNMENT OF WEST BENGAL
DEPARTMENT OF FORESTS

West Bengal Zoo Authority



F. NO. 476/WBZA/T-4/16-17

Date : 03.10.2016

ACKNOWLEDGEMENT

My deep thanks are due to Sri Basudeb Banerjee, IAS, Chief Secretary, Government of West Bengal and Chairman, West Bengal Zoo Authority and to Sri Chandan Sinha, IAS, Principal Secretary, Dept. of Forests and Vice-Chairman, West Bengal Zoo Authority for their guidance to prepare this master plan.

My sincere gratitude are given to Dr. Pradip Vyas, I F S, PCCF (WL) & CWLW, WB and Dr. B. R. Sharma, I F S, Former Member Secretary, West Bengal Zoo Authority for their constructive suggestions in preparation of this document. I am also grateful to Sri Arun Mukherjee, I F S for taking untiring effort to prepare this Master Plan.

The Master Plan of the North Bengal Wild Animals Park (Bengal Safari), Siliguri is a combined effort of all the officials of West Bengal Zoo Authority especially Dr. J. K. De, scientific Officer and Ms. Bithi Kar, Technical Asstt., WBZA.

The West Bengal Zoo Authority also thanks all the members of the Governing Body and Technical Committee for their inputs.

Lastly I am indebted to Dr. D. N. Singh, I F S, Member Secretary, Central Zoo Authority and also to the members of the Technical Committee of the CZA for their suggestions and improving the draft of the Master Plan.

V. K. Yadav, I F S

Member Secretary

CERTIFICATE

This is to certify that the Master Plan (2016-17 to 2036-37) for the scientific and long term management of the North Bengal Wild Animals Park (Bengal Safari), Siliguri has been prepared in consultation with the Technical Committee of West Bengal Zoo Authority and suggestions of the expert group on Zoo Designing of Central Zoo Authority. Technical Committee of the Central Zoo Authority approved the Master Lay Out Plan on its 79th meeting held on 24th August, 2016.



V. K. Yadav, I F S
Member Secretary
West Bengal Zoo Authority

Master Plan is approved subject to the condition that the responsibility of mobilizing the Financial resources for implementation of the Master Plan will be the sole responsibility of North Bengal Wild Animals Park (Bengal Safari), Siliguri.



Dr. D. N. Singh, I F S
Member Secretary
Central Zoo Authority
Ministry of Environment, Forests & Climate Change
Government of India

Digitized 25/12/2016

Dr. D. N. SINGH, IFS
Member Secretary

Central Zoo Authority
Ministry of Environment, Forests & Climate Change
New Delhi-110003

PART - I

CHAPTER – 1

1.1	Introduction	1
1.2	History	2
1.3	Vision	3
1.4	Mission	3
1.5	Strategy	3
1.6	Objectives	4
1.7	Topography	5
1.8	Geology	5
1.9	Rock & Soil	5
1.10	Flora & Fauna	6
1.11	Climate	6
1.12	Rainfall	6
1.13	Seasons	6
1.14	Approach	7
1.15	Demography	7
1.16	Legal Status of the Land	8
1.17	Pollution	8

CHAPTER – 2

2.1	Appraisal of the present arrangement and constraints	9
-----	--	---

PART – II

CHAPTER – 3

3.1	Future objectives	10
3.2	Vision	11
3.3	Mission	11
3.4	Theme	12
3.5	Strategy	12

CHAPTER – 4

Future Action Plan

4.1	Display Theme	15
4.2	North Bengal Biodiversity Park	15
4.3	Proposed Animal Collection Plan	15
4.4	Herbivores safari	22
4.5	Large Carnivores Safari	24
4.6	Aviaries	29
4.7	Reptile Pond	32
4.8	Proposed NB Biodiversity Park	32
4.9	Description of the Layout Plan	38
4.10	Proposal for Activities	40
4.11	Peculiar Problem of the Zoo	41
4.12	Animal Section	41
4.13	Veterinary Section	43
4.14	Sanitary Section	46
4.15	Security Section	47
4.16	Water Supply Section	48
4.17	Visitors Amenities	49

4.18	Parking	49
4.19	Entry Plaza	50
4.20	Visitor Circulation	50
4.21	Safari Timing	51
4.22	Safari Ride	51
4.23	Wheel Chairs	51
4.24	Sitting Arrangements	51
4.25	Toilets & Drinking Water	52
4.26	Cafeteria, Kiosk & Souvenir Shop	52
4.27	First – Aid Kit	52
4.28	Dustbin	52
4.29	Waste Disposal	52
4.30	Drainage System	53
4.31	Electricity System	54
4.32	Lawns & Gardens	54
4.33	Construction & Maintenance section	55
4.34	Commissary Section	56
4.35	Education & Research Section	57
4.36	Administrative Section	59
4.37	Justification for the Staff	61

CHAPTER – 5

Personnel Planning

5.1	Present Staff Position	62
5.2	Animal Section	64
5.3	Veterinary section	64
5.4	Commissary Section	64
5.5	Sanitation Section	64
5.6	Security Section	65
5.7	Lawns & Gardens Section	65

5.8	Administrative Section	65
5.9	Maintenance Section	65
5.10	Education Cum Research Section	66
5.11	Personal Section	66
5.12	Outsourcing	66
5.13	Manpower on Contract	67

CHAPTER – 6

Disaster Management

6.1	Introduction	68
6.2	Fire	68
6.3	Bomb Threat	69
6.4	Flood	69
6.5	Cyclone Situation	69
6.6	Law & order problem	70
6.7	Feed Supply	70
6.8	For warning People About the Emergency	70
6.9	Local Response Capabilities	70

CHAPTER – 7

Contingency Plan

7.1	Escape of animal from enclosure	71
7.2	Monkey & Dog menace	72
7.3	Arrangement of food in case of strike	73
7.4	Snake bite	74
7.5	Visitor Getting Injured	74
7.6	Visitor falling inside enclosure	74

7.7	Fighting among animals	75
7.8	Epidemics	75
7.9	Breakdown of Power Supply	76
7.10	First – Aid	76
7.11	For Warning People About the emergencies	77
7.12	Breakdown of Safari Vehicles	77

CHAPTER – 8

Capacity Building

8.1	Training aboard	78
8.2	To Encourage Specialization and Interaction with Retired Staff	78
8.3	Rewards to Staff Members	79
8.4	Keepers Training Programme	79
8.5	Administrative Training	80
8.6	Middle Level, Top Level Training Management	80
8.7	Training to the Executive Director	80
8.8	Safari Park Vets Training	81
8.9	Safari Park Educators Training	81
8.10	Safari park Volunteers Training	81
8.11	Regional Committee of Experts	81

CHAPTER – 9

E-Governance

9	E-governance	83
---	--------------	----

CHAPTER – 10

Budget Analysis

10	Budget analysis	87
----	-----------------	----

Annexure

Annexure No.– I	Flora of Safari park, Siliguri.	88
Annexure No.– II	Fauna of Safari park, Siliguri	97
Annexure No.- III	Legal status of land.	107
Annexure No.– IV	Layout plan of Safari park, Siliguri.	108
	1. Approved Master Layout Plan	
	2. Approved Master Layout Plan With Contour	
	3. Water Supply System Layout Plan	
	4. Drainage & Sewerage System Layout Plan	
	5. Electric Power System Layout Plan	
Annexure No.– V	Water sample test report.	113
Annexure No.– VI (A)	Year Wise Budget Estimate	115
Annexure No.– VI (B)	Year Wise Operational Budget	119
Annexure No.– V	Approved Manpower of NBWAP, Siliguri	121

PART-I

Chapter -1

1.1 INTRODUCTION:

West Bengal- a rich State in wild life, with a variety of forest types may be broadly divided into five natural geographic regions—the Mangrove, Junglemahal and the Gangetic Plain in the South and the North Bengal flood plains and Himalayan region in the North. Varied habitats provide home and shelter to wild animals like elephant, rhino, tiger, leopard, Himalayan Black Bear sloth bear, gaur, sambhar, cheetal, barking deer, small cats, crocodile, gharial, jungle fowl and a number of terrestrial birds. North Bengal is famous for wild life and varied habitat and it is gate way to North East India. Siliguri is situated in North Bengal flood plains and is the main town of North Bengal. It is well connected with Darjeeling, Sikkim, Bhutan, North East India as well as Kolkata and New Delhi.

Innumerable tourists travelling to Darjeeling, Gangtok, Sikkim, North East India & Bhutan are to pass through or touch Siliguri. To provide rewarding experience to the visitors about the wildlife of the region and to promote conservation of our invaluable faunal resources through display, care and awareness, the North Bengal Wild Animals Park has been established at Siliguri. The North Bengal Wild Animal Park, Siliguri has been planned keeping in view of CZA's norms for its development, objectives and maintenance. As per the provisions laid down in Wild Life (Protection) Act, 1972, it is mandatory to obtain permission for setting up of any rescue centre or zoo /Park from the Central Zoo Authority, Govt. of India. So, this master plan has been prepared for the development of this Park over a period of 20 years incorporating the vision, mission, theme of display and objectives.

The North Bengal Wild Animals Park, Siliguri is more of a Safari Park to observe the different animals in their natural habitats through safari vehicle. It will be one of the role model in terms of facilities, infrastructures and management practices. Moreover, it will showcase the rich biodiversity of North Bengal flood plains in the state of West Bengal. It presents the picturesque glimpse of the Himalayan range establishing its inmate charm.

The guiding principle of wildlife displayed at this safari park is to present them in an environment as natural as possible and maintain their dignity as our fellow creatures. One will get a feeling of freedom in the free nature as he/she steps in to a different world of animals. This sets the right environment of being with wild animals in their environment.

1.2 HISTORY:

Geographically Siliguri is uniquely situated in North Bengal which is rich in wildlife like Bengal Tiger, Leopard, Elephant, Indian One Horned Rhinoceros, Bison, Bear etc. North Bengal is extremely important place on the wildlife map of India. An area of 297 ha has been identified for the establishment of the Park at Siliguri. The area is largely plain with thick to sparse vegetation providing ideal habitat for the wild life. The city is surrounded by forest ranges, making the sighting of wild animals common. Siliguri stands in a unique geographical niche; Nepal lies in the West of the city (10 km from Bagdogra), Bhutan to the North East (about 40 km), China to the North (about 180 km at Nathula Pass in Sikkim), Bangladesh to the South (about 30 km from Fulbari). Siliguri is situated on the bank of Mahananda River at the foothills of the Himalayas. It lies at latitude 26° 42' N and Longitude 88°25'E.

Siliguri is a principal commercial, tourism, transportation, and educational center of North Bengal. The total area of Siliguri City is 48 km², most of which lies in Darjeeling district; however, a part of the city spreads over neighbouring Jalpaiguri district. The city hosts over 5 lakh domestic and 50,000 foreign visitors annually. It is also the transit point for air, road and rail traffic to the neighbouring countries of Nepal, Bhutan and Bangladesh, and to the North East. Tourists / people from other parts of the country became interested to take a glimpse of wild animals and birds of the North Bengal for developing a healthy relationship between animals and human beings.

1.3 VISION:

The North Bengal Wild Animals Park (Siliguri Safari), Siliguri, West Bengal is to provide a glimpse of wild animals and birds of the North Bengal plains to the general public for developing a healthy relationship between animals and human beings and to promote conservation of our invaluable faunal resources through display, care and awareness. The Siliguri Safari is an endeavour to breed the endangered species for display, exchange and rehabilitation in the wild. This safari is a showcase of rich biodiversity of the state of West Bengal.

1.4 MISSION:

The Wild Animal Park, Siliguri intends to complement the national efforts in conservation of wildlife through conservation breeding of endangered species especially Bengal Florican of the region and to develop empathy among visitors for wild animals.

1.5 STRATEGY

- To conserve natural resources

- To showcase biodiversity of the North Bengal plains in the State of West Bengal
- To develop expertise in animal care, wildlife education and awareness
- To develop infrastructure and services of high standards

1.6 OBJECTIVES:

A professionally run Park will serve a great variety of roles to benefit both the animals it displays and the visiting public. Conservation breeding programmes can help propagate endangered species and continue gene pools for species whose habitats have been obliterated. Educational programmes can help foster the respect that wild animals deserve and familiarize the visitors with the important role these animals play in the ecosystem. Large scale habitat destruction has resulted in the extinction of many species. The park may have to serve as the last bastion for threatened and endangered species.

It is intended to develop this park in conformity with the National Zoo Policy, 1998 with the following objectives:-

- 1 To conserve the rich biodiversity of the region i.e. North Bengal plains, as the animal species displayed shall be from the North Bengal flood plains eco-system only.
- 2 To reduce the tourist pressure on the National Parks/Protected Areas around Siliguri.
- 3 To create amongst the visitors empathy towards wild animals through appreciation and better understanding.
- 4 To collect and collate the scientific data on the biology, behaviour and health care of various species of wild animals displayed in the safari and use the same in

future management of the safari park.

- 5 Recreation for the purpose of providing wholesome, healthy and educational activity to a large number of people by utilizing the outdoor natural setting without detriment to any of the preceding objectives.

1.7 TOPOGRAPHY:

The North Bengal wild animal Park is largely plain area. The area falls outside Siliguri Municipal Corporation Administration. Out of 47 wards Siliguri Municipal Corporation, 14 wards fall in neighbouring Jalpaiguri district. Siliguri has Perennial River in West side, a number of nallahs in North and artificial boundaries on Eastern and Southern sides.

1.8 GEOLOGY:

Soil of Siliguri Safari is sandy loam. General pattern of soil profile indicates a top loose to hard soil with different depths of very compact nature. The water table is about 15-25 m. The entire region is made up of sand, gravel and pebbles laid down by the Himalayan rivers like the Teesta, Torsa, Raidak, Jaldhaka, Sankosh and several other small rivulets. The slope of the land is gentle, from north to south. The general height of the land is 80 to 100 m from the mean sea level.

1.9 ROCK AND SOIL:

The area is plain without any rock. The soil is sandy loam with top loose to hard below and it does not vary in the whole area. The area is composed of alternate layers of clay and sand.

1.10 FLORA AND FAUNA:

Flora available at the Park is provided in **Annexure- II** and availability of Fauna is provided in the **Annexure- III**

1.11 CLIMATE:

There are 3 distinct seasons' viz., summer, winter and monsoon. It is hottest from the month of May to mid-June, when temperature rises to 35°C. The winter of Siliguri continues from December to February. Winters are generally chilled and cool when temperature goes below 2°C. The city has several fault lines or uplands nearby which is the reason for most frequent earthquakes. The city has expanded towards hills which lead to destruction of vegetation, due to which the summers are becoming hot and winters are losing and becoming warmer. The climate is suitable for growing tea and the surrounding regions have many tea gardens.

1.12 RAINFALL:

The monsoon season in Siliguri starts from the mid June and lasts upto September. The city is lashed by moderate to heavy rains often cutting access to the hill stations and Sikkim. Pre-monsoon rains are from early April to early May. The annual average rain fall ranges from 2600mm to 4000mm. Heavy rain occurs in July and August. Intense rain fall upto 200mm per day has been recorded in this period.

1.13 SEASONS:

Summer season is marked by hot, dry and humid summer from April to September and cold winter from December to February. The season may be divided into four seasons' viz., summer season, and monsoon, post-monsoon and winter

season. Summer season starts from March and ends at the month of May followed by monsoon which ends in the month of October. November may be considered as the post – monsoon season. Winter season constitutes with the months of December to February.

1.14 APPROACH:

The North Bengal wild animal Park is located at 5th mile from Siliguri on NH- 31 which goes towards Sikkim / Assam. It is easily accessible. Siliguri is called Gateway to “North-East India” and is very well connected by Road, Rail and Air (Bagdogra Airport). Siliguri has five important railway stations. It is at a distance of approx. 575 km from Kolkata and 42 kilometers away from Jalpaiguri. Bagdogra Airport- the only airport in the region is situated at a distance of about 15 km away Siliguri. The Tenzing Norgay Central Bus Terminus situated next to the North Bengal State Transport Corporation Bus Stop is a major stop for most private and state-owned buses in the region. Air conditioned sleeper coach bus service is available from Siliguri to Kolkata, Patna and Assam. Jeeps also link Siliguri to neighbouring hill towns of Darjeeling, Gangtok, Kurseong, Kalimpong, Mirik, Jorethang, Namchi, etc. Public transport includes cycle rickshaws, auto rickshaws, "Toto" rickshaws, local buses and tempos which are available to reach the Park.

1.15 DEMOGRAPHY OF SURROUNDING AREA:

Siliguri is the largest city in the North Bengal and is the second largest city of West Bengal. Siliguri has experienced a huge surge in population in recent times. Based on Census data of 2011, the city had a population of 509,709, while the city agglomeration had a population of 1,201,489. Males constitute 51% of the population

and females 49%. In Siliguri, 10% of the population is under six years of age. Siliguri has a majority Bengali population. Other minority communities include Gorkhas (Nepali), Marwaris and Biharis. Bengali, Nepali, Hindi, English, Marwari, Bihari, Bhojpuri, Assamese, Bodo, Punjabi, Gujarati, and Tibetan languages are spoken by the local people of Siliguri. Siliguri has received waves of immigration over the years, most prominent being the migrants from the erstwhile East Bengal during the Partition of India. In addition, people from Jharkhand and other parts of India have also come to the city in search of livelihood.

1.16 LEGAL STATUS OF LAND:

The ownership of the land of the North Bengal Wild Animals Park, Siliguri belongs to Forest Department, Government of West Bengal. Dabgram 1 & 4 Forest Compartments classified as Protected Forest vides G.O. No 707-For dated 29.02.1960 of Adabari Beat, Salugarah Range of Baikunthpur Forest Division on the National Highway no. 31 constitutes the said land. The notification of ownership of the said land is placed at **Annexure - IV**

1.17 POLLUTION:

The proposed safari park is full of vegetation. Due to abundant greenery, air of park is pollution free. No noticeable sources of pollution exist in the area. Rather this patch of 290 ha. of forested area acts as a lungs of Siliguri town and is the carbon sink of the town.

Chapter-2

2.1 APPRAISAL OF THE PRESENT ARRANGEMENT AND CONSTRAINTS:

The North Bengal Wild Animals Park is relocated near Siliguri under Jalpaiguri district. North Bengal Wild Animals Park, Siliguri as Siliguri Safari has been established to provide rewarding experience to the visitors about the wildlife of the region and to promote conservation of our invaluable faunal resources through display, care and awareness. An area of 290 ha has been identified for the establishment of the Park near Siliguri. The area is largely plain with thick to sparse vegetation providing ideal habitat for the wild life. The city is surrounded by forest ranges, making the sighting of wild animals.

It is a new project as Wild Animals Park, so the question of appraisal of the existing infrastructure does not arise.

PART-II

Chapter-3

3.1 FUTURE OBJECTIVES:

Future objectives, vision and mission will remain same as given in Part-I, Chapter -I, as this is a new Wild Animals Park. However salient points are provided below:-

A professionally run Wild Animals Park will serve a great variety of roles to benefit both the animals it displays and the visiting public. It will showcase the rich biodiversity of West Bengal and reduce tourist pressure on nearby protected areas. Breeding programs can help in propagating endangered species and to continue gene pools for species whose habitats have been obliterated. Educational programmes can help to foster the respect that wild animals deserve and familiarize the visitors with the important role these animals play in the ecosystem. Large scale habitat destruction has resulted in the extinction of many species. Safari Park may have to serve as the last bastion for threatened and endangered species.

The safari park shall work for the conservation of the rich bio-diversity of the state with the following objectives:

- (1) The number of visitors to these protected areas is increasing day by day. In some protected areas it has already crossed the expected carrying capacity of the area. The proposed North Bengal Wild Animals Park, Siliguri shall so in long way to reduce pressure on the protected areas in North Bengal.
- (2) The objective of the park shall be the conservation of the rich biodiversity of the region i.e. North Bengal flood plains as the animal species displayed shall be

from the North Bengal eco-system only.

- (3) To create amongst the visitors empathy towards wild animals through appreciation and better understanding.
- (4) To collect and collate the scientific data on the biology, behavior and health care of various species of wild animals displayed in the safari and use the same in future management of the safari park.
- (5) Recreation for the purpose of providing wholesome, healthy and educational activity to a large number of people by utilizing the outdoor natural setting without detriment to any of the preceding objectives.

3.2 VISION:

The North Bengal Wild Animals Park, Siliguri (West Bengal) will provide rewarding experience to the visitors about the wildlife of the region. The display, care and awareness will be of such level to promote conservation of wildlife. The Siliguri Safari will endeavour to breed the endangered species for display, exchange and rehabilitation in the wild. This safari will be a showcase of rich biodiversity of the region.

3.3 MISSION:

This North Bengal Wild Animal's Safari, Siliguri intends to complement the national efforts in conservation of wildlife through breeding of endangered species and to develop empathy among visitors for wild animals. It will help to showcase the rich biodiversity of West Bengal.

3.4 THEME:

The display of animals has been done on taxonomical system. The visitors will observe the animal of a particular group in one location for better understanding of their behaviour and differences. The visitors will have exciting experience of different taxonomical groups as under:-

- (1) Large carnivores safari (Tiger, Leopard and Himalayan black bear)
- (2) Small cats (Clouded Leopard, Marble cat, Jungle cat, Leopard cat and Civets)
- (3) Herbivores safari (Rhinoceros, Gaur and Deer)
- (4) Bird aviaries (Pheasants, Water and Terrestrial birds)
- (5) Reptile (Mugger and Gharial)
- (6) NB Biodiversity park (Various species plants including of medicinal plants)

3.5 STRATEGY TO ACHIEVE THE OBJECTIVES:

1 Ex-situ Conservation:

This Siliguri safari will display a number of endemic species like tiger, panther, himalayan black bear, rhino, gaur, deer, mugger, gharial, pheasants, water and terrestrial birds, etc. Efforts will be made to provide them adequate health care and balance diet for their breeding and longevity. The exhibits will have natural vegetation and enough space to run, walk and hide to check boredom.

2 Education and awareness:

In order to achieve the objectives, an education wing will be created in the safari park with adequate man power and infrastructure like interpretation centre, auditorium, published material and audio-visuals.

This section will develop an education and awareness programme as under:-

- (1) To develop interactive signage.

- (2) To prepare animals signage – giving basic information's & their characteristics.
- (3) To place general information signage at prominent places.
- (4) To conduct guided tour, organize lectures, talks and competitions.
- (5) To publish guide book, brochures, guide map & leaflets about the Safari and its inmates.
- (6) To organize orientation programmes for the selected groups.
- (7) To conduct various competitions on the eve of wildlife week, world environment day, earth day, biodiversity day and other specific days.
- (8) To involve volunteers, NGO'S to take up awareness activities.

3 Research on wildlife: -

The Safari Park will offer ample opportunities for conducting research on wild life. For this an education - cum research section will be created with adequate staff & infrastructure. The section will be responsible to conduct research in ex-situ and in-situ conditions and also interact with other institutes for collaboration in formulation and conducting research.

Chapter-4

Future action plan

4. FUTURE PLANNING:

The aim of the future action plan is to develop the North Bengal Wild Animals Safari at Siliguri **during the period 2016-17 to 2036-37** with the provision to review the **Master** Plan after every 10 years. Proposal is based on available resources and for convenience of the management. While formulating the proposal, recommendations and guide lines of the Central Zoo Authority have been taken into consideration. The development has been planned keeping in view with the strategy to achieve the prescribed objectives. The North Bengal Wild Animals Safari at Siliguri is to be established to provide a glimpse of wild animals and birds of the North Bengal to the general public for developing a healthy relationship between animals and human beings and to make aware the general public on sustainable conservation of wild fauna which are under severe threat due to biotic interference. The plan has been prepared on the basis of site requirements, visitor's profile, availability of water and electricity, vegetation, climate conditions and resources available with the available with the management.

North Bengal is rich in wildlife like Bengal Tiger, Leopard, Elephant, Indian one horned Rhinoceros, Bison, Bear etc. Siliguri is the gateway of Darjeeling, Sikkim, Bhutan as well as other places of North East India and for this reason the aforesaid area has been chosen for creation of North Bengal Wild Animals Safari at Siliguri.

For the convenience of the zoo management, "broad taxonomic display" of

animal spp. of North Bengal flood plain of North Bengal is proposed to be adopted as far as feasible and the said display will be as follows:

4.1 DISPLAY THEME:

The display of animals has to be made on taxonomical system as follows:-

- (1) Large carnivores safari (Tiger, Leopard and Himalayan black bear)
- (2) Small cats Safari (Clouded Leopard, Marble cat, Jungle cat, Leopard cat and Civets)
- (3) Herbivores safari (Rhinoceros, Gaur and Deer)
- (4) Bird aviaries (Pheasants, Water and Terrestrial birds)
- (5) Reptile (Mugger, Gharial)

4.2 NORTH BENGAL BIODIVERSITY PARK

It will showcase the biodiversity of North Bengal Flora and Fauna apart from mega fauna & will consist of Butterfly Park, Aquarium, Herpetological Section, Medicinal Plant Garden and Arboretum of Endangered plants

4.3 PROPOSED ANIMAL COLLECTION PLAN

The North Bengal Wild Animal Park at Siliguri, aims to display animals keeping in view the local habitat, climatic conditions and the resources available. This safari is going to be a modern Safari Park and will display animals & biodiversity of West Bengal only. The North Bengal wild animals Safari, Siliguri has an area of 297 ha. It will display about 266 animals comprising of 30 species

The animal collection plan of North Bengal Wild Animals Safari Park at Siliguri is as under:-

Sl. no	Species	Existing stock				Proposed collection				Animals to be acquired				Area proposed
A	Mammal	M	F	U	Total	M	F	U	Total	M	F	U	Total	
1	Tiger, (<i>Panthera tigris</i> Linnaeus 1758)	-	-	-	-	2	4	-	6	2	4	-	6	20 ha
2	Leopard, <i>Panthera pardus</i> Meyer, 1826	-	-	-	-	2	4	-	6	2	4	-	6	20 ha
3	Himalayan Black Bear, <i>Ursus thibetanus</i> G. Cuvier 1758	-	-	-	-	2	4	-	6	2	4	-	6	20 ha
4	Sloth Bear <i>Melursus ursinus</i> Shaw, 1791	-	-	-	-	2	4	-	6	2	4	-	6	
5	Clouded Leopard, <i>Neofelis nebulosa</i> (Griffith, 1821)	-	-	-	-	2	3	-	5	2	3	-	5	20 ha
6	Bintutong, <i>Arctictis binturong</i> (Raffles, 1822)	-	-	-	-	2	3	-	5	2	3	-	5	
7	Marbled Cat, <i>Felis marmorata</i>	-	-	-	-	2	3	-	5	2	3	-	5	
8	Fishing Cat, <i>Prionailurus viverrinus</i> (Bennett, 1833)	-	-	-	-	2	3	-	5	2	3	-	5	
9	Jungle Cat, <i>Felis chaus</i> Schreber, 1777	-	-	-	-	2	3	-	5	2	3	-	5	
10	Leopard Cat, <i>Prionailurus bengalensis</i> , Kerr, 1792	-	-	-	-	2	3	-	5	2	3	-	5	

11	Small Indian Civet, <i>Viverricula indica</i> , Geoffroy, 1803	-	-	-	-	2	3	-	5	2	3	-	5	
12	Large Indian Civet, <i>Viverra</i> <i>zibetha</i> , Linnaeus, 1758	-	-	-	-	2	3	-	5	2	3	-	5	
13	Common Palm Civet/ Toddy Cat, <i>Paradoxurus</i> <i>hermaphrodites</i> , Pallas, 1777	-	-	-	-	2	3	-	5	2	3	-	5	
14	Golden Cat, <i>Catopuma</i> <i>temminckii</i> (Vigors and Horsfield, 1827)	-	-	-	-	2	4	-	6	2	4	-	6	
15	One Horned Rhinoceros <i>Rhinoceros unicornis</i> , Linnaeus, 1758	-	-	-	-	2	6	-	8	2	6	-	8	91ha
16	Swamp Deer, <i>Rucervus</i> <i>duvauceli</i> (G. Cuvier, 1823)	-	-	-	-	4	6	-	10	4	6	-	10	
17	Chital, <i>Axis axis</i> (Erxleben, 1777)	-	-	-	-	1 0	1 0	-	20	1 0	1 0	-	20	
18	Sambar, <i>Rusa unicolor</i> (Kerr, 1792)	-	-	-	-	3	6	-	9	3	6	-	9	
19	Barking Deer, <i>Muntiacus muntjak</i> , Zimmermann, 1780	-	-	-	-	4	1 0	-	14	4	1 0	-	14	
20	Hog Deer, <i>Axis porcinus</i> , Zimmermann, 1780	-	-	-	-	3	6	-	9	3	6	-	9	
21	Wild Boar <i>Sus scrofa</i> ,	-	-	-	-	2	6	-	8	2	6	-	8	

	Linnaeus, 1758												
22	Gaur, <i>Bos gaurus</i> , Smith, 1827	-	-	-	-	3	4	-	7	3	4	-	7
Birds													
23	Red Jungle Fowl, <i>Gallus gallus</i> Linnaeus, 1758	-	-	-	-	5	5	-	10	5	5	-	10
24	Bengal Florican, <i>Houbaropsis</i> <i>bengalensis</i> (Gmelin, 1789) /	-	-	-	-	5	5	-	10	5	5	-	10
25	Black Partridge, <i>Melanoperdix</i> <i>niger</i> (Vigors, 1829)	-	-	-	-	5	5	-	10	5	5	-	10
26	Pea Fowl, <i>Pavo cristatus</i> Linnaeus, 1758	-	-	-	-	5	5	-	10	5	5	-	10
27	Grey Hornbill, <i>Ocyrceros</i> <i>birostris</i> (Scopoli, 1786)	-	-	-	-	5	5	-	10	5	5	-	10
28	Great Indian/Pied Horned Bill, <i>Buceros bicornis</i> Linnaeus, 1758	-	-	-	-	5	5	-	10	5	5	-	10
Birds of Prey Aviary/Aviaries													
29	Bazas, <i>Aviceda jleuphotes</i> (Dumont, 1820)	-	-	-	-	5	5	-	10	5	5	-	10
30	Hawk, <i>Buteo jamai censis</i> (Gmelin, 1788)	-	-	-	-	5	5	-	10	5	5	-	10
31	Large Indian Kite/ Pariah kite <i>Milvus migrans</i> (Boddaert, 1783)	-	-	-	-	5	5	-	10	5	5	-	10

32	Large Grey Headed Fishing Eagle, <i>Ichthyophaga ichthyaetus</i> (Horsfield, 1821)	-	-	-	-	5	5	-	10	5	5	-	10	2 ha
33	Changeable Hawk Eagle <i>Nisaetus cirrhatus</i> (Gmelin, 1788)	-	-	-	-	5	5	-	10	5	5	-	10	
34	Crested Serpent Eagle <i>Spilornis cheela</i> Latham, 1790	-	-	-	-	5	5	-	10	5	5	-	10	
35	Himalayan Griffin Vulture <i>Gyps himalayensis</i> Hume, 1869 (Horsfield, 1821)	-	-	-	-	5	5	-	10	5	5	-	10	
36	White Rumped Vulture <i>Gyps bengalensis</i> (Gmelin, 1788)	-	-	-	-	5	5	-	10	5	5	-	10	
37	Long Billed Vulture <i>Gyps indicus</i> (<u>Scopoli</u> , 1786)	-	-	-	-	5	5	-	10	5	5	-	10	
38	Slender-billed vulture <i>Gyps tenuirostris</i> Hodgson (in Gray), 1844	-	-	-	-	5	5	-	10	5	5	-	10	
Mixed Birds Aviary														
39	Hill Mayans, <i>Gracula religiosa</i> Linnaeus, 1758	-	-	-	-	5	5	-	10	5	5	-	10	
40	Rose Ring Parakeet, <i>Psittacula krameri</i> (Scopoli, 1769)	-	-	-	-	5	5	-	10	5	5	-	10	

41	Alexandrine Parakeet <i>Psittacula eupatria</i> (Linnaeus, 1766)	-	-	-	-	5	5	-	10	5	5	-	10
42	Blossom Headed Parakeet <i>Psittacula roseate</i> Biswas, 1951	-	-	-	-	5	5	-	10	5	5	-	10
43	Drongo Cuckoo, <i>Surniculus</i> <i>lugubris</i> (Horsfield, 1821)	-	-	-	-	5	5	-	10	5	5	-	10
44	Pied Myna, <i>Gracupica contra</i> (Linnaeus, 1758)	-	-	-	-	5	5	-	10	5	5	-	10
45	Spotted Dove, <i>Spilopelia</i> <i>chinensis</i> (Scopoli, 1768)	-	-	-	-	5	5	-	10	5	5	-	10
46	Indian Ring Dove, <i>Streptopelia</i> <i>capicola</i> (Sundevall, 1857)												
47	Common Myna, <i>Acridotheres</i> <i>tristis</i> (Linnaeus, 1766)		-	-	-	5	5	-	10	5	5	-	10
48	White Breasted Water Hen , <i>Amaurornis phoenicurus</i> Pennant, 1769		-	-	-	5	5	-	10	5	5	-	10
49	Little Egret, <i>Egretta garzetta</i> (Linnaeus, 1766)	-	-	-	-	5	5	-	10	5	5	-	10
50	Pond Heron, <i>Ardeola grayii</i> (Sykes, 1832)	-	-	-	-	5	5	-	10	5	5	-	10
51	White Breasted Kingfisher, <i>Halcyon smyrnensis</i> (Linnaeus, 1758)	-	-	-	-	5	5	-	10	5	5	-	10

52	Open Billed Stork, <i>Anastomus oscitans</i> (Boddaert, 1783)	-	-	-	-	5	5	-	10	5	5	-	10	
53	Indian Cormonent, <i>Phalacrocorax fuscicollis</i> Stephens, 1826	-	-	-	-	5	5	-	10	5	5	-	10	
54	Indian Moor Hen, <i>Gallinula chloropus</i> (Linnaeus, 1758)	-	-	-	-	5	5	-	10	5	5	-	10	
Reptile														
55	Gharial, <i>Gavialis gangeticus</i> (Gmelin, 1789)	-	-	-	-	2	3	-	5	2	3	-	5	0.40 ha
56	Mugger, <i>Crocodylus palustris</i> Lesson, 1831	-	-	-	-	2	3	-	5	2	3	-	5	0.32 ha

In addition to the above mentioned animals, following animals are proposed to be included :

1. Different species of Butterfly & Moths of North Bengal are to be showcase in the Butterfly Park
2. Indigenous and endemic fishes like Putitor, Boroli, Pithalu, Mourla, Chapchata, Chepti, Khoira, Bamos, Chanda, Sar Puthi, Pabda, Bacha, Taki, Catfish, Mollies, Guppies, Characins, Killfish , Ornamental fishes like Goldfish, angle fish, etc., and some invertebrates such as Prawns, Shrimps, Molluscs, Crabs, are to be displayed in the aquarium within biodiversity park.
3. Different species of amphibian available in North Bengal , like Himalayan Toad, Common Indian Toad, Indian Bull Frog, Himalayan Sucker Frog, Himalayan Newt, Common Tree Frog etc., are proposed to be showcased in Herpetological Section

of biodiversity park

4. Reptiles of North Bengal like Monitor Lizard, Python, Indian Rat Snake, Banded Krait, Common Krait, King Cobra, Russell's viper, Common Green Pit Viper etc., are also be exhibited in Herpetological Section of biodiversity park.

The above mentioned animals will be procured from different Zoos / Rescue Centres / Deer Parks within the state & outside the state of West Bengal. The animals seized during raid operation as well as animals rescued, while strayed from different forest areas will also be rehabilitated in different specified enclosures after obtaining necessary permission from the Chief wildlife Warden, West Bengal as per existing rules and regulations in this regard.

N.B: Keeping these above animals will make people aware about the need of conservation as well as to cater the need of the people to identify animals with their habit and habitat in the gradually waning of flora and fauna for bio-diversity reduction.

The animals would be displayed in large and spacious enclosures. Most of the enclosures will be safari type i.e. the visitor will be taken inside safari in a specially designed well protected 20/35 seats busses/gypsies. There will be two double door gates in each safari i.e. at entrance and exit.. Each safari enclosure will have chain link fence of appropriate height to check escape. A pickup and drop point has been marked near the entrance.

4.4 HERBIVORES SAFARI :

The first exhibit will be Herbivore Safari in an area of 91 ha. This safari will have motor-able road of 10 km. Besides this, there will be provision to visit this safari on

elephant, for which a separate path of 2.70 km. has been proposed. A pickup point for elephant ride has also been proposed.

Herbivores safari will contain 2♂, 6♀ **One Horned Rhinoceros**, 3♂, 6♀ **Sambar**, 10♂, 10♀ **Spotted Deer**, 4♂, 10♀ **Barking Deer**, 3♂, 4♀ **Gaur**, 3♂, 6♀ **Hog Deer**, 4♂, 6♀ **Swamp Deer** and 2♂, 6♀ **Wild Boar** in 91 ha area.

Kraal size (in m)			Area proposed for enclosure	Remarks
L	B	H		
8	3	2.5	Sambar	The safari type enclosure will be covered on all sides with 7.5 cm x 7.5 cm x 10g chain link fence of 2.5 m high in Safari enclosure will have double door gate at entrance and exit
			Chital	
			Barking deer	
			Hog deer	
			Wild Boar	
15	10	1.5	Barasingha	Enrichment: Groove of bushes will be provided Adequate poles / logs to rub horns / antlers and scratching will be fixed Glades and salt licks blocks / provisions have been made at different location to avoid inter-specific interaction. Provision of 8 numbers of drinking water ponds have been made at different locations. Feeding places / platforms will be provided at 3 to 4 places near the drinking water points.
			Rhino	
			Gaur	

4.5. LARGE CARNIVORES SAFARI :

After visiting Herbivores Safari , vehicle will enter the bear safari, spread in 20+ ha having road length of 2.5 Km. Before entering to next safari exhibit i.e. leopard, visitors will have a break point where they can enjoy snacks and tea /coffee and use washrooms. The Leopard Safari has road length of 2.5 Km. After the visit to Leopard safari, the vehicle will enter Tiger safari which has motor able road of length of 2.5 km. After this the visitor will be dropped back at drop / pick up point.

Large carnivore's safari will consist of 2♂, 4♀ **Tiger**, 2♂, 4♀ **Leopard**, 2♂, 4♀ **Himalayan Black Bear**, 2♂, 4♀ **Sloth Bear** in 60 ha area.

4.5.1. Himalayan Black Bear & Sloth Bear Safari: -

Cell size (in m)			Area proposed for enclosure	Remarks
L	B	H		
2.50	1.80	2.50	02 ha	<p>The safari type enclosure will be covered on all sides with chain link fence of 4mtr in height. The chain link fence will be of 5cm x5cm x 8g with inclined inward steel plate of one meter width on top at 60 degree. Safari enclosure will have double door gate at entrance and exit.</p> <p><u>Enrichment:</u></p> <p>1) The area will be provided with natural vegetation including trees and tree logs, a pool</p> <p>2) Groove of bushes will also be provided</p>

		<p>3) A cave will be provided for breeding and shelter</p> <p>4) Provision of drinking water has been made at different locations for which small ponds will be created.</p> <p>5) Feeding places / platforms will be provided at 3 to 4 places near the drinking water points</p> <p>6) Provision of catch drain of 150 x 150 mm size along the night cell in keeper gallery has been provided to drain out the water of the house and it will be discharged into soak pit.</p>
--	--	--

4.5.2 Leopard Safari: -

Cell size (in m)			Area proposed for enclosure	Remarks
L	B	H		
2	1.80	2.50	Leopard safari- 20 ha.	<p>1. The panther will be displayed in a fenced safari typed exhibit, covered on all sides with 1.5" x 1.5" chain link fence of 4mt height with inverted steel plate of 1 m width at top at 60°</p> <p>2. The viewing will be drive through in a specially designed vehicle</p> <p>3. The fenced sides will have over grown</p>

		<p>shrubs to conceal the metallic parts. Safari enclosure will have double door gate at entrance and exit.</p> <p><u>Enrichment:</u></p> <ol style="list-style-type: none"> 1. Shady trees of moderate height will be provided. 2. Scratching logs will be provided. 3. Provision of drinking water has been made at different locations for which small ponds will be created 4. Provision of catch drain of 150 x 150 mm size along the night cell in keeper gallery has been provided to drain out the water of the house and it will be discharged into soak pit. 5. Feeding places / platforms will be provided at 3 to 4 places near the drinking water points. 6. Food will be provided 2- times a day.
--	--	---

4.5.3 Tiger Safari: -

Cell size (in m)			Area proposed for enclosure	Remarks
L	B	H		
2.75	1.80	3	Tiger safari –	This will be a drive through safari type enclosure in which entry and exit will be

	20ha	<p>through a system of double door gates. The visitor vehicle will be a specially designed bus with adequate protective measures.</p> <p>This vehicle will move on the designated road inside the safari at low speed. The whole area of the safari will be covered by 5cm x 5cm x 8g chain link fence of the height of 5 m and 1.5m inverted at the top at 60°</p> <p><u>Enrichment:</u></p> <ol style="list-style-type: none"> 1. The whole area will have adequate vegetation & sheds. 2. Provision of catch drain of 150 x 150 mm size along the night cell in keeper gallery has been provided to drain out the water of the house and it will be discharged into soak pit. 3. Provision of drinking water has been made at different locations for which small ponds will be created. 4. Feeding places / platforms will be provided at 3 to 4 places near the drinking water points. 5. Doors between interconnecting night cells will be of sliding nature and draw up type doors will open on the back side of the
--	------	--

		<p>animal house. The said doors will be of 750 x 900mm for reducing the weight as well as for easy operation.</p> <p>6. Food will be provided 2- times a day.</p>
--	--	---

4.5.4. Small cats :

The small cats safaris will contain 2♂, 4♀ **Golden Cat**, 2♂, 3♀ **Clouded Leopard**, 2♂, 3♀ **Jungle Cat**, 2♂, 3♀ **Leopard Cat**, 2♂, 3♀ **Small Indian Civet**, 2♂, 3♀ **Large Indian Civet** and 2♂, 3♀ **Marbled Cat**, 2♂, 3♀ **Fishing Cat**, 2♂, 3♀ **Binturong**, 2♂, 3♀ **Common Palm Civet** in 20 ha area. Small cat enclosures are proposed to be constructed for the above mentioned species found in North Bengal.

Cell size (in m)			Area proposed for enclosure	Remarks
L	B	H		
2.00	1.50	2.5	20ha	<p>The small cat enclosures will be an open at the top. There will be a night house on the rear end while the front will have viewing side through chain link fence of 50cm x 50cm x 10g. The height of the fence will be 2.5 to 4mt with inward slant with steel pipe.</p> <p><u>Enrichment:</u></p> <ol style="list-style-type: none"> 1 Trees and logs shall be provided 2 Food will be provided 2- times a day. 3 Adequate shelter will be provided

		<p>4 Provision of catch drain of 150 x 150 mm size along the night cell in keeper gallery has been provided to drain out the water of the house and it will be discharged into soak pit.</p> <p>5. Doors between interconnecting night cells will be of sliding nature and draw up type doors will open on the back side of the animal house. The said doors will be of 750 x 900mm for reducing the weight as well as for easy operation.</p> <p>6 Feeding places / platforms will be provided at 3 to 4 places near the drinking water points.</p>
--	--	--

The small cat enclosures will be separated by green belt and visitor circulation pathway.

4.6. **AVIARIES:**

Aviaries are located at the southern end of the safari behind the tiger safari.

There are seven aviaries as mentioned below in the zoo park of the Safari:-

- | | | |
|---|-----------------------------------|----------|
| 1 | Red Jungle Fowl | : 5♂, 5♀ |
| 2 | Bengal Florican / Black Partridge | : 5♂, 5♀ |
| 3 | Peacock | : 5♂, 5♀ |
| 4 | Grey Horn Bill | : 5♂, 5♀ |
| 5 | Great Pied Horn Bill | : 5♂, 5♀ |
| 6 | Mixed Birds Aviary | |
| | a. Indian Moor Hen | : 5♂, 5♀ |

b. Indian Cormorant	: 5♂, 5♀
c. Open Billed Stork	: 5♂, 5♀
d. White Breasted Water Hen	: 5♂, 5♀
e. Little Egret	: 10 ♂, 10♀
f. Pond Heron	: 5♂, 5♀
g. White Breasted Kingfisher	: 5♂, 5♀
h. Hill Mayans	: 10 ♂, 10♀
i. Rose Ring Parakeet	: 5♂, 5♀
j. Alexandrine Parakeet	: 5♂, 5♀
k. Blossom Headed Parakeet	: 5♂, 5♀
l. Drongo Cuckoo	: 5♂, 5♀
m. Pied Myna	: 5♂, 5♀
n. Spotted Dove	: 5♂, 5♀
o. Indian Ring Dove	: 5♂, 5♀
p. Common Myna	: 5♂, 5♀

7. Birds of Prey Aviary

a) Himalayan Griffin Vulture	: 5♂, 5♀
b) Long Billed Vulture	: 5♂, 5♀
c) Slender-billed vulture	: 5♂, 5♀
d) White Rumped Vulture	: 5♂, 5♀
e) Changeable Hawk Eagle	: 5♂, 5♀
f) Crested Serpent Eagle	: 5♂, 5♀
g) Large Grey Headed Fishing Eagle	: 5♂, 5♀
h) Large Indian Kite/ pariah kite	: 5♂, 5♀

i) Hawk : 5♂, 5♀

j) Bazas : 5♂, 5♀

Sl. No	Proposed Area (sqm)	Height (m)	Remarks
1	Red Jungle Fowl		The total area of 2.5 ha is kept for the development of bird aviaries.
	80	3	The minimum prescribed size by CZA for the outdoor enclosures will be followed as indicated in the table. Some area will be kept as a buffer and for future development.
2	Bengal Florican / Black Partridge		Each aviary will be a covered with wire mesh of size of 1"x1".
	80	3	The viewing will be through toughened glass of size of 3 m x2 m
3	Peacock		<u>Enrichment:</u>
	160	3	(1) Perches of bamboo of varying dia meter (2"-3") will be provided
4	Grey Horn Bill		(2) Small size tree/ bushes will be planted
	80	6	(3) Earthen pots or nest boxes will be kept
5	Great Pied Horn Bill		(4) Nesting material will be provided
	80	6	<u>Enrichment:</u>
6	Mixed Bird Aviary		(1) Shady trees will be provided.
	80	6	(2) Sand beds will be provided
7	Birds of Prey Aviary		(3) Flow of water will be maintained to check over heating in summer
	600	8	

4.7. REPTILE POND

There are two ponds at the south-western side of the safari for keeping Gharial and Crocodile near the pick up point.

Reptile Ponds will consist of 2♂, 3♀ **Gharial**, 2♂, 3♀ **Mugger**.

Area proposed for enclosure		Remarks
There will be no cell; instead a side kraal of about 20 sqm will be developed for Gharial & Mugger.	Gharial – 0.4 ha Mugger – 0.32 ha	The enclosures will be covered by brick wall of 1 m height all around. A water body of about 500 sqm with a depth of 2 m will be developed The rest of the area will have sand and soft soil. There will be an inlet and out let to maintain the water level. There will be a service gate towards the service road in the exhibit

4.8. PROPOSED NB BIODIVERSITY PARK

The Biodiversity park having an area of 15ha occupies between leopard safari and tiger safari. A botanical garden with different species of Angiosperm, Gymnosperm, flowering plants will be created. There will also be Orchidarium, Arboretum, in the park. Small riparian zone along with passing stream in the park will be an additional attraction to the visitors. Lesser cats, different rodents, amphibians and reptiles (snake) and different species of fishes may take shelter in the riparian zone of the pond. Suitable

species of medicinal and butterfly and insect attracting plants will be planted in this park, which will impart on firsthand knowledge and experience of nature to the visitors. As per suitability of natural habitat butterflies and amphibians could also be the part of biodiversity. There is a planning to have an aquarium, amphibian and reptile house (especially for North Bengal Snakes) in this biodiversity Park.

Visitors while walking through the biodiversity park will be interested to observe different enclosures like butterfly park, Herpetological house, Aquarium, Medicinal Garden and Arboretum / Rare & endangered plants.

A. Butterfly Park / lepidopterarium

A facility is specifically intended for the breeding and display of different butterflies with an emphasis on research & education. Habitat development for butterflies includes planting of different host species. Till date more than 50 endangered species of butterflies are recorded in North Bengal. It is proposed to construct butterfly house for different species in such butterfly enclosure, with stock of butterflies from different areas of north Bengal to have a look on their vibrant colors and patterns of the wings, which earned them the fanciful nickname "flying flowers". The structure of the butterfly park will be made in manner where visitors walk inside to experience the beauty and study their behaviour.

They are so graceful and beautiful; the visitors may be enlightened to observe them. The butterfly houses will be open to the public and the visitors may know the value of butterfly by observing their lifecycle in the butterfly parks. The guide will brief the visitors on the following importance / value of butterfly for creates awareness among the visitors:-

- | | |
|--------------------|---------------------|
| 1. Intrinsic value | 4. Scientific value |
| 2. Aesthetic value | 5. Ecosystem value |

3. Educational value

6. Economic value

Butterflies and moths have fascinating life-cycles that can be shown to teach the children about the natural world. Their metamorphosis / transformation from egg to caterpillar and to pupa or chrysalis are one of the wonders of nature. And finally when it leaves the chrysalis it is reborn as a beautiful winged butterfly. They can be shown the butterfly eggs, caterpillars, and chrysalides and identify specific plants that are favored by each species.

Plantation of those species which are preferred by different groups of butterflies and moths will be planted in a manner so that visitors can experience and study the particular group. Such flower garden will be developed and landscaping will be done in such a manner to depict the natural environment in the butterfly house.

After visits of the park, the visitors may spread the message of conserving butterflies. Our message is conserving butterflies will improve our whole environment for wildlife and enrich the lives of people now and in the future.

B. Aquaria

There is a planning to set up fresh water aquaria in the Biodiversity Park for the visitors of the North Bengal Wild Animals Park, Siliguri. 105 nos. of edible fish fauna have been recorded in North Bengal Rivers. Among them Putitor, Boroli, Pithalu, Mourla, Chapchata, Chepti, Khoira, Bamos, Chanda, Bolla, Desh Puthi, Sar Puthi, Tengra, Pabda, Bacha, Telchitta, Taki, etc., may be mentioned. Their populations are rapidly decreasing. These fishes are to be showcased along with fresh water-dwelling plants and animals. Breeding of these fishes are also to be initiated for releasing in the nearby river. Live bearing fish such as mollies and guppies are easily raised in captivity, but regularly breeding species like cichlid, catfish, characins, cyprinids, and killifish are also to be kept

in the aquaria. Colourful tropical fish, different ornamental fishes are also to be kept as exhibits. Goldfish, guppies, and angelfish, invertebrates such as prawns, shrimps, molluscs, crabs, small turtles etc., will also be kept for enriching the aquaria and to simulate a specific natural ecosystem. Plants added to water in the aquaria would give off enough oxygen to support animals.

One International standard Aquarium is proposed to be constructed to showcase the endemic and local variety of fishes, crustaceans, molluscs, turtles etc. There will be a separate section for exotic species of fishes, and other invertebrates in the aquaria.

Aquaria bring aquatic life to the surface and increase public awareness about an important resource on which we all depend. The aquarium is very much popular to the visitors especially for the children. The aquaria may *provide lots of educational opportunities for the visitors as well as lifetime memories for the family*. An aquarium is a fun, educational tool that parents and children can enjoy together. Watching aquatic life has a different tempo to watching animals in a zoo or safari. They will be interested to watch colourful fish swims to look at other fishes; it offers opportunities for the family to have a good time together.

Zoos and aquariums reach to millions of people all over the world and most of them living in urban & city areas and having little or no contact with nature. They come to the zoo or aquarium because they have an interest in animals. They should play an active role in increasing the public and political awareness of the connection between consumption and lifestyle and the survival of species and biological systems.

C. Herpetological Section / Reptile & Amphibian House

There is also a proposal to build one Herpetological Section in the Biodiversity Park to have glimpse of reptilian and amphibian species of North Bengal and to create

inquisitives to the visitors about their morphological identifying characters of different species of Reptile and Amphibia. The house will be constructed as per the design specified by the CZA for display to the visitors.

Among reptilian species, Monitor lizard, Python, Indian Rat Snake, Banded Krait, Common Krait, King Cobra, Russell's viper, Common Green Pit Viper and other species found in North Bengal are to be exhibited for the visitors. There are 83 species of amphibian recorded from the North Bengal. The amphibian house in the Biodiversity Park will be showcased with Himalayan Toad, Common Indian Toad, Indian Bull Frog, Himalaya Sucker Frog, Himalayan Newt, Common Tree Frog, Jordon's Bush Frog, Sikkim's Caecilian, etc.

A number of research and education programmes will also help in spreading of message of wildlife conservation among the visitors. It will attract the scholars, students, academicians to carry on some research works on the exhibited animals. Visitor will be interested to find out the basic morphological differences of different exhibited animals in this Herpetology section.

D. Medicinal Plants Garden.

Some lands are kept for proposed medicinal garden in the Biodiversity Park for planting different medicinal plants which are being used from ancient time for curing our various diseases.

Our forefather used to depend on these medicinal plants. Present day scientists are now realising the importance of our medicinal plants. That's why Ayurvedic science is getting importance now-a-days. National Medicinal Plant Board, GOI suggested planting of different species, suitable for this agro-climatic condition to be planted in the garden

along with the species suggested by Ayurvedic personnel and botanists. Following list suggested by NMPB, GOI

S. No	Species	Botanical name
1	Ashok	<i>Saraca asoca (Roxb.) de Wilde</i>
2	Bach	<i>Acorus calamus Linn.</i>
3	Brahmi	<i>Bacopa monnieri (L.) Pennell</i>
4	Harar	<i>Terminalia chebula Retz.</i>
5	Giloe	<i>Tinospora cordifolia Miers</i>
6	Pippali	<i>Piper longum Linn.</i>
7	Sarpgandha	<i>Rauwolfia serpentina Benth. ex Kurz</i>
8	Ulatkambal	<i>Abroma augusta Linn. f.</i>
9	Amla	<i>Phyllanthus emblica Linn.</i>
10	Arjun	<i>Terminalia arjuna (Roxb.) Wt & Arn</i>
11	Gudmar	<i>Gymnema sylvestre R. Br.</i>
12	Bhumi amalaki	<i>Phyllanthus amarus Schum & Thonn.</i>
13	Kutaj	<i>Holarrhena antidysenterica Wall.</i>
14	Shankhpushpi	<i>Convolvulus microphyllus Sieb ex spreng</i>
15	Shatavari	<i>Asparagus racemosus Willd.</i>

The main objectives of this garden are to conduct research and at the same to educate the visitors on the importance of different medicinal plants available in North Bengal. To visit the garden, the visitors will be well acquainted with different medicinal plants. They will be briefed by the Zoo staff about the importance of these plants for

curing different diseases. Every part of these plants has the medicinal value. They will be aware of conserving these medicinal plants.

In this way our ultimate goal to conserve biodiversity will be achieved by spreading the message of conservations through the visitors of the park.

E. Arboretum / Endangered & Rare plants.

There is a proposal to establish one arboretum – a botanical garden in this park with an aim of conserving native and indigenous tree species. In the park, already there are some tree species viz Tantri (*Dillenia pentagyna*, Roxb.), Chalta (*Dillenia indica*, Linn.), Rudrak (*Elaeocarpus sphaericus*, Schumann., *Elaeocarpus ganitrus*), Bange or Bangekhat (*Glochidion pentagyna*, Roxb.), Timur (*Litsaea cubeba*, Loureiro), Chiwari or Patpate (*Meliosma simplicifolia*, Wall. & Canes).

There are planning to plant more species of RET species suitable for this locality as per list of National Medicinal Plant Board (NMPB, GOI), IUCN & Botany Department, NBU, CU & report of the Research wings of Forest Department will be planted in that arboretum. The arboreta are special places for the cultivation and display of a wide variety of different kinds of trees and shrubs. Some of the wild Fruit trees common in Duars and terai and other area, which are rare now a days to be planted.

Various research and education programme for the visitors and students may be undertaken in this arboretum. There will be different sections for following trees, endangered trees, Bamboos, Canes, Grasses, Shrubs and Herbs. The visitor will have the facility to see Botanical trail, aviary and small cats on foot, for which visitor path has been provided.

4.9. DESCRIPTION OF THE LAYOUT PLAN:

Green buffer area is proposed along boundary of the safari. The green buffer area will vary 50-100 mt taking into consideration the location of the highway, army area,

residential area, villages etc. Necessary landscaping works will be done inside the zoo area, near visitor's facilities & parking area etc.

Around 200 Hac of area is proposed to be used for establishment of different safaris & bio-diversity park. The remaining 97 Hac will be kept as green buffer area. The Army area adjacent to the Park was established in the forest & has lot of greenery. There is no firing range of the Army in the vicinity of this Safari park.

The North Bengal Wild Animal's Park, Siliguri (West Bengal) is a new Park. The site is located between 5th and 7th mile from Siliguri on NH- 31 which goes towards Siliguri / Assam. This Safari Park safari has been proposed to be developed on modern concept of Safari Park – safari management. An area of 297 ha presents thick to sparse vegetation and a number of herbs and shrubs. The layout plan has been drawn on scale 1:2000 with contour interval of 4 m. It includes approach road to the Safari Park, parking area, entrance gate, offices, roads and paths, interpretation centre, animal houses, natural nalahs, veterinary hospital, water works, power station and administrative block.

The layout plan also shows the location of the veterinary hospital, administrative block, service block and visitor amenities. The safari will be encompassed by a boundary wall of 2.5 mt high. The base shall have boulder sausage work of (1.25 x 1.25 x 1.25 mt) with chain links 1.25mt at the top. 4 -5 strands power fencing on the pillar shall be added re-enforcement to control entry of elephant, tiger and leopard from the surrounding forests into the park. Additional 3 strands power fence will be provided in the strategic location to prevent entry of wild animals in to the safari park. Soil conservation works will be taken up for stabilization of the river banks and erosion prone areas. Catch water drains will be constructed for proper flow of rain water and collected for disposal through main drainage.

Elephant Proof Trench (EPT)

The construction of EPT will involve felling of trees. However elephant proof structure will be constructed at certain locations which are frequently visited by wild elephant as well as around the pilkhana. Further, the area experience heavy rainfall and erosion may take place. However, at some locations second layer of energised fencing has been provided in addition to the boundary wall and energised fencing. Alarming system is provided in case of destruction and day and night monitoring system is done all along the boundary along Park boundary to avoid entry of wild animals etc.

Supply of feed and essential items: - For this a service gate has been proposed on the southern fringe. Majority of the services will be under taken through this gate. A service road behind the night houses has been created for unobstructed movement of service vehicle for supply of feed items to animals. The service gate and the network of service roads can be seen in the layout plan. The plan for drainage, garbage, disposal and sewerage water supply and electricity supply to different locations is given in the map.

The layout plan of the North Bengal wild animal safari park, Siliguri is placed at

Annexure-IV

4.10. PROPOSAL FOR ACTIVITIES

The animal enclosures have been divided into following 7 beats for effective care and upkeep of animals.

- (1) Beat no. – 1 – Herbivore safari.
- (2) Beat no. 2 – Bear safari.
- (3) Beat no. 3 – Leopard safari.
- (4) Beat no. 4 – Tiger safari.
- (5) Beat no. 5 – Small cats.

(6) Beat no. 6- Aviaries.

(7) Beat no 7- Gharial, Mugger

There is no place for barred cages to exhibit animals as condemned prisoners or to push them in deep pits and dark holes. The animals will have access of bright sunshine and fresh air. All the safari type enclosures will be open with grasses and trees.

The safari will be encompassed by a boundary wall of 2.5 m boulder sausage work, chain link fencing, with 4- 5 strained power fence over top of it to prevent entry of Tigers, Leopards and animals from the surrounding forests. Day and night patrolling will be done by the staff to monitor the condition and functioning of the the power fence as well as to secure the area from entry of any human being into the safari from outside. Watch tower will be constructed at strategic location for monitoring and protection purpose.

Veterinary hospital, administrative block, service block and visitor amenities are also to be constructed in the location as depicted in the Lay Out Plan.

4.11. PECULIAR PROBLEMS OF THE ZOO, LIKE OFF DISPLAY RESCUE CENTRE ETC

i. Animals rescued from wild can be given shelter for a transitory period, if needed and will be shifted elsewhere or released in nature. For this some standard cages will be erected.

ii. An off-display rescue centre for sick, seized animals is proposed to be erected.

4.12. ANIMAL SECTION:

Animal section is the main section of Safari Park. The importance of a Safari Park depends upon the quality of exhibits rather than the number of species it displays. This section is responsible for the upkeep of animals and their houses so that they get a

hygienic and naturalistic environment.

The animals will be kept in enclosures which provide them adequate space in quality and quantity and satisfy the biological needs of each individual species. Adequate measures will be taken to ensure the safety of animals, caretakers and visitors. Each enclosure will have proper drainage of excess water and arrangements for removal of excreta and residual waste so that a high standard of sanitation and hygiene would be maintained. The animals will be acquired from other zoos or through rescue.

4.12.1. Duties and responsibilities:

- i. To ensure cleanliness and maintenance of enclosures, animal houses and surroundings
- ii. To ensure daily optimum supply of ration and water to animals
- iii. To report and record of health and feeding conditions of animals daily
- iv. To keep liaison with Veterinary section for health problems and treatment of animals
- v. To dispose of carcasses in burial ground along with veterinary staff
- vi. To keep liaison with construction and maintenance section for repairs of damaged enclosures, cages, doors, gates, other structures and miscellaneous works to prevent escape of animals
- vii. To maintain records of all live stock, food distribution and inventories
- viii. To maintain keeper's dairy, animal history card, animal inventory register, daily report etc.

4.12.2 Staff engaged:

Following staff are in this section:

1. Zoo Supervisor	:	1
2. Asstt. Zoo Supervisor	:	1
3. Zoo Keeper	:	10
4. Animal Attendant	:	<u>10</u>

Total: **22 nos**

Allotment of Zoo Keepers as follows:

No. of beats - 7

Beat no. 1 Herbivore safari	- 2no.	
Beat no. 2 Himalayan black bear safari	-2 no.	
Beat no. 3 Leopard safari-	- 2no.	
Beat no. 4 Tiger safari	-2no.	
Beat no. 5 Small cats	}	-2no.
Beat no. 6 Aviaries		

Beat no. 7

Gharial & Mugger

Total - 10nos.

4.13. VETERINARY SECTION

The North Bengal wild animals Safari, Siliguri will have a well equipped hospital. All modern facilities will be made available. A full time veterinarian along with

support staff will be appointed. The hospital will have a clinic with basic facilities for treatment and dressing of animals, standard surgical instruments, diagnostic equipments and dispensary with wide range of drugs. A separate facility will be created for hand rearing baby animals. Proper drainage and ventilation will also be provided.

4.13.1. Duties and responsibilities:

- 1 Inspection of the Safari Park animals, identification of sick animals and treating them.
- 2 To maintain the record of treatment of inpatient and outpatient animals.
- 3 Monitoring of pregnant animals till their successful delivery & post care.
- 4 Formulation of diet and quality control of feed issued to Safari Park animals.
- 5 To follow prophylactic protocol, periodical examination of faecal matter, blood, de- worming, vaccination and disinfection.
- 6 Planning breeding strategy of endangered species and their husbandry.
- 7 To take measures for preventive disease control in the safari.
- 8 Physical and chemical capture of safari animals.
- 9 To check the quality of the food daily.
- 10 To maintain the inventory of the equipments and medicines.
- 11 To guide the rescue operation when needed.

4.13.2 Staff deployed

- | | |
|-----------------------|---|
| 1. Veterinary Officer | 1 |
| 2. Veterinary Asstt. | 1 |
| 3. Attendant | 1 |

Total: 3

4.13.3 Hospital will have following facilities

- (1) A separate operation theatre for surgery and treatment.
- (2) An X-ray unit with dark room.
- (3) A dispensary / pharmacy with storage facility for wide range of medicines.
- (4) A nursery unit for hand rearing baby animals.
- (5) A self contained laboratory for conducting pathological tests.
- (6) Appropriate housing for in-door patients.
- (7) Quarantine / isolation ward.
- (8) Offices, library, record room, toilets.
- (9) Stores and kitchen for animals feeds under treatment

4.13.4 Post mortem room:

- (1) A 12 sqm post mortem room is proposed near veterinary hospital.
- (2) It will have natural light, drainage, wash basin with water point and platform etc.

4.13.5 Quarantine Wards:

- 1 An area of 500 sqm has been kept for quarantine wards.
- 2 Each cell will have light and air exposure.
- 3 Each cell will have provision for medication and temperature monitoring facilities.
- 4 The breakup of the area for different wards is given as under:

4.14. SANITARY SECTION:

It is an important section for the upkeep of Safari Park. The sanitary section will provide clean and pollution free environment. This section will be responsible to remove leftover food, dung, cut grasses, fallen leaves, weeds and other items. All roads, foot-paths, toilets, drinking water points and rain shelters will be cleaned and maintained. Disinfection schedule will be followed round the year.

Provision of STP has been made in the safari area for solid waste disposal. The left over food and other organic materials which are bio-degradable will be used for composting. Details are provided on page no. 39 & 40.

It is proposed to have a separate office with a store room in the composite office building for sanitary section. This composite office will also house animal and horticulture sections.

<i>S. No.</i>	<i>Ward</i>	<i>Name</i>	<i>Area(sqm)</i>
1	Ward-1	Herbivores	150
2	Ward-2	Large Cats	120
3	Ward-3	Bear/Leopard	100
4	Ward-4	Small Cats	80
5	Ward-5	Birds	50

4.14.1 Duties and responsibilities:

- 1 Cleaning of roads, paths, toilets & urinals.
- 2 To remove and disposal of garbage, leftover food, animals waste, bones, fallen leaves, cut grasses, weeds, tobacco pouches and plastic items.
- 3 Regular cleaning of drinking water coolers & tanks.

- 4 To spray malaria oil to check mosquito breeding.
- 5 To control flies in Safari Park safari premises.
- 6 To clean and dusting of all section offices.
- 7 To control rodents by using traps particularly in aviaries and night houses.
- 8 To follow the disinfection schedule for animal enclosures

4.14.2 Staff deployed

- | | |
|--------------------------|----------|
| 1. Asstt. Zoo Supervisor | 1 |
| 2. Sanitation Personnel | <u>6</u> |

Total : 7

4.15. SECURITY SECTION:

This section will be responsible to safe guard safari properties, animals and animal enclosures and to maintain law and order. It will also take care to check thefts, pick pocketing, trespassing, animal escape at night and entry of stray animals in the safari premises.

A security control room will be built at the entrance with a small store, a toilet and rest room.

4.15.1 Duties and responsibilities:

- (1) To patrol safari area day & night.
- (2) To protect Govt. property, animals and visitors.
- (3) To check illicit cutting of trees.
- (4) To maintain law and order at entrance and inside safari area.
- (5) To assist public in lost & found.

- (6) To interact with local police whenever needed.
- (7) To control vandalism, pick pocketing and teasing of animals.
- (8) To frisk visitors at entry point.
- (9) To man service & entry gates.

4.15.2. Staff deployed:

- | | |
|-------------------------------|----|
| 1. Asstt. Security Supervisor | 1 |
| 2. Security Personnels | 12 |
| 3. Gate Keeper | 1 |

Total: 14

4.16. WATER SUPPLY SECTION:

The water will be obtained from the following sources.

- (1) River.
- (2) Bore wells/Wells.
- (3) STP.

Bore wells will be made near botany trail, leopard safari and veterinary hospital. Bore wells of 150 mm dia. and an average depth of 15 – 25 mtr. are proposed to be drilled. Suitable submersible pumps, pumping house and pipelines will be provided on these bores. Water samples of different location of the safari park will be got tested. The report of the sample tested by agency is at **Annexure- V**

The water from bore wells will be collected in two reservoirs of 1 lakh litres capacity each. A water treatment plant will be installed near reservoirs for its treatment before release through over head tank of 50,000 litres capacity.

The river water from the river will be collected behind leopard safari. There will be a pumping station for supplying water to gharial, enclosures of water loving animals and horticulture purpose through pipe lines. A separate pipe line from intake point will also be laid up to reservoirs. The river water will also be treated before its release in the Safari Park.

- The river (Gulma) is flowing by the site which is perennial and the water level in the surrounding area is high. The river will be the major source of water.
- Ample of water is available at a depth of 40-80 ft.
- The water for drinking from all the sources will be filtered and then used for drinking purpose.
- A central Artificial Water Body will be created to cater to animal water requirements, for animal spotting (from Break point) and to act as storage.

4.17. VISITOR AMENITIES:

The North Bengal wild animals Safari, Siliguri is likely to cater about 5 - 6 lakh visitors annually. This will include adult, children, students, scientists, foresters, wild lifers, old, disabled and foreigners. It will be opened on all the days except Monday for the visitors. The following amenities will be developed.

4.18. PARKING:

An area of about 3 ha will be developed for parking of bus, truck, cars, two wheelers and cycles. The parking will be leased out.

4.19. ENTRY PLAZA:

The Entry Plaza will be developed at the entrance near the parking. It will have following facilities:-

1. Entry and exit gate for vehicle with security posts.
2. Information Centre
3. Ticket booking window - 4 (with a provision to increase) with visitor entrance.
4. Cloak room-1
5. Washrooms
6. Security office.
7. Public address system.
8. A ramp

4.20. VISITOR CIRCULATION:

The visitor's circulation is well defined and is from right to left. The visitors enter from national highway side. The entry leads to the interpretation center for orientation. After visiting the interpretation center, the visitors go to pickup point to board the bus. The bus will take the visitors to herbivore, bear, leopard and then tiger safari and finally drop the visitor at the drop point. The visitors who wish to see herbivore safari by way of elephant ride, can avail this facility. For this a separate pickup point has been proposed. A road has also been made to connect botanical trail, aviary and small cats. Visitors can reach these exhibits on foot and will return following the same road. It will take about 4-5 hours to see the whole Safari Park.

4.22 SAFARI TIMING:

- (1.) April to October 9:00 am to 5:00 pm (last ticket to be issued at 4:30 pm)
- (2.) November to March 9:30 am to 4:30 pm (last ticket to be issued at 4:00 pm)

4.22 SAFARI RIDE:

The visitors will be taken in a well protected bus in the safaris against charges which will be decided by the authority concerned. This ride will also be run on contract basis.

4.22.1. Elephant Ride:

It is proposed to arrange elephant ride for the visitors to show herbivore safari. Starting & dropping point will be in the park area and not in the safari area. The necessary charge for this elephant ride will be decided by the authority concerned and will be reviewed from time to time. There will be a separate route path of elephant ride other than vehicle safari route.

4.23. WHEEL CHAIRS:

Two or more wheel chairs will be available at the entrance for the disabled visitors free of charges.

4.24. SITTING BENCHES AND SHELTERS:

About 100 sitting benches and shelters will be provided at different locations for visitors.

4.25. TOILETS AND DRINKING WATER POINTS:

These facilities are proposed to be provided near the following locations:-

- (1) Parking site.
- (2) Break point (Near leopard safari)
- (3) Entrance plaza

4.26. CAFETERIA, KIOSK AND SOUVENIR SHOP:

The visitors will spend 4 - 5 hours to see the whole safari park. They are likely to be tired. These facilities are proposed for their relaxing. The location of these amenities is as under:

- (1) Cafeteria / Kiosk – in the parking area
- (2) Souvenir shop- near the entrance
- (3) Kiosk – at break point (near leopard safari). These will be leased out

4.27. FIRST-AID KIT:

It will be available at the entrance with the security office, main office and safari veterinary hospital.

4.28. DUSTBINS:

About 100 dustbins will be placed at different locations to collect waste and left out.

4.29. WASTE DISPOSAL:

4.29.1 Solid Waste Disposal:

The solid waste of the park will consist of following materials

1. Leftover food.
2. Fecal matter.
3. Fallen leaves.
4. Grasses.
5. Visitors left over.
6. Office waste.

It has been proposed to segregate the non bio-degradable waste. This waste will be disposed off by the authorized outsourced agency at the authorized site. The bio-degradable waste will be used to make manure and the same will be used for horticulture purpose.

4.29.2 Liquid waste disposal (sewage)

1. All of the Waste water and Sewage from the visitor centre, entrance plaza, etc. will be diverted to the STP in the service block.
2. The Liquid waste will be treated in STP and after treatment the treated water will be used for flushing, landscaping and pavement cleaning.
3. Waste from Animal houses, Small cats & Aviary enclosures will be diverted into Septic Tank and then the water would be let into the soak pit.

4.30. DRAINAGE SYSTEM:

The site has topographical features which facilitates the quick water runoff. In the study of data for last 10 years it has been observed that there has been no significant water logging in the site.

4.31. ELECTRICITY SUPPLY SYSTEM:

An electric substation with transformer of capacity of 1000 KW will be installed.

4.32. LAWNS AND GARDEN –LANDSCAPES / HORTICULTURE SECTION:

This section will provide the naturalness in the safari by maintaining natural flora. It will be responsible for all works related to plantation and maintenance of trees, gardens and lawns, etc. This section will also lay emphasis on the plantations of medicinal plants. A plant nursery will also be developed for in house consumption of seedlings for sale. It will also maintain botanical trail. There will be a children park near the food court for outdoor activity and learning through science principles.

Botanical trail:

Green buffer area is proposed along boundary of the safari. The green buffer area will vary 50-100 mt taking into consideration the location of the highway, army area, residential area, villages etc. Necessary landscaping works will be done inside the zoo area, near visitor's facilities & parking area etc.

Around 200 Ha Of area is proposed to be used for establishment of different safaris & bio-diversity Park. The remaining 97 Ha will be kept as green buffer area.

A separate office will be made for horticulture in the composite office as stated before.

4.31.1. Duties and responsibilities:

- 1 To maintain lawns, trees, hedges and plants.
- 2 To remove weeds from lawns and hedges etc.
- 3 To provide water to lawns, and trees.
- 4 To remove and collect all dry leaves from lawns.
- 5 To remove uprooted/dead trees when ever occasion arises.

- 6 To prepare seedlings of plants as per season.
- 7 To collect seeds and keep them for future use.
- 8 To maintain flowering and small plant earthen pots
- 9 To maintain botanical trail.
- 10 To maintain the record of manpower supplied, work under taken, and implements used by outsourcing agency.

4.32.2. Staff deployed:

1. Garden Attendant

6

4.33. CONSTRUCTION AND MAINTENANCE SECTION:

The section will undertake construction of buildings, animal enclosures, roads, path, laying of service lines, over head tank, bore wells, power supply system and maintenance thereof. This section will also take care to protect animals against summer and winter season.

There will be separate office and work shop with adequate space for keeping construction and maintenance material. It will also have enough space for parking of vehicles and keeping of transport cages under shed.

4.33.1 Duties and responsibilities:

- (1) Construction of buildings, animal enclosures, roads, path, and service lines.
- (2) Maintenance of all buildings, animal enclosures, service lines etc.
- (3) Repair and strengthening of steel sections, doors, partitions, up slides etc. by welding.
- (4) Lubrication of sliding/partition/gates/doors/pulleys/pressure pumps etc.

to ensure their proper functioning.

- (5) Dewatering of moats/ponds/wallow pools/water bodies, as and when required.
- (6) Repair pressure pumps/heaters/coolers and other miscellaneous equipments and to maintain them functional.
- (7) Replacement of damaged steel wire ropes of up-slide partitions/gates of animal enclosures.

4.33.2. Staff deployed:

1. Sub Asstt. Engineer	1
2. Attendant	1
Total:	2

4.34. COMMISSARY SECTION (STORE):

A well developed commissary section is proposed to be constructed which will have ample space to store the food as well as maintenance material. It will have a storage room, feeding troughs, storage containers, kitchen, refrigeration room or cold storage for the storage of items like meat, milk, fish, and fruit. It will have a weighing machine, and a platform for loading and unloading store items.

4.34.1. Duties and responsibilities:

- (1) To procure, store and supply diet articles.
- (2) To get the quality of food checked by Veterinary officer daily.
- (3) To prepare daily ration as per schedule for all animals and distribute them.
- (4) To procure maintenance material as required by other sections.
- (5) To keep the record of purchase and disposal of all items.

- (6) To get the store record audited every year.
- (7) To process for the write off of obsolete items.
- (8) Any other item required for running and maintenance of safari.

4.34.2 Staff deployed:

1	Cook/ Attended	-	1
2	Attendant	-	<u>1</u>
Total:			2

4.35. EDUCATION CUM RESEARCH SECTION:

Safari Park is a living educational Institute. It imparts firsthand knowledge and experience of nature to visitors. Safari Park is also a place from where the visitors can get lot of information on wildlife and environment. It will collect data on behaviour, breeding biology, growth, hand rearing and population dynamics.

As per CZA s norms on zoo/safari education, Safari should inspire empathy for wild life, understanding and awareness about need of conservation of natural re-sources besides maintaining ecological balance. A separate education -cum research office with an interpretation centre will be created near the entrance. The interpretation center will have an exhibit area, small auditorium with projector room and a class room. The office will have a office for education-cum research officer and its staff, store, library, toilets and drinking water facilities.

4.35.1. Duties & responsibilities:

- (1) To formulate and execute the educational programs of the safari.
- (2) To conduct guided tour particularly for students from time to time.
- (3) To publish educational material like guide books, guide maps, brochure and

leaf lets.

- (4) To prepare material for animal, directional and utility signages.
- (5) To produce interactive exhibits and signages.
- (6) To organize various awareness and orientation programs from time to time.
- (7) To provide information about wild animals to individual visitor and institutions.
- (8) To help, in preparation of audio visuals on wild animals.
- (9) To help and guide students in preparations of their projects.
- (10) To conduct lectures and presentation for organized groups.
- (11) To look after the safari library.
- (12) To look after public relation work.
- (13) To prepare the annual report of the park.
- (14) To maintain the animal history card as per CZA format
- (15) To maintain the stud book of endangered species.
- (16) To formulate research project and execute them.
- (17) To keep liaison with research institutes.
- (18) To prepare replies to queries of visitors and institutes.
- (19) To publish research papers in the journals.

4.35.2. Staff deployed:

1. Zoo Biologist	1
2. Education Asstt.	1
3. Attendant	1

Total 3

4.36. ADMINISTRATIVE SECTION:

A new administrative section has been proposed which will include the office of Director, Deputy Director, administrative and account staff. A separate room will be created for each officer. The administrative and account sections will be in a hall. This building will have small conference room, store, parking, toilet and drinking water facilities.

Director will be a whole time officer and over all in charge of the Safari Park-safari operation. He will be responsible to the State Govt, West Bengal Zoo Authority and management committee. He will be assisted by the Asstt. Director, Veterinary officer, Curators and other support staff for the smooth running of the Safari Park.

This section will have following two sub sections:-

- (1) Establishment.
- (2) Account section.

4.36.1. Duties and responsibilities of establishment section:

- (1) To process recruitment of staff when required.
- (2) To maintain service book and ACRs of employees.
- (3) To maintain diary and dispatch of letters.
- (4) To invite tender for supply of diet and maintenance articles.
- (5) To invite tender for leasing out parking site, cafeteria, kiosk, safari and elephant ride.
- (6) To process for out sourcing the various works and to engage man power on contract.
- (7) To coordinate various meetings.

- (8) To undertake correspondence with state ministries, WBZA, CZA and other department.
- (9) To process pension cases in time.
- (10) To deal cases of ACP, promotion, disciplinary action and enquiries.
- (11) To process returns well in time.
- (12) To procure furniture, stationary liveries for employees etc.47

4.36.2. Duties and responsibilities of account section:

- (1) To prepare plan & non plan budget and revise estimates.
- (2) To process cases of GPF withdrawal and retirement benefits.
- (3) To prepare regular Pay, Arrear, DA and Bonus, LTC, TA, Medical, Gratuity, Leave encashment bills.
- (4) To issue salary slip, GPF statement and form 16 of Income Tax.
- (5) To process cases of loans for Scooter, Cycle and House building.
- (6) To maintain record of visitor data & revenue collected.
- (7) To submit monthly statement of expenditure to department.
- (8) To process telephone, water and electricity bills.
- (9) To prepare duty roaster for booking counters.
- (10) To maintain cash book, contingency register, cheque and challan registers.
- (11) To deposit cash collected from gate and pickup point.
- (12) To keep record of entry tickets.
- (13) To pass the bills of outsourced agencies.

4.36.3 Staff deployed:

1. Upper Division Clerk	1
2. Lower Division Clerk	1
3. Ticket Collector	1
4. Driver	1
5. Attendant	1

Total 5

Manpower engaged in the North Bengal Wild Animals Park, Siliguri is shown in details at Chapter- V

4.37. JUSTIFICATION FOR THE STAFF AND HIERARCHY:

On the recommendation of Indian board for wildlife in 1973, Govt. of India constituted an expert committee on Safari Parks to suggest administrative pattern for various categories of Safari Parks. This committee suggested that Director should be a whole time officer and should be overall in charge of the Safari Park operation at site. He is responsible to the governing body which may be the government or a departmental head or a management committee. He will have adequate administrative and financial power. There must be a second officer to assist the Director and to function as in- charge in his absence. In a Safari Park, the various branches should be headed by qualified and trained Curators, Veterinarian and Engineers. Separate staff is necessary for construction, maintenance of the buildings and gardens.

CHAPTER – 5

Personnel planning

The North Bengal wild animals Safari park, Siliguri has an area of 297 ha. and is likely to display over 250 animals as per animal collection plan. This safari expects about 5 lakh visitors of different walks of life per year. A hierarchy of category of medium zoo has been proposed. This includes animal, veterinary, sanitary & horticulture, education cum-research, commissary, construction and maintenance sections. Besides animal safaris, park will display small cats, aviary birds, Gharial , Mugger and North Bengal Snakes. In order to maintain the safari and to achieve its objectives, a number of posts have already been created and some of the sections will be out sourced for their operation. The norms of CZA to include technical staff in the personnel management has also been taken care of.

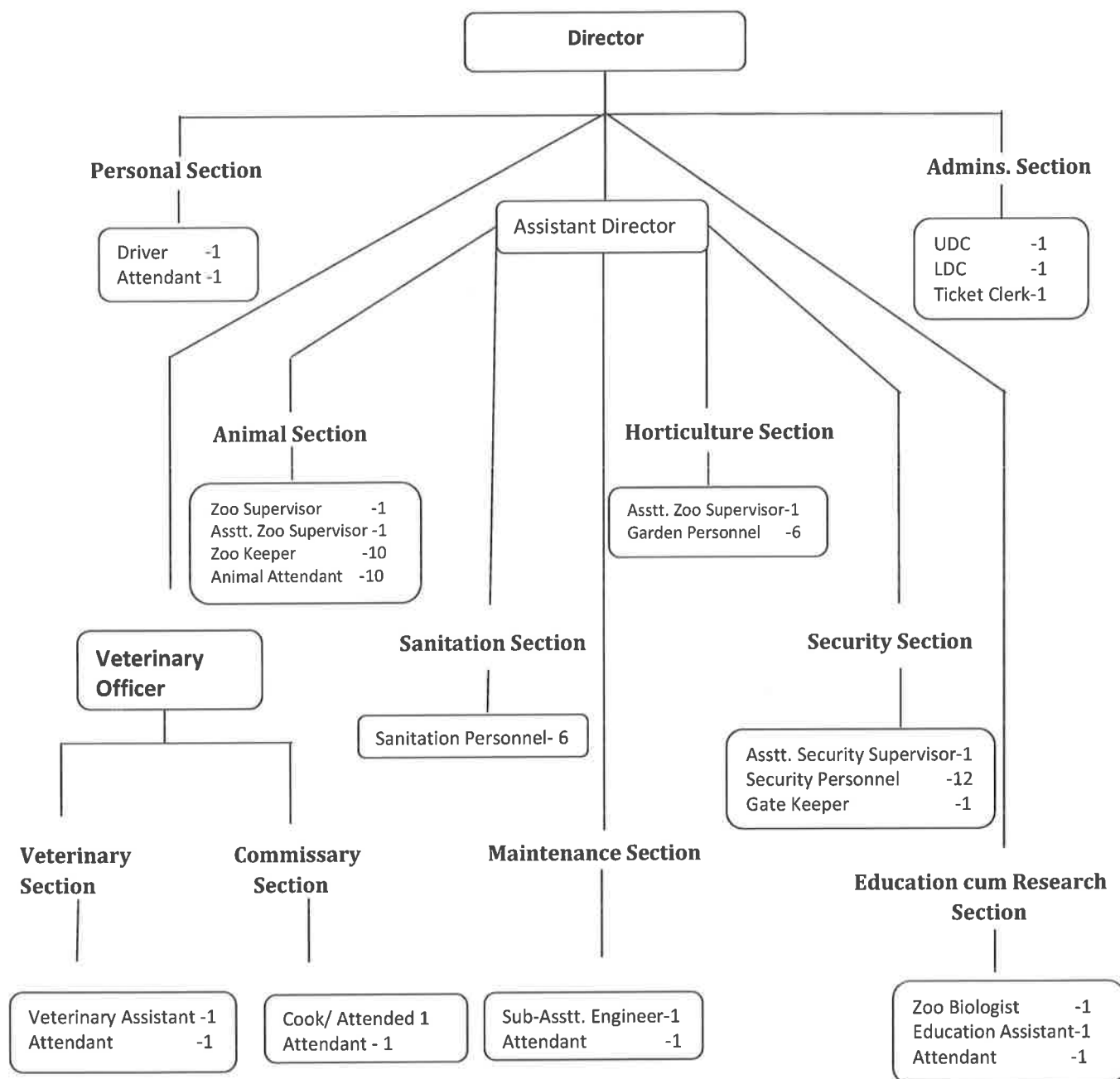
All together 26 nos. of officials on different sections and 40 nos. of personnel (on contract) have already been created to run the safari in a befitting manner.

5.1. Present Staff position :

Staffing pattern have already been provided in the respective section in the **Chapter –IV**. Approved manpower of the North Bengal Wild Animals Park, Siliguri has been shown in **Annexure VII**.

However schematic presentation is given below for a look at a glance:-

Director is the overall in-charge of the Park



5.1.1 1. Director : Pay Scale 15,600-39,100 + 6600 (GP)

2. Assistant Director : Pay Scale 15,600-39,100 + 5400 (GP)

5.2. ANIMAL SECTION

Sl. No.	Post	No. of post	Pay Scale
1	Zoo Supervisor	One	Rs.9,300-34,800 + Rs. 4,200 (GP)
2	Asstt. Zoo Supervisor	One	Rs. 5,200-20,200 + Rs. 2,400 (GP)
3	Zoo Keeper	Ten	Rs. 5,200-20,200 + Rs. 1,600 (GP)
5	Animal Attendant	Ten	On contract

5.3 VETERINARY SECTION

Sl. No.	Post	No. of post	Pay Scale
1	Veterinary Officer	One	Rs. 15,600-39,100+ Rs. 5,400 (GP)
2	Veterinary Asstt.	One	Rs. 5,200- 20,200 + Rs. 2,400 (GP)
3	Attendant	One	On contract

5.4 COMMISSARY SECTION

Sl. No.	Post	No. of post	Pay Scale
1	Cook/ Attended	One	On contract
2	Attendant	One	On contract

5.5 LAWNS AND GARDEN SECTION/ HORTICULTURE SECTION

Sl. No.	Post	No. of post	Pay Scale
1	Asstt. Zoo Supervisor	One	Rs. 5,200- 20,200 + Rs. 2,400 (GP)
2	Sanitation Personnel	Six	On contract

5.6 SECURITY SECTION

Sl. No.	Post	No. of post	Pay Scale
1	Asst. Security Supervisor	One	Rs. 5,200- 20,200 + Rs. 2,400 (GP)
2	Gate Keeper	one	Rs. 5,200- 20,200 + Rs. 2,400 (GP)
3	Security Personnel	Twelve	On contract

5.7 SANITATION SECTION

Sl. No.	Post	No. of post	Pay Scale
1	Garden Personnel	Six	On contract

5.8 ADMINISTRATION & ACCOUNTS SECTION

Sl. No.	Post	No. of post	Pay Scale
1	Upper Division Clerk	One	Rs. 5,200 – 20,200+ Rs. 2,400(GP)
2	Lower Division Clerk	One	Rs. 5,200 – 20,200+ Rs. 2,000(GP)
3	Ticket Clerk	One	Rs. 5,200 – 20,200+ Rs. 1,600(GP))

5.9 MAINTENANCE SECTION:

Sl. No.	Post	No. of post	Pay Scale
1	Sub Asstt. Engineer	One	Rs. 5,200-20,200 + Rs. 2,400 (GP)
2	Attendant	One	On contract

5.10 EDUCATION CUM RESEARCH SECTION

Sl. No.	Post	No. of post	Pay Scale
1	Zoo Biologist	One	Rs.9,300-34,800 + Rs. 4,200 (GP)
2	Education Asstt.	One	Rs.5,200 – 20,200 +Rs. 2,400 (GP)
3	Attendant	One	On contract

5.11 PERSONAL SECTION

Sl. No.	Post	No. of post	Pay Scale
1	Driver	One	Rs.5,200 –20,200+ Rs. 2,000(GP)
2	Attendant	One	On contract

5.12 OUTSOURCING:

The following services will be outsourced

1. Sanitation: (Cleaning and sweeping of roads path office buildings, cleaning of toilets and water points, collection of garbage, leftover, dry leaves, grasses and their disposal, cleaning benches, shelter and signages, mosquito, rodent and fly control and any other sanitation works).
2. Horticulture: (Development and maintenance of lawns, landscaping, plantation and nursery, pruning and cleaning of hedges, trees, preparation and maintenance of earthen pots, watering, sprinkling and manuring of lawns, hedges, trees and seedlings, collection of seeds, preparation of manure and other horticulture works).
3. Security: (Patrolling of safari area, maintenance of law and order, frisking,

control of entry of stray animals, duty at office and gates and other security related works).

4. Cafeteria, kiosk and souvenir shop – on lease.
5. Elephant ride – on lease
6. Operation of Safaris ride– on lease.
7. Parking – on lease.
8. Cloak room – on lease.

5.13 MANPOWER ON CONTRACT:

Lab. technician, x-ray technician, compounder, computer operators, store clerk, cook cum food distributors, Truck driver, drivers, attendants, field assistants, peons, electrician, black smith / welder, plumber, mason, carpenter, painter, pump driver, library.

CHAPTER 6

Disaster Management Plan

6.1. INTRODUCTION:

There are many threatening conditions that may require a rapid and organized response to minimize injury to people and animals or damage to facilities. Severe weather such as flooding, earthquakes, drought, severe cold and fires not only can severely damage the Safari Park, but also will do serious damage to the local community. Resources and equipment to clean up after catastrophic incidences will be directed to the community as a whole, and the Safari Park will be a low priority unless it presence the threat to the community. Portable generators, chain saws, gasoline, fresh water and an adequate supply of food stuffs should be maintained by Safari Park at all times. Staff may be needed around the clock to deal with problems occurring during severe weather. Normal access to the Safari Park may be limited or cut off due to flooding, downed trees or damaged roadways.

6.2. FIRE:

Fire in an animal facility requires quick thinking and discretionary judgment on the part of the employee discovering the problem. The fire department should be called immediately and directed to Safari Park entrance nearest the fire that allows the passage of its vehicle. The electrician should also notify appropriate Safari Park personnel to assist at the scene. The public should be evacuated from the area, if the fire is within an animal facility, attempts should be made to remove the animals threatened by the fire. If possible employees should attempt to extinguish the fire with a

fire extinguisher. Circuit breakers to affected area should be turned off. Water pipelines will also be used.

6.3. BOMB THREAT:

Bomb threats should be immediately referred to the law enforcement agency having jurisdiction. Generally, in a bomb threat emergency, Safari Park staff should follow the same evacuation procedure as for a fire, except all radio communications in the area should cease immediately. Visitors overhearing conversation concerning a bomb threat could panic, creating yet another problem.

6.4 FLOODS:

The Safari Park will have contingency plan for dealing with exigency associated with flooding. The contingency plan will envisage the cleaning and sanitizing the food items to eliminate the pathogens. Furthermore, the food items will be stored above ground and the storage will have sufficient ventilation and sunlight. Similarly, preventive measures will be taken to cope up with large scale contamination of the drinking water supply by identifying alternative sources of water and mobilizing water tankers.

6.5 CYCLONE SITUATION:

Like fire, cyclone may cause sort of devastation at the North Bengal Wild Animal Prk, Siliguri . There are a lot of big trees in the Park and these trees or their branches may fall on the Safari enclosures or may block the road due to heavy cyclone. The disaster management team of Siliguri is available to tackle the situation in case of exigency.

6.6 LAW AND ORDER BREAK DOWN / CIVIL DISTURBANCES:

During civil disturbances, it is very important that arrangements may be made to send the Safari Park visitors and the staff safely to safer areas. As the Safari Park is visited, largely by women and children evacuating them to safe areas becomes more imminent as panic may result in further injuries if people attempt to evacuate in a disorganized manner.

The Sadar Police Station is located very close to the Park. In case of emergency or if situation goes beyond control, authority of Sadar Police Station is contacted to take appropriate steps against any outbreak of law and order situation.

6.7 FEED SUPPLY:

Storage of feeding materials is to be made available to mitigate the need in any awkward situation like sudden bandh, strike, road blockade etc. Supply of perishable materials like meat, fish etc. do not hamper as the contact with the suppliers of such materials is to be made in that manner. However a proposal has been made in this Master Plan to construct commissary / store with all modern facilities to keep the perishable materials especially for the carnivorous animals.

6.8. FOR WARNING PEOPLE ABOUT THE EMERGENCIES:

To address the visiting public during emergencies, the North Bengal Wild Animals Park shall have its own alarm system at the entrance; public address system and enough walkie talkies for effective communications.

6.9. LOCAL RESPONSE CAPABILITIES:

North Bengal Wild Animals Park shall have the contact numbers of the nearest police station, fire and rescue service station and the nearest Government hospital to deal with any emergencies

CHAPTER 7

Contingency plan

It is very much needed by the Safari Parks that they should have a well-documented technical contingency plans for specific and high priority animal diseases. Apart from it every Safari Park should prepare a resource and financial plans too for dealing with emergency situations as it is being practiced in all similar institutions.

7.1. ESCAPE OF ANIMALS FROM ENCLOSURE:

As the animal enclosures at the North Bengal Wild Animals Park shall be protected by a compound wall of about 8-10 feet, there shall be no chance of animals escaping from them. However the Safari Park authorities shall conduct detailed patrolling inside and outside of the Safari Park periphery and the enclosures therein to avoid any such mishaps. The keepers of each and every enclosure thoroughly check the public exhibit areas, fences, night shelter rooms and service areas before releasing the animals in the day exhibit and after bringing them back to the night shelter. Public safety shall be on highest the priority; otherwise the damage caused by the escaped animals will be immense, in terms of the injuries/fatalities done to the Safari Park guests/staff of the Safari Park by the escaped animals and in terms of possible loss of the wild animal.

All the animal keepers shall be sensitized about the issue of animal escapes during their animal keepers training programmes and often during interactions with the technical staffs of the Safari Park.

The trees around the enclosures are trimmed to keep them in shape and to avoid falling of branches in to the exhibit which may serve as a escape route for the animals,

thus the same should be monitored on regular basis and shall be trimmed.

Water in the wet moated enclosures is maintained to a level so that the animals housed in these wet moats can't cross the barrier.

The gates and windows are painted once in a year to avoid rusting of the same. Barriers are designed, constructed and maintained to contain animals within enclosures.

Gates and doors to enclosures are strong and effective in containing the animals. Gates ,doors and standoff barrier to animal enclosures where the public are admitted, or are designed , constructed and maintained so as not to trap or otherwise injure visitors, particularly children or those with disabilities.

7.2. MONKEY AND DOG MENACE:

7.2.1 Monkey menace

Monkeys in Safari Park pose a great threat not only to the visitors but also to the animal collections of the Safari Park. These monkeys may carry various life threatening diseases like T.B.

Availability of abundant food in open areas of the Safari park attracts the monkeys into it. Monkeys in Safari Parks get their food from the fruiting trees and sometimes they share the food given to the animal collections. The visitors of the Safari Park sometimes feed the monkeys also.

For controlling the monkey menace the following actions are taken

- Visitors are not allowed to feed the monkeys
- Animal feeding should be done in the closed kraals.
- The monkeys are captured and vasectomy and tubectomy are performed and then released back to check their increase in population.

7.2.2 Controlling Dogs

Even though a boundary wall shall guard North Bengal Wild Animals Park, sometimes the dogs can enter the Safari Park. Dogs that enter the Safari Park can cause havoc among the free ranging animals of the Safari Park and can cause deaths among them. And if they happen to enter the enclosures of deer family it will result in heavy losses of Safari Park animals.

For controlling the Dog menace within the Safari Parks the following measures are undertaken.

- The boundary wall is checked periodically
- The watchmen keep a look out for the stray dogs
- Dogs that enter the Safari Park are captured and released or handed over to animal welfare organizations for rehabilitation.
- The main gates shall be guarded by staffs of Safari Park.

The leftover meat should be kept in closed bins and properly disposed

7.3. ARRANGEMENT OF FOOD IN CASE OF STRIKE (NON-SUPPLY OF CONTRACTOR)

The supply of food and feed for the animals may be affected by public strikes, vehicle breakdown, non-supply of the contractor, natural calamities...etc. In these circumstances, it is essential to get the required feed items to be fed.

- The store of Safari Park shall have the capacity to store non-perishable feed for a period of three months. The factor to be considered here is that, if the feed is stored for more than a month, insect pests and rodents may destroy the quality of feed.
- For perishable feed items, Safari Park shall have a cold storage unit having

two tones capacity and can accommodate feed required for a period of one week.

7.4 SNAKE BITE

- Enough anti-snake venom is stocked in the Safari Park veterinary hospital and will be used in case of any eventuality.
- Vehicles are readily available to transport the victim to the nearest hospital for proper treatment and care.

7.5 VISITOR GETTING INJURED/ VISITOR FALLING INSIDE THE ENCLOSURE

VISITORS GETTING INJURED:

- First aid boxes are kept ready in important points of the Safari Park like entrance complex, Battery operated vehicle counter, Safari Park Veterinary Hospital and office of the Forest Range Officers inside the Safari Park.
- First aid boxes are also available in the safari vehicles.
- Walkie talkies are also provided to the drivers of the vehicles and Safari Park staffs for easy and quick communication.
- Vehicles are readily available to transport the victim to the nearest hospital for proper treatment and care.

7.6 VISITOR FALLING INSIDE THE ENCLOSURE:

- Ropes, ladders, nets are kept ready in the respective offices of the Range officers.
- Once the information is passed to the Range officer, he will depute a team of skilled animal keepers to rescue the victim.
- The animals in the enclosures will be brought back to the night shelter to

facilitate the operation.

- Sometimes the animals may have to be chemically immobilized to avoid any injury to the fallen victim or to the animal.

7.7 **FIGHTING AMONG ANIMALS :**

Every effort will be made to separate the fighting animals without causing serious injuries. The fighting animals will be driven back to the night shelter and kraals (herbivores) to avoid further fighting. Many a times fight occurs during breeding season and the animals are watched carefully to avoid fight and if any fight happens, they will be separated. In Felids only those animals that are compatible will be released in the public exhibit. If needed, the animals will be chemically immobilized and to bring them back to the night shelter.

7.8 **EPIDEMICS :**

During breaking out of any epidemics elsewhere in the district or in the state, precautionary measures as far as practicable are taken to keep the animals well. However, some vector borne diseases like *Trypanosomiasis* may occur and turn into epidemic, if prophylactic measures are not administered. Chemo-prophylactic measures against *Trypanosomiasis* are being carried out twice in a year as routine practice on advice of the Veterinary Doctor.

Moreover, post-mortem examination of the dead animal would be carried out to ascertain the disease and the pathological materials would be sent to the diagnostic laboratory.

7.9 BREAKDOWN OF POWER SUPPLY:

The North Bengal Wild Animals Park shall have a 80 KW power generators and fuel for the same to run a minimum of 24 hours is kept in stock. The generator will be used to supply power for the entrance complex, stores, hospital, office and exhibits that require continuous power supply.

7.10 FIRST-AID:

Providing first aid for the needy people is very important, for this following points are to be kept in mind:-

- First-aid equipment is readily accessible on the Safari Park premises.
- First aid points are adequately signed.
- An adequate number of staff trained in first-aid is available during the Safari Park's normal operating hours
- Written instructions are provided for staff in the provision of health care and the procedures to be followed in the event of an incident involving any venomous animal and a visitor or staff member. These instructions include immediate action to be taken and required information on a pre-prepared form for forwarding to the local hospital which would include:
 - The nature of the bite or sting and the species inflicting it (if the species is known);
 - The specification, for cross-reference purposes, of the anti-venom which accompanies the patient;
 - The telephone number of the Safari Park and of an appropriate senior staff member;

- Details of the vet or any staff involved in handling venomous species

7.11 FOR WARNING PEOPLE ABOUT THE EMERGENCIES :

The following equipments shall be made available at the Safari Park for any emergencies to warn the public.

Sl. No	Minimal Requirement
1	Alarm systems
2	Public address system
3	Radio communications (walkie talkie)

7.12. BREAKDOWN OF SAFARI VEHICLES:

The North Bengal Wild Animals Park shall keep and use the high quality vehicles which are noiseless and safe for animal as well as for visitors. In case if there is breakdown of safari vehicle which is carrying the visitors to the Animal Safaris, there shall be two numbers of standby vehicles shall be available 24 hrs to meet such emergencies and for the safety of visitors. These vehicles shall also be designed in such way that at no point of time animals shall be able to harm the visitors as well the staff, which are involved in the bus management including Bus Driver, Bus Conductor as well Safari Guide.

CHAPTER 8

Capacity Building

Skilled and knowledgeable personnel are essential to maintain and up-keep of Safari Park and Wild Animal Safaris. As time changes the new challenges will emerge and the staff is required to upgrade their skills and potential to handle any eventualities. Capacity Building of different category of office staff and frontline personnel is very essential for better care of animals, providing better nature education and smooth function of the Safari Park/safari park.

8.1 IN-HOUSE TRAINING:

A cursory look at the history and growth of Safari Park does indicate the efficient functioning of the Safari Park with available competent and experience staff. Skills acquired are getting transferred to next generation. Documentation and regular demonstration of the skills and knowledge acquired has to be done on regular basis. Therefore it is proposed to organize training sessions with experienced people for the benefit of youngsters. A group of youngsters would be attached to such senior staff for some time, so that all the fine skills & nuances of animal handling and care could be learnt "on job". Also, working in groups fosters team spirit and brings out the best of the ordinary, which is the modus operandi of modern corporate work.

8.2 TO ENCOURAGE SPECIALIZATION AND INTERACTION WITH RETIRED STAFF:

Tapping the experience of skilled and retired personnel is advantageous to maintain the Safari Park in good conditions. By virtue of spending lifetime in animal handling and care, some would develop finite & highly special knowledge about

particular animal with respect to behaviour and breeding ability. Safari Park must tap this knowledge and encourage willing personnel among the existing staff to acquire and get expertise in particular group of animal species. It is desirable to elicit the preferences of each person, and assign jobs to attain specialization in the field. In this background, it is planned to conduct interactive sessions to select staff with notable retired staff in Animal Keeping, Gardening Security, Workshop and Veterinary care.

8.3 REWARDS TO STAFF MEMBERS:

Motivation is important to sustain the interest of staff members. Therefore, the Safari Park shall introduce rewards to staff members recognizing their service for exemplary services. Cash awards may also be given to the animal keepers, gardeners and other staff with appreciation certificate. Further it is also proposed to institute awards in on annual basis to the best outstanding contributor, best animal keeper, best gardener and special award respectively.

1. North Bengal Animal Safari Memorial Award
2. Chairman, West Bengal Zoo Authority Award
3. Member Secretary, West Bengal Zoo Authority Award
4. Safari/Safari Park Director Award

8.4 KEEPERS TRAINING PROGRAMME:

The North Bengal Wild Animals Park shall organize keepers training programme time to time to upgrade their knowledge in the scientific management of Safari Park. The themes of the training may included crisis management and Safari Park emergencies, enrichment, management of birds. The keepers shall be trained to entrust them with higher responsibility and incentives.

8.5 ADMINISTRATIVE TRAINING:

The personnel working in administration section in the Safari Park shall be sent for training to improve their skills. Normally after initial recruitment, they will be working continuously without any opportunity to enhance their skills. Their talents need to be recognized and encouraged for exposure training for the benefit of the Safari Park.

8.6 MIDDLE LEVEL, TOP LEVEL TRAINING ON SAFARI PARK MANAGEMENT:

The Wildlife Institute of India and the Central Zoo Authority regularly conduct special and focused training and workshops on different aspects of wild life management and policy. Participation of top level management of Safari Park is must and essential to upgrade their knowledge and bring changes and adopt newer techniques as enunciated in national Safari Park policies and rules. Regular interaction and opportunity to visit other Safari Parks would help to acquire suitable animals, enrichment of enclosure and other aspects of Safari Park management such as crowd management and initiation of better visitor facilities etc. it also provides an opportunity to interact with many experts in the field, who shall participate as faculty in the training programme. The Safari Park shall take the benefit of the training to have trained officers in the management for better results.

8.7 TRAINING TO THE EXECUTIVE DIRECTOR:

Government should post an officer to work as the Executive Director for at least 5 years and he should be exposed for all the training at least in 2 foreign countries viz. Durrell Wildlife Preservation Trust and in Smithsonian Institute. He should also be sent to all the Safari Parks to gain experience and to run the Safari Park on scientific lines.

8.8 SAFARI PARK VETS TRAINING:

The works of the Safari Park vets are very important from the point of view of the healthcare management of animals. As the Safari Park shall house valuable animals and failure to diagnose and able to provide treatment in time may lose the valuable animals.

8.9 SAFARI PARK EDUCATORS TRAINING:

As conservation education is one of the fundamental objectives of Safari Park, the Education officer shall be trained properly to organize training programme for the students, NGO's and Safari Park.

8.10 SAFARI PARK VOLUNTEERS TRAINING:

The volunteers should be given orientation training regularly, so that they can assist the Safari Park management in due necessities.

8.11. REGIONAL COMMITTEE OF EXPERTS:

A Regional committee of experts constituting leading veterinarians should be nominated to train Safari Park vets and to assist in handling the case as and when required.

As the staffs get older, they may not be in a position to carry out their assigned function. They are to be assessed and evaluated regularly and jobs based on their mental and physical capacity may be assigned to them for optimum efficiency in work. The staff has to be protected from exposure to risks in the course of their duty.

The up gradation of the knowledge and skill of the staff is a continuous process. They must get opportunity to know and understand the new methods, technologies and findings regarding the management of animals.

During the course of time the training needs of the different category of staff shall be assessed. Education and skill development module for each category shall be designed and agency/organization shall be identified for up gradation of their skill and knowledge. The exchange programme between Safari Parks and other Safari Parks shall be encouraged to give them exposure about the new techniques and management skills in vogue in various Safari Parks of the country.

CHAPTER 9

E-Governance

The concept of e-governance is now a reality. Present, is the age of information and efficiency of organization depends upon its Information System. It not only helps managers at various levels in organization but also helps in dissemination of information to the needful. In this, the core strategy is to move ahead in a systematic manner, and the approach should be to achieve the success step by step ensuring convenience, efficiency, transparency and reliability.

At North Bengal Wild Animals Park (NBWAP) the following will be the areas, which will generate the need for establishment of E-governance:

- i) Retrieval of Information with respect to following:
- ii) Repetitive processing of information manually
- iii) Delays in transfer of information
- iv) Erratic reporting of information
- v) Lack of standard formats
- vi) Non compliance of the schedules.

While devising the programme at NBWAP, following thrust areas will be given special attention:

- i) Management aspects related to protection including monitoring of health of the animals kept at NBWAP.
- ii) Information related to establishment matters including deployment of staff.
- iii) Resource inventory including animals housed at NBWAP and development works.

- iv) Management planning and perspective planning.
- v) General Periodic returns.
- vi) Annual Plan, Budgeting, Monitoring & Evaluation.
- vii) Resource inventory of assets and other equipment.
- viii) Tourism activities.
- ix) Documentation of resources.
- x) Environment awareness and Education Programmes.
- xi) Inventory and information related to inhabitants around the park.
- xii) Information relating to feed and fodder, history cards and animal transfers.

To establish and implement the programme functioning smoothly, the action plan will include:

- i) Identification of Information needs at different levels.
- ii) The data source will be identified.
- iii) Standardized format for collecting and recording data will be finalized.
- iv) Communication Network for information transfer and feedback will be established.
- v) Periodicity of data input and transmission of information will be standardized.
- vi) Formats for reporting will be finalized as per the needs of different levels.
- vii) Safari Notebooks at NBWAP are to be maintained regularly. It is expected that happenings in the Safari should be recorded in these books by care takers, Veterinary Doctor & senior management personals respectively.
- viii) Record of vandalism cases or any other act not commensurate with provisions of Recognition of Zoo Rules, 1992 and Wildlife (Protection) Act, 1972 should be maintained at management level.

- ix) Computer based framework will be used for inventory and management purposes including monitoring and evaluation.
- x) Efficacy of system will be periodically reviewed and the necessary alterations in the system will be made as per the requirement.

While designing the MIS following steps should be taken into consideration by the management:

- i) Basic character of data collected at field level should remain the same.
- ii) Repetition of items of input information should be avoided.
- iii) Format of output data should be kept similar as far as possible.
- iv) Datas should be easily accessible.
- v) The programme is to be improved according to needs.

Besides, a website is to be created and should be updated frequently and important events will be publicized among the people to generate awareness. Visitors will be provided with the facility to book their tickets using website (e-ticketing).

Staff involved in management of Safari Park should be provided with smart I-cards in which their personal details will be stored. The profile of the staff should be kept and database should be used for future management.

Closed circuit television sets will be installed in strategic locations like entrance, parking, stores, hospital and few animal enclosures to monitor the visiting public and the activity of animals and to avoid vandalism. The activities will be monitored at management level.

All the computers in the Safari Park will be networked to form LAN and internet connection will be given so that the documents can be accessed from any computer.

The dedicated website of NBWAP will be created to provide details. Important

events will be published for the public to create awareness.

Visitors can book their entry tickets and BOV tickets from their home using NBWAP website (e-ticketing).

The staffs of the Safari Park will be given smart identity card in which his personal details will be stored and the same card will be used to monitor his time of entry and exit. The profiles of the staff will be kept and the database will be used for future management plans.

The ticket vending machines will be linked to the LAN and the details of the visitation will be monitored by the Director/Curator of North Bengal Wild Animals Park, Siliguri.

CHAPTER 10

Broad Budget Analysis

A. Year wise Budget Estimate

Annexure- VI (A)

B. Year wise Operational Cost

Annexure- VI (B)

Annexure – I

FLORA OF PARK

Baikunthapur Division has got forest consisting of diversified floral composition. The blank areas within the forest or degraded patches are regenerated artificially with miscellaneous species. All the diverse species has got good luxuriant growth.

The following list shows the existence of species found in Baikunthapur Division and near about places.

A. TREES

Vernacular or Common Names	Botanical Name
Akhane	<i>Alangium chinensis</i> (Lour),Rehder Syn.
Am	<i>Mangifera indica</i> , Linn.
Amala	<i>Emblica officinalis</i> , Gaertn. Syn.
Amaro	<i>Spondias pinnata</i> , Kurz, Syn./ Willd.
Ambake or Amboke	<i>Syzygium formosum</i> , Wall.
Amloki	<i>Emblica officinalis</i>
Ankhataruwa	<i>Sapium baccatum</i> . Roxb
Arjun	<i>Terminalia arjuna</i> , Bedd.
Atta, Sarifa	<i>Annona squamosa</i>
Bahera	<i>Terminalia belerica</i> , Roxb.
Bahera	<i>Terminalia belirica</i> .
Bais	<i>Salix tetrasperma</i> , Roxb.
Bandre or Gante or Rampal	<i>Gynocardia adorata</i> , R.Br.
Bange or Bangekhat	<i>Glochidion lanceolarium</i> , Roxb.
Bankathal	<i>Artocarpus heterophyllus</i> , Lamarck.

Bara nimbu, Jangli nimbu	<i>Citrus medica</i> , L. Dz.
Barahar	<i>Artocarpus lakoocha</i> .
Barkunle	<i>Casearia graveolens</i> , Roxb.
Bat	<i>Ficus bengalensis</i> .
Benteak	<i>Lagerstroemia flos-reginae</i> . Retz.
Bhadrase	<i>Elaeocarpus lanceaefolius</i> . Roxb.
Bhalayo	<i>Semecarpus anacardium</i> , Linn.
Bhalukath, Hare	<i>Talauma hodgsoni</i> , Hk.f. & T.
Bohori	<i>Cordia oblique</i> .
Boro bans	<i>Bambusa balcooa</i> , Roxb
Chalta	<i>Dillenia indica</i> , Linn
Champ, Gogey	<i>Michelia velutina</i> , DC.
Champ, Tite	<i>Michelia montana</i> , Blume
Champa, Champ	<i>Michelia champaca</i> , Linn
Chapalish	<i>Artocarpus chaplasha</i> , Roxb.
Chatiwan	<i>Alstonia scholaris</i> , R. Br
Chikrase	<i>Chukrasia tabularis</i> , Adr. Juss.
Chilaune	<i>Schima wallichii</i> , Choisy.
Chipe Quail	<i>Grewia serrulata</i> , DC.
Chiple/Chiplekath	<i>Crataeva religiosa</i> , For.f.agg.
Chiwari or Patpate	<i>Meliosma simplicifolia</i> . Wall.
Dabdabe	<i>Garuga pinnata</i> , Roxb.
Dhauli	<i>Ficus bengalensis</i> .
Dhudilo	<i>Ficus nemoralis</i> , Wall.
Dumur	<i>Ficus racemosa</i> , L
Dung Kung	<i>Podocarpus neriifolia</i> , Don.

Gamar	<i>Gmelina arborea</i> , Linn.
Gayo	<i>Bridelia retusa</i> , Sprengel
Gineri	<i>Premna bengalensis</i> , C.B.C.
Gobre	<i>Echinocarpus sterculiacea</i> , Benth.
Gogun	<i>Saurauja roxburghii</i> , Wall
Gokul	<i>Ailanthus grandis</i> , Prain
Gokul dhup	<i>Canarium strictum</i> , Roxb.
Gueylo	<i>Callicarpa arborea</i> , Roxb
Haldu or Karam	<i>Haldina cordifolia</i> , Roxb.
Haritaki, Harra	<i>Terminalia chebula</i> , Retz
Hatipaile	<i>Pterospermum acerifolium</i> , Willd.
Hatisura	<i>Heliotropium indicum</i> , L.
Hukuse	<i>Pterygota</i> sp.
Jalpai	<i>Elaeocarpus floribundus</i> , Blume
Jaman or Jamuna or Jam	<i>Syzygium cumini</i> , (Linn) Skeels.
Jaatha bans	<i>Bambusa tuldo</i> , Roxb
Jarul	<i>Lagerstroemia hirsute</i> , Lamarck
Jhankrikath	<i>Phoebe lanceolata</i> , Nees.
Jhingini	<i>Eurya japonica</i> , Thumb.
Jia, Jeol or Halnore	<i>Lanea coromandelica</i> , (Houtt.) Merr
Kabra	<i>Ficus benamina</i> , L.
Kadam	<i>Anthocephalus cadamba</i> , Miq.
Kainjal	<i>Bischofia javanica</i> , Bl
Kalikath	<i>Cephalanthus occidentalis</i> , Linn.
Kanchan	<i>Bauhinia purpuree</i>
Kaphal	<i>Garcinia cowa</i> , Choisy.

Katus	<i>Castanopsis hystrix</i> , A. DC.
Kawla	<i>Persea gamblei</i> , Hook.f.
Khair	<i>Acacia catechu</i> , Willd.
Khamari/Gomori	<i>Gmelina arborea</i> , Linn.
Khanakpa	<i>Evodia fraxinifolium</i> , (Hook) Hartley.
Khanium	<i>Ficus cunia</i> , Ham.
Khanium,Jog Dumur	<i>Ficus semicordata</i> , J.E.Smith.
Kharane, Kholme	<i>Symplocus cochinchinensis</i> , Loureiro.
Khari	<i>Celtis tetrandra</i> , Roxb.
Khirra, Kurchi	<i>Holarrhena pubescens</i> , Buchanan Hamilton.
Khorsane	<i>Neocinnamomum caudatum</i> , Nees. Merrill.
Khutii	<i>Polyalthia simiarum</i> , Hook.f.& Thomson
Kimbu	<i>Morus macroura</i> , Miquel
Koksa	<i>Ficus hispida</i> , Linn.
Kuail	<i>Trema tomentosa</i> , Roxb.
Kubinde, Pichala	<i>Kydia calycina</i> , Roxb.
Kumbhi	<i>Careya arborea</i> , Roxb.
Kusum	<i>Baccauriamiflora</i> , Loureiro.
Kutmero	<i>Litsea monopetala</i> , Roxb.
Kyamuna	<i>Olea dioica</i> , Roxb.
Labsi	<i>Poupartia axillaries</i> , Roxb.
Lahasune	<i>Aphanamixis polystachya</i> , Wall Parker.
Lali	<i>Amoora spectabilis</i> , Miquel Jain & Bannet.
Lampate	<i>Duabanga sonneratioides</i> , Ham.
Lapche Kawla	<i>Persea fructifera</i> , Kostermans.
Lathar	<i>Artocarpus chaplasha</i> , Roxb.

Latikaram	<i>Hymenodictyon, oxixense</i> , Roxb.
Latikath	<i>Glochidion thomsonii</i> , Hk. F.
Lohakat	<i>Xylia dolabriformis</i>
Maina	<i>Tetrameles nudiflora</i> , R. Br.
Malagiri	<i>Cinnamomum glaucescens</i> , Nees.
Malata	<i>Macaranga nepalensis</i> , Mueller.
Mandane	<i>Acrocarpus fraxinifolius</i> , Arnett.
Mauwa	<i>Engelhardia spicata</i> , Blume.
Maya	<i>Eriobotrya bengalensis</i> , Roxb.Hook.f.
Nageswar	<i>Mesua ferrea</i> , Linn.
Odal	<i>Sterculia villosa</i> , Smith.
Pahenle	<i>Neonauclea griffithii</i> , Hk. F.
Pakasaj	<i>Terminalia alata</i> , Roth.
Panchpate	<i>Vitex quinata</i> , Loureiro.
Panchphal	<i>Dillenia indica</i> , Linn.
Panisaj	<i>Terminalia myriocarpa</i> , Heurck &Muell.
Parari	<i>Stereospermum colais</i> , Dillwyn.
Patpate or Champ	<i>Magnolia pterocarpa</i> , Roxb.
Phalame	<i>Walsura tubulata</i> , Hiern.
Phaledo	<i>Erythrina indiaca</i> , Lamarck.
Phalsa (locally Siyalphusre)	<i>Grewia asiatica</i> . Linn.
Phirphire	<i>Firmiana colorata</i> , (Roxb.) R. Br.
Pipal	<i>Ficus religiosa</i> , Linn.Dz.
Pipalpate	<i>Sapium eugeniifolium</i> , Hook.
Pitali	<i>Trewia nudiflora</i> , Linn.
Piyamon	<i>Syzygium operculatum</i> , Roxb.

Raktan	<i>Lophopetalum wightianum</i> , Arnott.
Ramguwa	<i>Knema erratica</i> , Hook.f.& Thomson
Ramphal	<i>Gynocardia odorata</i> , R. Br.
Rangbhang	<i>Caryota urens</i> , Linn.
Rhudrak	<i>Elaeocarpus sphaericus</i> , Schumann.
Ritha	<i>Sapindus rarak</i> , DC.
Runche	<i>Actinodaphne obovata</i> , Nees. Blume.
Sal	<i>Shorea robusta</i> , Gaertn.
Satpate	<i>Aesculus assamica</i> , Griff
Seti guenlo	<i>Premna bengalensis</i> , Clark.
Setikath	<i>Endospermum chinense</i> , Benth.
Setisal	<i>Dalbergia latifolia</i> , Roxb.
Sidha	<i>Lagerstroemia parviflora</i> , Roxb.
Simul	<i>Bombax ceiba</i> , Linn.
Sindure	<i>Mallotus philippenensis</i> , Lamarck.
Sinkoli or Tejpat	<i>Cinnamomum tamala</i> , Hamilton Nees & Ebermaier.
Siris Karkur	<i>Albizia odoratissima</i> , Benth.
Siris safed	<i>Albizia procera</i> , Roxb.
Sirish Harra	<i>Albizia lebbek</i> , (L.) Benth.
Sirish Patpate, Harra Siris	<i>Albizia gamblei</i> , Prain.
Sirish Portka or Kalo	<i>Albizia lucidior</i> , (Steudel) Hara.
Sissoo	<i>Dalbergia sissoo</i> , DC.
Sonalu	<i>Cassia fistula</i> , Linn.
Taki, Koiralo	<i>Bauhinia variegata</i> , Linn.
Tanki	<i>Bauhinia malabarica</i> , Roxb.

Tantri	<i>Dillenia pentagyna</i> , Roxb.
Tarsing	<i>Beilschmiedia roxburghiana</i> , Nees.
Teak	
Tejpata	<i>Cinnamomum tamala</i> .
Thali	<i>Turpinia pomifera</i> , Roxb.D. C.
Timur	<i>Litsea cubeba</i> , Loureiro.
Totola	<i>Oroxylum indicum</i> , L.Vent.
Totola, Lal	<i>Heteropanax fragrans</i> , Seemann.
Tula	<i>Pterygota alata</i> , Roxb.
Tula(locally Hukuse)	<i>Pterygota alata</i>
Tun or Toon	<i>Toona ciliate</i> , Rohen.

B. HERBS, SHRUBS, GRASSES & CLIMBERS

Vernacular or CommonNames	Botanical Name
Aal (locally haldikat)	<i>Morinda angustifolia</i> , Roxb.
Akanda	<i>Calotropis gigantea</i> , L.Dryander.
Amliso	<i>Thysanolenia maxima</i> .
Arerekhanra	<i>Mimosa himalayana</i> , Gamble.
Assamlota	<i>Chromolaena odoratum</i> , L. King & Robinson
Bakshi-kanra	<i>Caesalpinia cucullata</i> , Rox
Baldhengra	<i>Mucuna macrocarpa</i> , Wall.
Banjam (locally Magmedo)	<i>Ardisia solanacea</i> , Roxb.
Baro Mase, Bantulsi	<i>Lantana camera</i> .L.
Basak Kalo	<i>Justicia adhatoda</i> .L.
Begunkata	<i>Solanum aculeatissimum</i> , Jacquin.

Bhant	<i>Clerodendrum viscosum</i> , Ventenat.
Bhorla	<i>Bauhinia vahlii</i> , Wight & Arnott.
Bhuichampa(Banhaldi/Jungli haldi)	<i>Kaempferia rotunda</i> , L.
Bincha (locally Monkata)	<i>Flacourtia jangamas</i> , Loureiro, Raeuschel.
Brela (locally Khareto)	<i>Sida cordifolia</i> , Wight & Arnott.
Charchare	<i>Tetrastigma serrulatum</i> , Roxb. Planch.
Chila lahara or Pangra	<i>Entada rheedi</i> , Sprengel
Danda Kalas	<i>Leucas indica</i> , L. Vatke.
Debre lahara	<i>Butea parviflora</i> , Roxb.
Dheki/Dhenki	<i>Dryopteris</i> sp.
Dude lahara	<i>Cryptolepis buchanani</i> , Roem., Schutt.
Dude lahara(Locally chetia)	<i>Ichocarpus frutescens</i> , Br.
Durba	<i>Cynodon dactylon</i>
Gayo lahara	<i>Bridelia stipularis</i> , L. Blume.
Gojalata(Locally Bhui Kumbi)	<i>Elephantopus scabe</i> , L.
Gurjo	<i>Tinospora cordifolia</i> , Will. Hook.f.Thom.
Haldi	<i>Curcuma longa</i> , L.Sha.
Hardikath	<i>Morinda angustifolia</i> , Roxb.
Hazarmani (locally Bantetal)	<i>Phyllanthus urinaria</i> , L.
Jungli til	<i>Anisomeles indica</i> , L.Kuntze
Kabutarpata	<i>Dioscorea prazeri</i> .
Kali lahara	<i>Combretum decandrum</i> , Roxb.
Kali lahara, Kasaidatan	<i>Combretum decandrum</i> , Roxb.
Karipata	<i>Murraya koenigii</i> L. Spreingel.
Kew (Locally Betlauri)	<i>Costus speciosus</i> , J.Konig, Smith.

Kochu, Haledo	<i>Curcuma zedoaria</i> , Christ. Roscoe.
Kontakachu (locally Lodha)	<i>Lasia spinosa</i> , L.
Kowchu or Kaochir, Kauso	<i>Mucuna pruriens</i> , L.D. C.
Kul (bankul)	<i>Zizyphus mayritiana</i> , Lamarck.
Kunch (locally Jungli Sirish), Lalgeri	<i>Abrus precatorius</i> , L.
Manjistha (locally Datarangi)	<i>Rubia wallichiana</i> , Decaisne.
Mikania	<i>Mikania micrantha</i> , Kunth.
Mongidatan	<i>Alternanthera sessilis</i> , L.DC.
Monkanta	<i>Flacourtia jangomas</i> , Loureiro, Raeuschel.
Nagbaeli	<i>Bauhinia scandens</i> , L.
Pani lahara	<i>Cissus repanda</i> , Vahl.
Peepla or Piplai	<i>Pipermullesua</i> , D. Don.
Phalsa (locally Seal Fosra)	<i>Grewia asiatica</i> , L.
Purrandi	<i>Alpinia nigra</i> , Gaertner, B.L.Burt.
Ramtulsi (locally Bantulsi)	<i>Ocimum americanum</i> , L.
Sada ful (White flower)	<i>Jovernum montenum</i> .
Sadha Dhatura	<i>Datura stramonium</i> , L.D.
Sarpagandha	<i>Rauwolfia serpentine</i> , L.Kurz.
Satamul	<i>Asparagus racemosus</i> , Will.
Satpatri, B ilaune, Kanchirna	<i>Maesa indica</i> , Roxb.
Sheora (locally Sheora kata).Kaksi	<i>Streblus asper</i> , Loureiro.
Siris lahara	<i>Dalbergia stipulacea</i> , Roxb.
Tagar, Bara Massey	<i>Plumeria rubra</i> , L.
Talamuli (Chagua/Bansupari)	<i>Curculigo orchiodes</i> , Gaertner.
Taror-rik, Kurku	<i>Millettia extensa</i> , Bant.
Teteberi/Lattasiris, Titebiri	<i>Delbergia rimosa</i> , Roxb.

Annexure - II

FAUNA OF PARK

A. List of Mammals

Local or Common Name	Zoological Name
Assam Giant Squirrel	<i>Ratufa bicolor</i>
Barking Deer	<i>Muntiacus muntiac</i>
Bengal (common) Monkey	<i>Macacus rhesus</i>
Bengal Mole rat	<i>Bandicota bengalensis</i>
Bhutan Duars rat	<i>Rattus ratus bhotia</i>
Common flying Fox	<i>Pteropus giganteus</i>
Common Indian Hare	<i>Lepus ruficaudatus</i>
Common Mongoose	<i>Herpestes erdwardsii</i>
Common palm Civet	<i>Viverra indica</i>
Common yellow bat	<i>Scotophilus kuhlii</i>
Crab eating Mongoose	<i>Herpestes urva</i>

Crestless Himalayan Porcupine	<i>Hystrix hodgsoni</i>
Fishing Cat	<i>Felis virerrina</i>
Fulvous fruit Bat	<i>Rosettes leschensulti</i>
Hairy winged Bat	<i>Marpiocephalus harpia lasyunes</i>
Hispid Hare	<i>Lepus hispidus</i>
Hog Deer	<i>Axis porcinus</i>
Indian Civet	<i>Vivera zibetha zibetha</i>
Indian Elephant	<i>Elephus maximus</i>
Indian Fox	<i>Vulpes bengalensis</i>
Indian Martin	<i>Martes flavigula</i>
Indian Pandolin	<i>Manis crassicaudata</i>
Jackal	<i>Canis aurens</i>
Jungle Cat	<i>Felis chaus</i>
Leopard Cat	<i>Felis bengalensis horsfieldi</i>

Long tailed tree Mouse	<i>Vandeleuria oleracea</i>
One horned Indian Rhinoceros	<i>Rhinocerus unicornis</i>
Palm Squirrel	<i>Funanbulus pennanti</i>
Leopard	<i>Panthera pardus</i>
Short tailed Mole	<i>Talpa micrura</i>
Small Indian Mongoose	<i>Herpestes auropunctatus</i>
Spotted Deer	<i>Axis axis</i>
Wall Bat	<i>Myotis mystacinus muricola</i>
Wild Boar	<i>Sus scrofa cristatus</i>
Wroughton's Bat	<i>Scotophilus temmincki wroughtoni</i>

B. List of Birds

Local or Common Name	Zoological Name
Green Magpie	<i>Cissa chinensis</i>
Indian Treepie	<i>Dendracilta vagabunda</i>
Jungle Babbler	<i>Turdoides striatus striatus</i>

Jungle Crow	<i>Corvus macrorhynchos</i>
House Crow	<i>Corvus splendens splendens</i>
Yellow eyed Babbler	<i>Chrysomitris sinensis sinensis</i>
Common Iora	<i>Agathinops tiphia</i>
Fairy Blue bird	<i>Irena puella</i>
Red tailed Minla	<i>Minola ignotincta</i>
White throated Bulbul	<i>Crinifer orchraceus</i>
Himalayan Black Bulbul	<i>Microscelis psaroides</i>
Bengal Redvented Bulbul	<i>Pycnonotus cafer bengalensis</i>
Dark Grey Cuckoo Shrike	<i>Corcina melaschistos melaschistos</i>
Black Headed Cuckoo Shrike	<i>Corcina melanoptra</i>
Common Myna	<i>Acridotheres tristis tristis</i>
Jungle Myna	<i>Acridotheres fuscus</i>
Pied Myna	<i>Sturnus contra contra</i>

Yellow bellied Fantail Fly Catcher	<i>Rhiphidura hypoxantha</i>
White throated Fantail Fly Catcher	<i>Rhiphidura albicollis</i>
Magpie Robin	<i>Copsychus saularis</i>
House Sparrow	<i>Passer domesticus indicus</i>
Tree Sparrow	<i>Passer monlanus</i>
Plain Sand Martin	<i>Riparia paludicola</i>
Scarlet backed Flower-pecker	<i>Dicaeum cruetatum</i>
Plain coloured Flower pecker	<i>Dicaeum concolor</i>
Large Yellow napped Woodpecker	<i>Picus flavinucha</i>
Himalayan Golden backed throat/Woodpecker	<i>Dinopium shorei shorei</i>
Great Himalayan Barbet	<i>Megalaima virens</i>
Blue throated Barbet	<i>Megalaima asiatica</i>
Common Kingfisher	<i>Alcedo atthis bengalensis</i>
White Breasted Kingfisher	<i>Halcyon smyrensis</i>

Great Hornbill	<i>Buceros bicornis homrai</i>
Indo-Burmese Pied Hornbill	<i>Anthracoceros coronatus</i>
Rufous necked Hornbill	<i>Aceros nipalensis</i>
Himalayan Cuckoo	<i>Cuculus saturatus</i>
Indian Cuckoo	<i>Cuculus micropterus</i>
Brown Fish Owl	<i>Bubo zeylonensis</i>
Spotted Owlet	<i>Athene bramo</i>
Jungle Owl	<i>Glaucidium radiatum</i>
Himalayan Griffon Vulture	<i>Gyps himalayensis</i>
Indian White backed Vulture	<i>Gyps bengalensis</i>
Changeable Hawk Eagle	<i>Spizaetus (cirrhatus) limnaeetus</i>
Crested Serpent Eagle	<i>Spilornis cheela</i>
Large Grey Headed Fishing Eagle	<i>Ichthyophaga ichthyaetus</i>

Large Indian Kite	<i>Milvus lineulus</i>
Bengal Green Pigeon	<i>Treron phoenicoptera phoenicoptera</i>
Green Imperial Pigeon	<i>Ducula aenea</i>
Bronze Winged or Emerald Dove	<i>Chalcophaps indica</i>
Indian Blue Rock Pigeon	<i>Columba livia intermedia</i>
Indian Rufous Turtle Dove	<i>Streptopelia orientalis agricola</i>
Spotted Dove	<i>Streptopelis chinensis</i>
Indian Ring Dove	<i>Streptopelis decaocto</i>
Indian Red turtle Dove	<i>Oenopopelia tranquebarica</i>
Common Pea Fowl	<i>Pavo cristatus</i>
Blue Breasted Quail	<i>Coturnix chinensis</i>
Common or Grey Quail	<i>Coturnix coturnix</i>
Grey Partridge	<i>Francolinus pondicerianus</i>

Bengal Florican	<i>Eupodotis bengalensis</i>
Small Indian Pratincole	<i>Glareola lacteal</i>
Bronze Winged Jacana	<i>Metopidius indicus</i>
Pheasant-tailed Jacana	<i>Hydrophasianus chinurgus</i>
Common Sandpiper	<i>Tringa hypoleucos</i>
Green Sandpiper	<i>Tringa ochropus</i>
The Woodcock	<i>Scolopax rusticola</i>

C. List of Reptiles

Local or Common Name	Zoological Name
Python	<i>Python molurus</i>
Common Wolf Snake	<i>Lycodon aulicus</i>
Collared Dwarf Snake	<i>Sibynophus collaris</i>
Indian Rat Snake	<i>Ptyas mucosus</i>

Trinket Snake	<i>Elaphe helena</i>
Indian Bronze backed Tree Snake	<i>Ahoetulla tristis</i>
Hooded Tree Snake	<i>Pseudoxendion macrops</i>
Indian Egg eating Snake	<i>Elachistodon westermanni</i>
Common Green Whip Snake	<i>Dryophis nasutus</i>
Banded Krait	<i>Bungarus fasciatus</i>
Common Krait	<i>Bungarus caeruleus</i>
Cobra	<i>Naja naja</i>
King Cobra	<i>Naja hannah</i>
Russell's Viper	<i>Vipera resseli</i>
Common Green Pit Viper	<i>Trimeresurus gramineus</i>
Green Vine Snake	<i>Ahaetulla nasuta</i>

C. List of Fishes

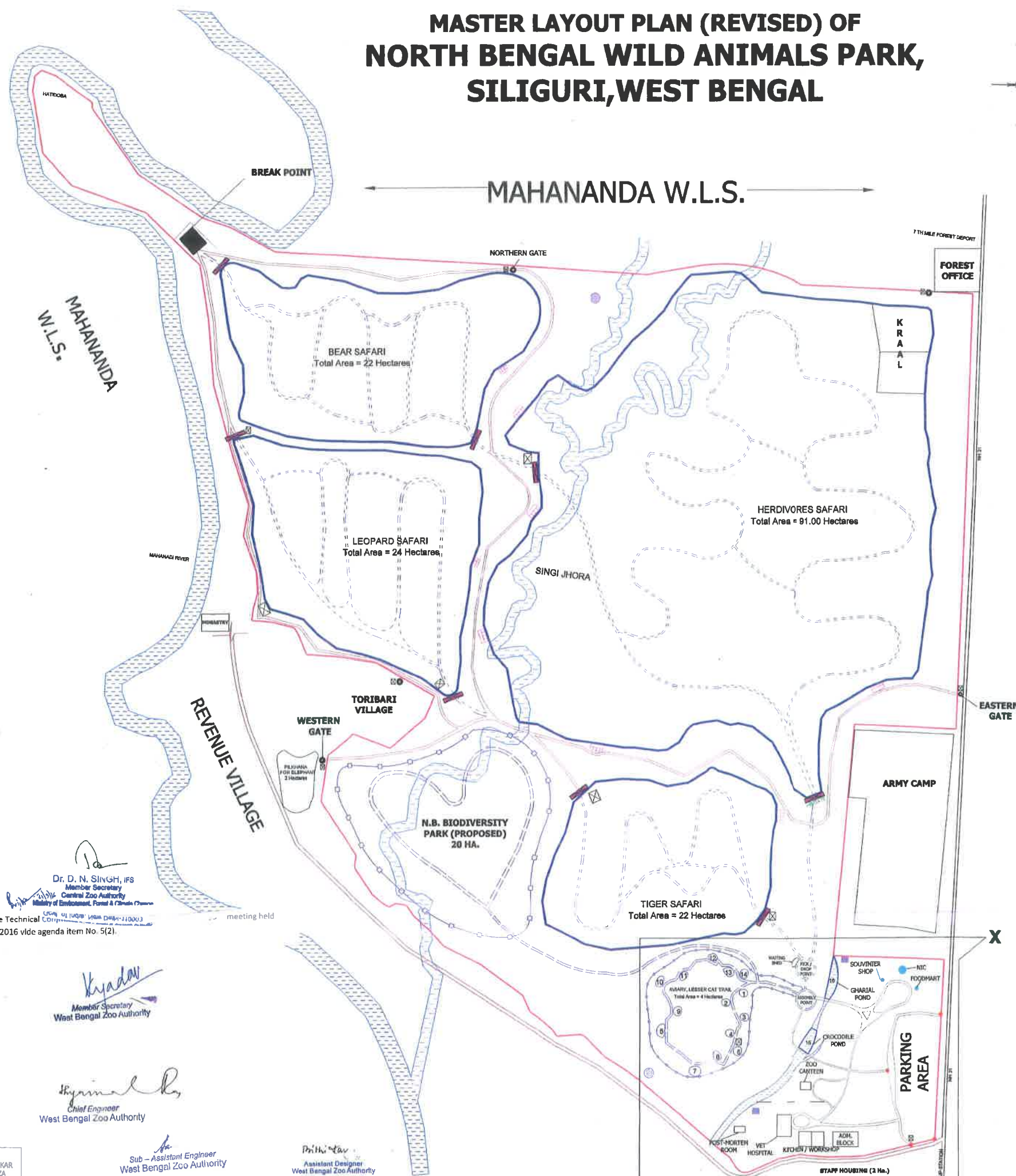
Local or Common Name	Zoological Name
Batasi	<i>Pseudeutropius atherinoides</i>
Bowali	<i>Wallago attu</i>
Chella	<i>Chela gora</i>
Dankoni	<i>Rasbora daniconius</i>
Denkara	<i>Labeo pangusia</i>
Elanga	<i>Danio rerio, D. equipinnatus & D. dangila</i>
Kalbaos	<i>Labeo calbasu</i>
Koochia	<i>Amphipnaus cuchia</i>
Kursha	<i>Aspidoparia morar</i>
Magur	<i>Clarias batrachus</i>
Moh	<i>Notopterus kariput</i>
Sal Mas	<i>Ophicephalus striatus</i>
Puti	<i>Barbus sp.</i>
Rohu	<i>Labeo rohita</i>
Singi	<i>Heteropneustes fossilis</i>
Soul	<i>Ophiocephalus marulus</i>
Turi or bain	<i>Mestacembelus armatus</i>
Baspata	<i>Ailia coila</i>
Bacha	<i>Eutropichthus vacha</i>

Annexure – III

LEGAL STATUS OF LAND

Status of the area 298 ha earmarked for proposed North Bengal Animal Safari Park is Dabgram 1 & 4 Forest Compartments is classified as Protected Forest vide G.O. No 707-For dated 29.02.1960.

MASTER LAYOUT PLAN (REVISED) OF NORTH BENGAL WILD ANIMALS PARK, SILIGURI, WEST BENGAL



ZONING AREA STATEMENT

TOTAL SITE AREA (297.00 Ha)

SAFARIS (151.72 Ha)

1. HERBIVORE SAFARI ---- 91.00Ha.
2. TIGER SAFARI ---- 20.00Ha.
3. LEOPARD SAFARI ---- 20.00Ha.
4. BEAR SAFARI ---- 20.00Ha.
5. GHARIYAL POND ---- 00.32Ha.
6. CROCODILE POND ---- 00.40Ha.

TRAILS (4.00Ha.)

1. AVIARY ---- 2.00 Ha.
2. THE CAT TRAIL ---- 2.00Ha.

OTHER AMENITIES

1. N.B. BIODIVERSITY PARK (PROPOSED) ---- 15.00Ha.
2. ENTRANCE PLAZA (Ticket counter, coffee shop, souvenir shop, play area, interpretation centre, museum, amphi-theatre & parking) ---- 13.80Ha.
3. VETERINARY HOSPITAL QUARANTINE & ANIMAL SHELTER ---- 4.00Ha.
4. BUFFER ZONE ---- 64Ha.
5. BREAK POINT ---- 3Ha.

LEGENDS

	ANIMAL HOUSE		PROPOSED ROAD
	WATCH TOWER		PROPOSED SAFARI ROAD
	WASHROOM		PROPOSED BOUNDARY
	SECURITY POST		PROPOSED SERVICE ROAD
	GATE		NALA
	NH - 31		SAFARI GATE
	BOUNDARY		PAKKA ROAD
	JHORA / RIVER		ZOO FENCING
	STP		COMPOST BIN

LEGEND OF ENCLOSURE

1. RED JUNGLE FOWL
2. GREY PEACOCK PHEASANT
3. PEACOCK
4. GREY PIED HORNBILL
5. GREAT PIED HORNBILL
6. WATER BIRDS AVIARY
7. FLYING BIRDS AVIARY
8. CLOUDED LEOPARD
9. GOLDEN CAT
10. LARGE INDIAN CIVET
11. TODDY CAT
12. JUNGLE CAT
13. LEOPARD CAT
14. SMALL INDIAN CIVET
15. CROCODILE POND
16. GHARIAL POND

OWNER : WEST BENGAL ZOO AUTHORITY
TITLE : MASTER PLAN OF
NORTH BENGAL WILD ANIMALS PARK
PLACE : SILIGURI

Dr. D. N. SINGH, IFS
Member Secretary
Central Zoo Authority
Ministry of Environment, Forest & Climate Change
Approved by the Technical Committee on 24th August, 2016 vide agenda item No. 5(2).

Kyadav
Member Secretary
West Bengal Zoo Authority

Kyadav
Chief Engineer
West Bengal Zoo Authority

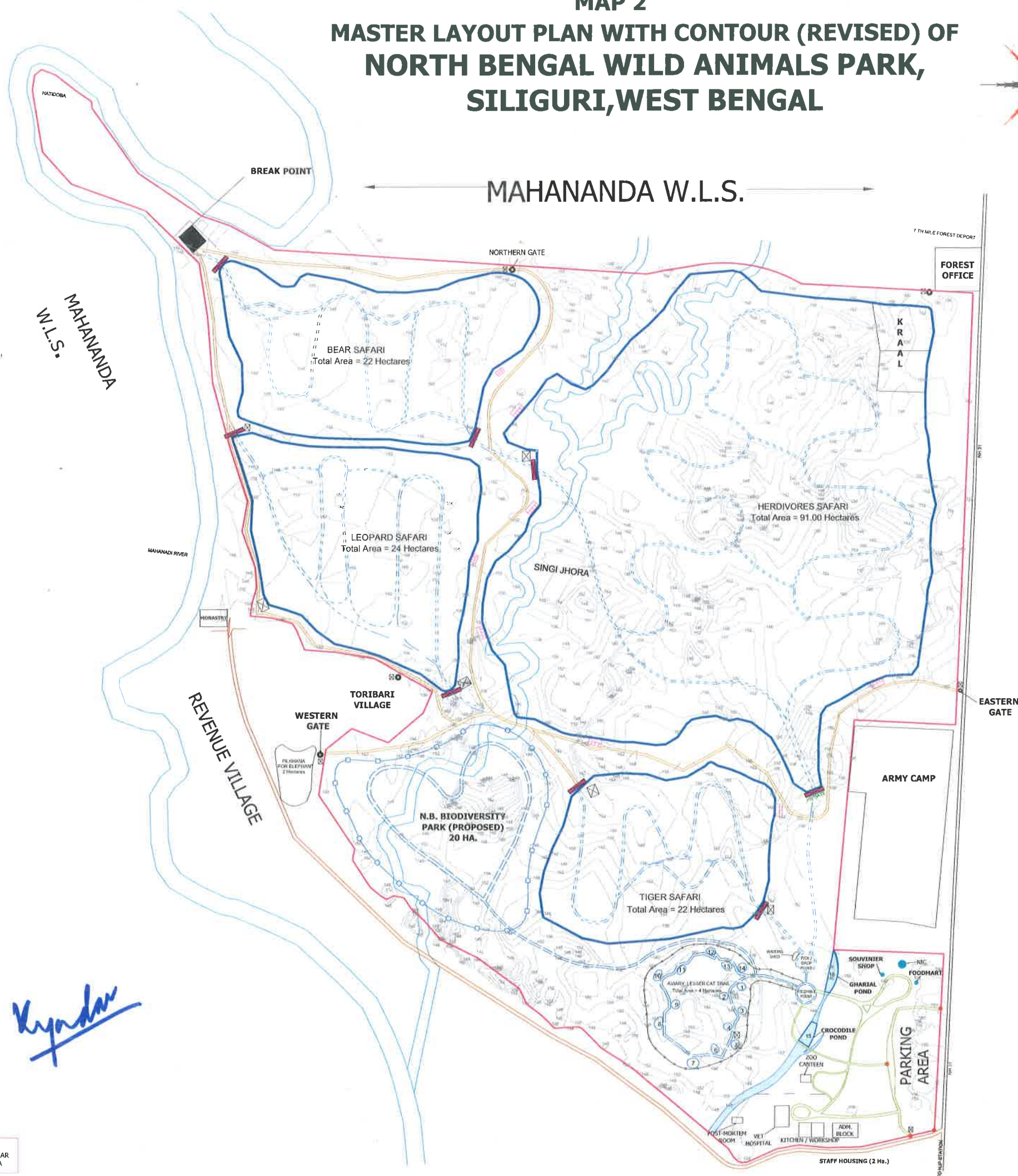
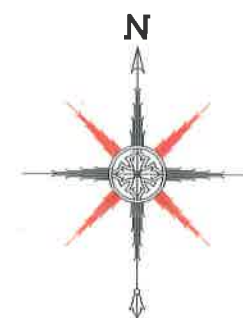
DRAWN BY:
BITHI KAR
WBZA

Sub - Assistant Engineer
West Bengal Zoo Authority

Prithvi
Assistant Designer
West Bengal Zoo Authority

SCALE 1 : 10000
SHEET SIZE: A-1

MAP 2 **MASTER LAYOUT PLAN WITH CONTOUR (REVISED) OF** **NORTH BENGAL WILD ANIMALS PARK,** **SILIGURI, WEST BENGAL**



ZONING AREA STATEMENT

TOTAL SITE AREA (297.00 Ha)

SAFARIS (151.72 Ha)

1. HERBIVORE SAFARI ---- 91.00Ha.
2. TIGER SAFARI ---- 20.00Ha.
3. LEOPARD SAFARI ---- 20.00Ha.
4. BEAR SAFARI ---- 20.00Ha.
5. GHARIAL POND ---- 00.32Ha.
6. CROCODILE POND ---- 00.40Ha.

TRAILS (4.00Ha.)

1. AVIARY ---- 2.00 Ha.
2. THE CAT TRAIL ---- 2.00Ha.

OTHER AMENITIES

1. N.B. BIODIVERSITY PARK (PROPOSED) ----15.00Ha.
2. ENTRANCE PLAZA (Ticket counter, coffee shop, souvenir shop, play area, interpretation centre, museum, amphi-theatre & parking) ----13.80Ha.
3. VETERINARY HOSPITAL QUARANTINE & ANIMAL SHELTER ----4.00Ha.
4. BUFFER ZONE ----64Ha.
5. BREAK POINT ---- 3Ha.

LEGENDS

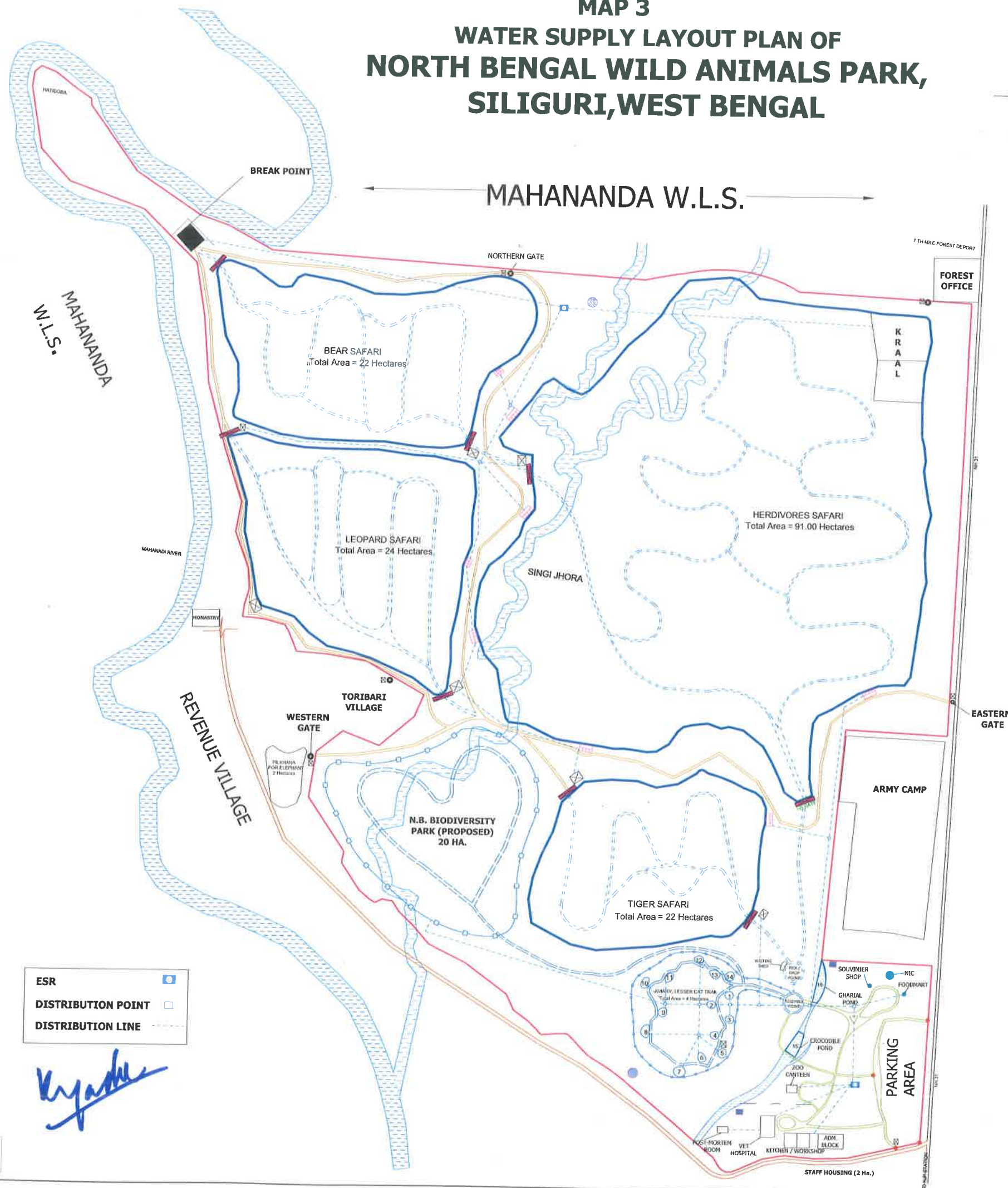
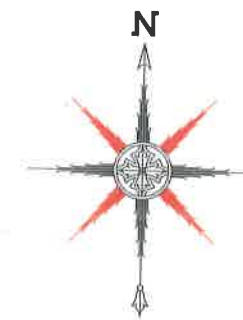
	ANIMAL HOUSE		PROPOSED ROAD
	WATCH TOWER		PROPOSED SAFARI ROAD
	WASHROOM		PROPOSED BOUNDARY
	SECURITY POST		PROPOSED SERVICE ROAD
	GATE		NALA
	NH - 31		SAFARI GATE
	BOUNDARY		PAKKA ROAD
	JHORA / RIVER		ZOO FENCING
	STP		COMPOST BIN

LEGEND OF ENCLOSURE

- | | |
|--------------------------|------------------------|
| 1. RED JUNGLE FOWL | 9. GOLDEN CAT |
| 2. GREY PEACOCK PHEASANT | 10. LARGE INDIAN CIVET |
| 3. PEACOCK | 11. TODDY CAT |
| 4. GREY PIED HORNBILL | 12. JUNGLE CAT |
| 5. GREAT PIED HORNBILL | 13. LEOPARD CAT |
| 6. WATER BIRDS AVIARY | 14. SMALL INDIAN CIVET |
| 7. FLYING BIRDS AVIARY | 15. CROCODILE POND |
| 8. CLOUDED LEOPARD | 16. GHARIAL POND |

OWNER : WEST BENGAL ZOO AUTHORITY
TITLE : MASTER PLAN OF
NORTH BENGAL WILD ANIMALS PARK
PLACE : SILIGURI

MAP 3 **WATER SUPPLY LAYOUT PLAN OF** **NORTH BENGAL WILD ANIMALS PARK,** **SILIGURI, WEST BENGAL**



ZONING AREA STATEMENT

TOTAL SITE AREA (297.00 Ha)

SAFARIS (151.72 Ha)

1. HERBIVORE SAFARI ---- 91.00Ha.
2. TIGER SAFARI ---- 20.00Ha.
3. LEOPARD SAFARI ---- 20.00Ha.
4. BEAR SAFARI ---- 20.00Ha.
5. GHARIYAL POND ---- 00.32Ha.
6. CROCODILE POND ---- 00.40Ha.

TRAILS (4.00Ha.)

1. AVIARY ---- 2.00 Ha.
2. THE CAT TRAIL ---- 2.00Ha.

OTHER AMENITIES

1. N.B. BIODIVERSITY PARK (PROPOSED) ----15.00Ha.
2. ENTRANCE PLAZA (Ticket counter, coffee shop, souvenir shop, play area, interpretation centre, museum, amphi-theatre & parking) ----13.80Ha.
3. VETERINARY HOSPITAL QUARANTINE & ANIMAL SHELTER ----4.00Ha.
4. BUFFER ZONE ----64Ha.
5. BREAK POINT ---- 3Ha.

LEGENDS

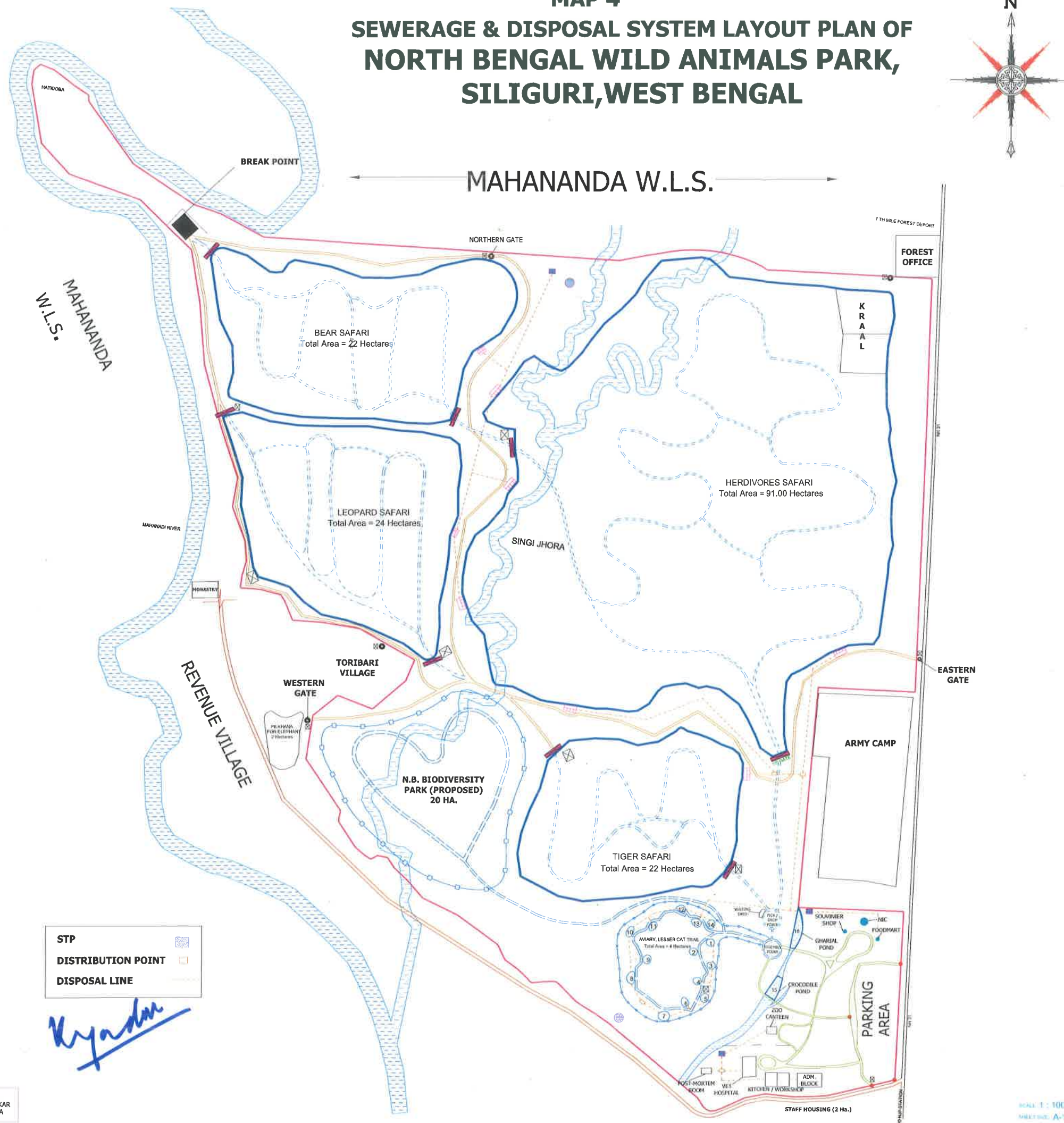
	ANIMAL HOUSE		PROPOSED ROAD
	WATCH TOWER		PROPOSED SAFARI ROAD
	WASHROOM		PROPOSED BOUNDARY
	SECURITY POST		PROPOSED SERVICE ROAD
	GATE		NALA
	NH - 31		SAFARI GATE
	BOUNDARY		PAKKA ROAD
	JHORA / RIVER		ZOO FENCING
	STP		COMPOST BIN

LEGEND OF ENCLOSURE

- | | |
|--------------------------|------------------------|
| 1. RED JUNGLE FOWL | 9. GOLDEN CAT |
| 2. GREY PEACOCK PHEASANT | 10. LARGE INDIAN CIVET |
| 3. PEACOCK | 11. TODDY CAT |
| 4. GREY PIED HORNBILL | 12. JUNGLE CAT |
| 5. GREAT PIED HORNBILL | 13. LEOPARD CAT |
| 6. WATER BIRDS AVIARY | 14. SMALL INDIAN CIVET |
| 7. FLYING BIRDS AVIARY | 15. CROCODILE PONT |
| 8. CLOUDED LEOPARD | 16. GHARIAL POND |

OWNER : WEST BENGAL ZOO AUTHORITY
TITLE : MASTER PLAN OF
NORTH BENGAL WILD ANIMALS PARK
PLACE : SILIGURI

MAP 4 **SEWERAGE & DISPOSAL SYSTEM LAYOUT PLAN OF** **NORTH BENGAL WILD ANIMALS PARK,** **SILIGURI, WEST BENGAL**



ZONING AREA STATEMENT

TOTAL SITE AREA (297.00 Ha)

- SAFARIS (151.72 Ha)**
1. HERBIVORE SAFARI ---- 91.00Ha.
 2. TIGER SAFARI ---- 20.00Ha.
 3. LEOPARD SAFARI ---- 20.00Ha.
 4. BEAR SAFARI ---- 20.00Ha.
 5. GHARIYAL POND ---- 00.32Ha.
 6. CROCODILE POND ---- 00.40Ha.

- TRAILS (4.00Ha.)**
1. AVIARY ---- 2.00 Ha.
 2. THE CAT TRAIL ---- 2.00Ha.

OTHER AMENITIES

1. N.B. BIODIVERSITY PARK (PROPOSED) ---- 15.00Ha.
2. ENTRANCE PLAZA (Ticket counter, coffee shop, souvenir shop, play area, interpretation centre, museum, amphi-theatre & parking) ---- 13.80Ha.
3. VETERINARY HOSPITAL QUARANTINE & ANIMAL SHELTER ---- 4.00Ha.
4. BUFFER ZONE ---- 64Ha.
5. BREAK POINT ---- 3Ha.

LEGENDS

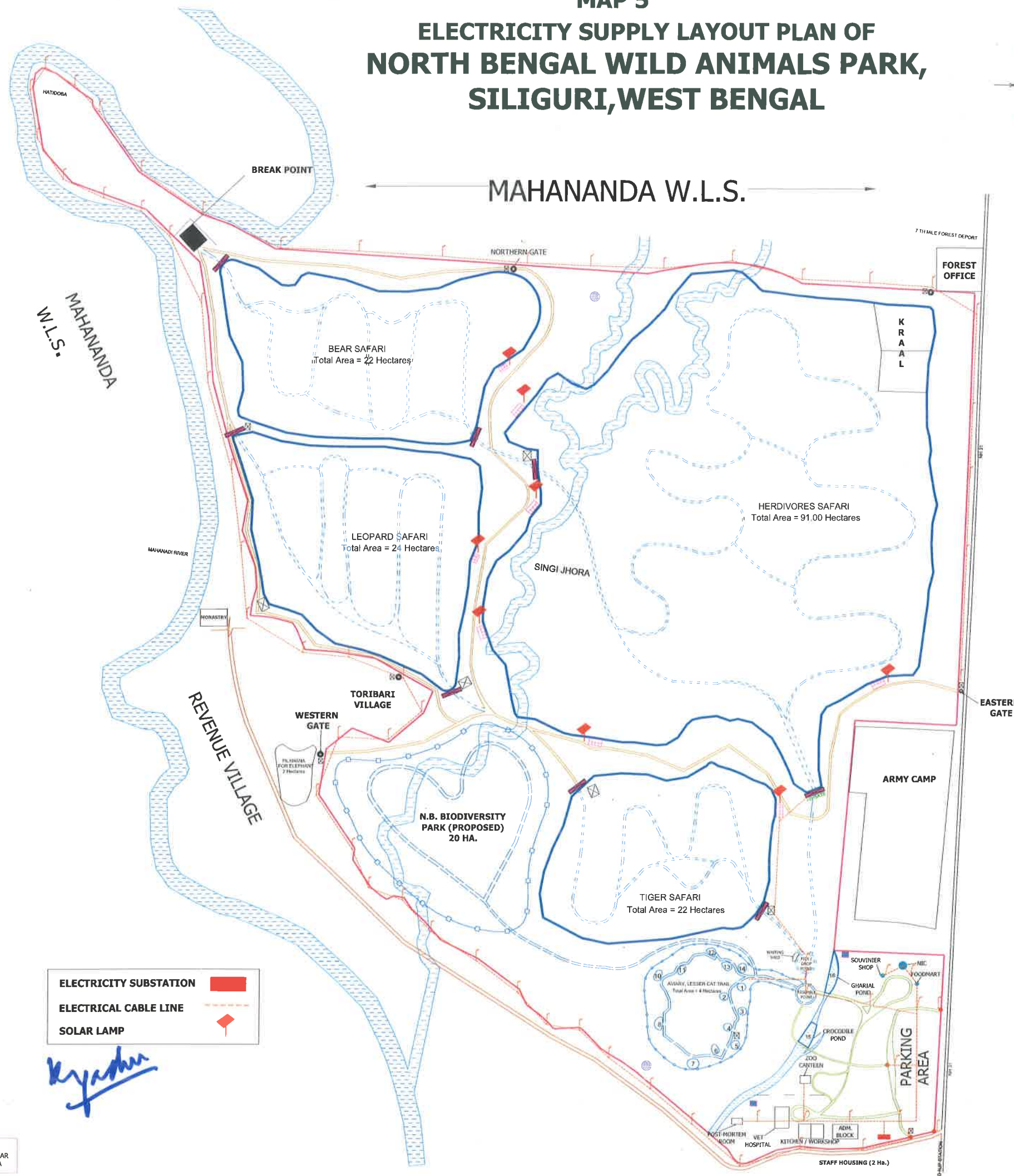
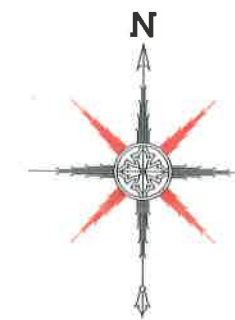
	ANIMAL HOUSE		PROPOSED ROAD
	WATCH TOWER		PROPOSED SAFARI ROAD
	WASHROOM		PROPOSED BOUNDARY
	SECURITY POST		PROPOSED SERVICE ROAD
	GATE		NALA
	NH - 31		SAFARI GATE
	BOUNDARY		PAKKA ROAD
	JHORA / RIVER		ZOO FENCING
	STP		COMPOST BIN

LEGEND OF ENCLOSURE

- | | |
|--------------------------|------------------------|
| 1. RED JUNGLE FOWL | 9. GOLDEN CAT |
| 2. GREY PEACOCK PHEASANT | 10. LARGE INDIAN CIVET |
| 3. PEACOCK | 11. TODDY CAT |
| 4. GREY PIED HORNBILL | 12. JUNGLE CAT |
| 5. GREAT PIED HORNBILL | 13. LEOPARD CAT |
| 6. WATER BIRDS AVIARY | 14. SMALL INDIAN CIVET |
| 7. FLYING BIRDS AVIARY | 15. CROCODILE PONT |
| 8. CLOUDED LEOPARD | 16. GHARIAL POND |

OWNER : WEST BENGAL ZOO AUTHORITY
TITLE : MASTER PLAN OF
NORTH BENGAL WILD ANIMALS PARK
PLACE : SILIGURI

MAP 5 ELECTRICITY SUPPLY LAYOUT PLAN OF NORTH BENGAL WILD ANIMALS PARK, SILIGURI, WEST BENGAL



ZONING AREA STATEMENT

TOTAL SITE AREA (297.00 Ha)

SAFARIS (151.72 Ha)

1. HERBIVORE SAFARI ---- 91.00Ha.
2. TIGER SAFARI ---- 20.00Ha.
3. LEOPARD SAFARI ---- 20.00Ha.
4. BEAR SAFARI ---- 20.00Ha.
5. GHARIYAL POND ---- 00.32Ha.
6. CROCODILE POND ---- 00.40Ha.

TRAILS (4.00Ha.)

1. AVIARY ---- 2.00 Ha.
2. THE CAT TRAIL ---- 2.00Ha.

OTHER AMENITIES

1. N.B. BIODIVERSITY PARK (PROPOSED) ----15.00Ha.
2. ENTRANCE PLAZA (Ticket counter, coffee shop, souvenir shop, play area, interpretation centre, museum, amphi-theatre & parking) ----13.80Ha.
3. VETERINARY HOSPITAL QUARANTINE & ANIMAL SHELTER ----4.00Ha.
4. BUFFER ZONE ----64Ha.
5. BREAK POINT ---- 3Ha.

LEGENDS

	ANIMAL HOUSE		PROPOSED ROAD
	WATCH TOWER		PROPOSED SAFARI ROAD
	WASHROOM		PROPOSED BOUNDARY
	SECURITY POST		PROPOSED SERVICE ROAD
	GATE		NALA
	NH - 31		SAFARI GATE
	BOUNDARY		PAKKA ROAD
	JHORA / RIVER		ZOO FENCING
	STP		COMPOST BIN

LEGEND OF ENCLOSURE

- | | |
|--------------------------|------------------------|
| 1. RED JUNGLE FOWL | 9. GOLDEN CAT |
| 2. GREY PEACOCK PHEASANT | 10. LARGE INDIAN CIVET |
| 3. PEACOCK | 11. TODDY CAT |
| 4. GREY PIED HORNBILL | 12. JUNGLE CAT |
| 5. GREAT PIED HORNBILL | 13. LEOPARD CAT |
| 6. WATER BIRDS AVIARY | 14. SMALL INDIAN CIVET |
| 7. FLYING BIRDS AVIARY | 15. CROCODILE POND |
| 8. CLOUDED LEOPARD | 16. GHARIYAL POND |

OWNER : WEST BENGAL ZOO AUTHORITY
TITLE : MASTER PLAN OF
NORTH BENGAL WILD ANIMALS PARK
PLACE : SILIGURI

Annexure - V

Water Sample Test Report

**GOVERNMENT OF WEST BENGAL,
DIRECTORATE OF PUBLIC HEALTH ENGINEERING,
OFFICE OF THE EXECUTIVE ENGINEER,
SILIGURI WATER SUPPLY DIVISION,
DISTRICT LABORATORY AT FULBARI,
SILIGURI.**

BACTERIOLOGICAL ANALYSIS:

Date of Collection:	06.07.2013
Time of Collection:	1.30 PM, 1.40 PM & 1.50 PM
Date of Analysis:	06.07.2013 TO 09.07.2013
Date of Reporting:	09.07.2013

Sl. No.	Bacteriological Parameters	Acceptable Limit	RESULT		
			Place	Toribari	Toribari
			Source	Gulma Khola	Singhi Jhora
			Sender	Dr. B.R. Sharma	
1.	Total Coliform Present/Absent MPN (per 100 ml)	Absent	Present	Present	Present
2.	Faecal Coliform Present/Absent MPN (per 100 ml)	Absent	Present	Present	Present
3.	WATER BACTERIOLOGICALLY SAFE / UNSAFE		UNSAFE	UNSAFE	UNSAFE

* The tests done with the Sample as deposited by the Party.

Bacteriological Test Charge @ Re 500. 00 / Sample.

[Signature]
Chemist & Bacteriologist,
District Laboratory
Fulbari, W.T.P.

[Signature]
Sub. Assistant Engineer
Siliguri Water Supply Division,
P. H. Engineering Dte.

[Signature]
Assistant Engineer,
Siliguri Water Supply Division,
P. H. Engineering Dte

Memo No. **764** / SD: Dated, Siliguri, the **10-07** 2013

Copy forwarded for information and necessary action to: -

1. The Chief Engineer, Head Quarters, P.H. Engineering, Kolkata - I.B
2. The Chief Engineer, WQ Management, P. H. Engineering, Kolkata-I.
3. The Chief Engineer, Western Zone, P. H. E. Dte.
4. The Superintending Engineer, N. B. Circle - I, P.H. Engineering Dte. Siliguri.
5. The Assistant Engineer-I, Siliguri W/S Division, P. H. Engg. Dte. Siliguri.
6. The Divisional Accounts Officer, SWS Division, P. H. Engg. Dte. Siliguri.
7. The District Laboratory, Fulbari under Siliguri W/S Division, P. H. E. Dte
8. The Chief Executive Officer, Siliguri Municipal Corporation, Siliguri.
9. The Dr. B.R. Sharma

[Signature]
Executive Engineer
Siliguri Water Supply Division,
P.H. Engineering Dte

GOVERNMENT OF WEST BENGAL,
DIRECTORATE OF PUBLIC HEALTH ENGINEERING,
OFFICE OF THE EXECUTIVE ENGINEER,
SILIGURI WATER SUPPLY DIVISION,
DISTRICT LABORATORY AT FULBARI,
SILIGURI.

PHYSICAL AND CHEMICAL TEST REPORT.

Date of Collection:	06.07.2013
Date of Testing:	06.07.2013
Date of Reporting:	06.07.2013

Sl. No	Parameters	Acceptable Limit	Cause of Rejection	RESULT			
				Place	Tori Bari	Tori Bari	Singhi Jhora
				Source	Gulma Khola	Singhi Jhora	Dug Well
				Sender	Dr. B.R. Sharma		
1.	Turbidity (NTU)	1	10	185.87			2.39
2.	pH	7.0 to 8.5	<6.5 or >9.2	6.98			6.68
3.	TDS (ppm)	500	2000	7.85			6.07
4.	Colour (Hz)	5	25	161.74			1.94
5.	Total Alkalinity (mg/l)	200	600	36			44
6.	Total Hardness (mg/l)	300	600	46			30
7.	Iron (mg/l)	0.1	1.0	0.79			0.02
8.	Chloride (mg/l)	200	600	21.02			
9.	Chlorine (mg/l)	0.2	>1.0				0
10.	Fluoride (mg/l)		1.5	0.20			0
11.	Nitrate (mg/l)	45	45	5.88			4.97
12.	Copper (mg/l)	0.05	0.5	0.99			0

* The tests done with the Sample as deposited by the Party.

Physical & Chemical Test Charge @ Rs. 900.00 / Sample.

[Signature]
Chemist & Bacteriologist,
District Laboratory at WTP Fulbari.

[Signature]
Sub Assistant Engineer
Siliguri Water Supply Division
P. H. Engineering Dte.

[Signature]
Assistant Engineer,
Siliguri Water Supply Division,
P. H. Engineering Dte.

Memo No. 763 / SD; Dated, Siliguri, the 10/07 2013
Copy forwarded for information and necessary action to:-

- 1) The Chief Engineer, Head Quarters, P. H. E. Dte.
- 2) The Chief Engineer, WQ Management, P. H. Engineering, Kolkata-1.
- 3) The Chief Engineer, Western Zone, P. H. E. Dte.
- 4) The Superintending Engineer, N. B. Circle - I, P. H. Engineering Dte. Siliguri.
- 5) The Assistant Engineer-I, Siliguri W/S Division, P. H. Engg. Dte. Siliguri.
- 6) The Divisional Accounts Officer, SWS Division, P. H. Engg. Dte. Siliguri.
- 7) The District Laboratory, Fulbari under Siliguri W/S Division, P. H. E. Dte.
- 8) The Chief Executive Office of Siliguri Municipal Corporation.
- 9) The Dr. B.R. Sharma.

[Signature] 10/7/13
Executive Engineer,
Siliguri Water Supply Division,
P.H. Engineering Dte.

ANNEXURE – VI (A)

Year Wise Budget for Establishment of North Bengal Wild Animals Park, Siliguri

under West Bengal Zoo Authority

Sl. No.	Description	Total amount (Rs. in crore)	Y e a r			
			2015	2016	2017	2018
1	AREA DEVELOPMENT					
	TOTAL COST	31.78	10	15	6.78	-
2	ACCESS & ENTRY PLAZA					
	TOTAL COST	40.54	12	18	10.54	-
3	INTERPRETATION CENTRE & AMPHITHEATRE					
	TOTAL COST	15.85	-	7	8.85	-
4	CHILDRENS' PLAY AREA					
	TOTAL COST	2.93	-	-	2.93	-
5	GHARIYAL POND					
	TOTAL COST	0.12	-	-	0.12	-
6	CROCODILE POND					
	TOTAL COST	0.16	-	-	0.16	-
7	BOTANY TRAIL (8 Ha) (80,700 Sq. Mtrs.)					

	TOTAL COST	4.18	2.00	1.50	0.68	-
8	AVIARY (2 Ha) (21,461 Sq. Mtrs.)					
	TOTAL COST	2.51	-	1.51	1.00	-
9	THE CAT TRAIL (3 Ha) (25,840 Sq. Mtrs.)					
	TOTAL COST	1.37	-	0.75	0.62	-
10	HERBIVORE SAFARI (104 Ha.) (10,40,000 Sq. Mtrs.)					
	TOTAL COST	8.41	3.00	3.41	2.00	-
11	BEAR SAFARI (20 Ha) (2,01,962 Sq. Mtrs.)					
	TOTAL COST	4.63	2.25	1.23	1.15	
12	LEOPARD SAFARI (25 Ha) (2,53,273 Sq. Mtrs.)					
	TOTAL COST	5.27	2.5	1.67	1.1	-
13	TIGER SAFARI (22 Ha) (2,19,320 Sq. Mtrs.)					
	TOTAL COST	4.73	2.25	1.43	1.05	-
14	BREAK POINT					
	TOTAL COST	1.54	-	1.00	0.54	-
15	ANIMAL CARE CENTRE					
	TOTAL COST	1.90	0.75	0.75	0.4	-
16	INTERNAL SERVICES					
	TOTAL COST	14.83	4.00	6.33	4.50	-

17	WATER SUPPLY SCHEME & DISTRIBUTION					
	TOTAL COST	5.32	2.00	2.00	1.32	-
18	ELECTRICITY & IT					
	TOTAL COST	11.48	3.50	3.84	4.50	-
19	SEWERAGE SYSTEM					
	TOTAL COST	2.00	-	1.00	1.00	-
20	SERVICE BLOCK					
	TOTAL COST	1.54	0.75	0.79	-	-
21	INTERPRETATIVE & INTERACTIVE GRAPHICS & SIGNAGES					
	TOTAL COST	0.54	-	-	0.54	-
22	VEHICLES					
	TOTAL COST	8.14	-	-	0.50	7.64
	TOTAL	170.13				
23	ANIMAL					
	Animals 5% Capital Cost					
	TOTAL COST	8.51	-	-	4.50	4.01
24	PRE-OPENING COST 5%					
	TOTAL COST	8.51	1.50	3.00	4.01	-
25	FEES FOR PLANNING & DESIGNING, ARCHITECTURE, ENGINEERING, PMC					

	SERVICES, SPECIAL CONSULTANT					
	10% of the Total Cost					
	TOTAL COST	17.01	4.21	7.01	5.03	0.76
26	CONTINGENCY					
	Contingency 3.00% of Capital Cost					
	TOTAL COST	5.10	1.23	2.10	1.50	0.27
	SUBTOTAL	209.26	51.94	79.32	65.32	12.77
27	Price Escalation @ 10% every year	-	5.19	15.86	19.59	5.15
	GRAND TOTAL	255.15	57.13	95.18	84.91	17.92

ANNEXURE – VI (B)

Year Wise Operational Cost of North Bengal Wild Animals Park, Siliguri

Sl. No	Description	Estimated Budget (Rs. In lacs)										Total
		2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	
-	Financial year	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total
1	Salaries	15	25	35	55	65	70	75	80	85	90	595
2	Out sourced payment	-	15	20	30	35	35	40	40	45	45	305
3	Contract man power	-	10	15	20	25	25	30	30	35	35	225
4	Feed	-	-	-	10	16	20	25	30	35	40	175
5	Medicines	-	-	-	1	1.5	2	2	2	3	3	145
6	Telephone	0.5	0.5	0.5	1	1	1.5	1.5	2	2	2	12.5
7	Water	-	1	1.5	2	2	2	2.5	2.5	3	3	19.5
8	Electricity	-	2	2.5	3	3	3.5	3.5	4	4	4	29.5
9	Consumable items	-	1	1	2	2	2	2	2	2	2.5	16.5
10	Miscellaneous	-	5	6	6	7	7	8	8	9	9	6.5
		15.5	59.5	81.6	130	166.5	168	189.5	200.5	223	223.5	1457.5

ANNEXURE – VI I

WEST BENGAL ZOO AUTHORITY

(Approved Manpower of North Bengal Wild Animals Park, Siliguri)

Sl.No.	Name and number of the posts	NBWAP
1.	Director	1
2.	Asst. Director	1
3.	Veterinary Officer	1
4.	Zoo Biologist	1
5.	Sub Assistant Engineer (Civil)	1
6.	Zoo Supervisor	1
7.	Education Assistant	1
8.	Veterinary Assistant	1
9.	Asst. Zoo Supervisor	2
10.	Asst. Estate/. Security Supervisor	1
11.	Gate Keeper	1
12.	Driver	1
13.	Zoo Keeper	10
14.	UDC /OA/TA	1
15.	LDC	1
16.	Ticket Clerk	1
17.	Total (permanent)	26
18.	Support Staff (On Contract) :	
	a) Security	12
	b) Sanitation	6
	c) Garden	6
	d) Attendant	6
	e) animal attendants	10
19.	Total (on Contract)	40
20.	Grand Total	66

Note : Approved by Governing Body of West Bengal Zoo Authority and Department of Forests, Govt. of West Bengal vide Memo No. 1292-For/FR/O/N/6M-08/2015 dated 16.06.2015.