Bardhaman Zoological Park Master Plan

Duration: 2024-25 to 2044-45

Year of Submission: 2024-25

Operator: West Bengal Zoo Authority,

Government of West Bengal

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Certificate

This is to certify that the Master Plan 2024-25 to 2044-45 for the scientific and long term captive management of Wildlife in Bardhaman Zoological Park, Purba Bardhaman has been prepared in consultation with technical advice from West Bengal Zoo Authority and suggestions of the designing guidelines from Central Zoo Authority.

Prepared by

Ms. Sanchita Sharma, IFS
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Burdwan Division,
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Directorate of Forests,
West Bengal

Counter signed by

Sri Saurabh Chaudhuri, IFS
Addl PCCF and
Member Secretary
West Bengal Zoo Authority
Directorate of Forests,
West Bengal

Counter signed by

Sri Debal Ray, IFS
PCCF (Wildlife) and
Chief Wildlife Warden
Directorate of Forests,
West Bengal

This Master Plan of Purba Bardhaman for 2024-25 to 2044-45 has been approved in the ..... Technical Committee meeting of Central Zoo Authority on ..... .

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Date: 30-03-2026
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Member Secretary

Central Zoo Authority

Ministry of Environment, Forests, and Climate change

Government of India

Bardhaman Zoological Park

Purba Bardhaman

Master Plan

2024-25 to 2044-45

Prepared by
Ex-officio Director, Bardhaman Zoological Park
& Divisional Forest Officer, Burdwan Division,
Directorate of Forests,
West Bengal

Acknowledgement

My thanks are due to Dr. Manoj Pant, IAS, Chief Secretary, Government of West Bengal and Chairman, West Bengal Zoo Authority and to Sri Manoj Kumar, IAS, Addl. Chief Secretary, Department of Forests and Vice-Chairman, West Bengal Zoo Authority for their guidance to prepare this Master plan.

My sincere thanks to Sri Debal Ray, IFS, Principal Chief Conservator of Forests (WL) & Chief Wildlife Warden, West Bengal and Sri Saurabh Chaudhuri, IFS, Additional Principal Chief Conservator of Forests &Member Secretary, West Bengal Zoo Authority for their valuable suggestions and guidance in preparation of this Master plan.

The Master Plan is a combined effort of all the officials of West Bengal Zoo Authority. I would like to put on record the untiring efforts and contribution of Dr. Sulata Maity, Scientific Officer, Sri Asim Kumar Khan, Sub Assistant Engineer and Mrs. Anwesha Dey, Research Assistant of West Bengal Zoo Authority for the preparation of the Master Plan and Revised Master (Layout) Plan.

Lastly, I am indebted to Sri Sanjay Kumar Shukla, IFS, Member Secretary, Central Zoo Authority, Govt. of India and also to the members of the Technical Committee of the Central Zoo Authority for their suggestions and improving the draft of the Master Plan.

Ms. Sanchita Sharma, IFS
Ex-Officio Director, Bardhaman Zoological Park &
Divisional Forest Officer, Burdwan Division, PurbaBardhaman
Directorate of Forests,
West Bengal

Preface

The zoo has been developed within the Ramnabagan Wild Life Sanctuary, a natural forest patch flourished during the feudal reign of Rajas and Maharajas of Bardhaman Taluk. After the promulgation of Estate Acquisition act, it was handed over to the Forest Department of West Bengal for management. Because there isn't a zoo in the Bardhaman district or any of the neighboring districts like Bankura, Nadia, Murshidabad, Birbhum, or Hooghly, people from the Bardhaman district and other districts became interested in witnessing the wild animals and birds of the Gangetic plains in order to foster a positive relationship between animals and people and to provide healthcare services to rescued, seized, orphaned, injured, or old wild animals in the region.

The concept of modern zoo has been constantly evolving and has undergone drastic changes since modern zoos have made a paradigm shift in objectives from display and recreation to centres of ex-situ conservation and conservation education for the common people. Accordingly, a comprehensive master plan has been prepared and revised for the long-term development, planned and scientific management of the zoo.

The design strategy combined with the extensive and in-depth knowledge of the zoo personnel forges a path ahead that is respectful to the animal and encouraging the visitor. Strong enrichment policy embedded in the zoo will be taken further. The zoological park aims to raise the benchmark in the enrichment provided to its residents. The renovated precinct will provide more space to the animals to support their natural behaviour as well as more open spaces for people to have a leisurely visit. Though it will continue taxonomy and Bio-geography as its theme, the public open areas will try to resemble some of the specific environments.

Sri Saurabh Chaudhuri, IFS
Additional Principal Chief Conservator of Forests &
Member Secretary, West Bengal Zoo Authority
Directorate of Forests, West Bengal

Foreword

The history of zoological parks has come a long way from being menageries with cages to creating a naturalistic environment for the animal keeping in view its well being. World over, considerable efforts are being made to create empathy towards the animal world providing immersive environments, both for the animal and the visitors. Apart from being educative in nature, this strategy shows the ecological relationships that exist in nature. It creates awareness amongst the human population of the vast variety of species that inhabit the various habitats across the globe.

The development of the Bardhaman Zoological Park is to take a glimpse of wild animals and birds of the Gangetic plains for developing a healthy relationship between animals and human beings and to provide medical facility to the rescued, seized, orphaned, injured or old wild animals of surroundings. With the development of the zoological garden, it takes infrastructure to a new level of interpretation. It looks at a long-term strategy of creating more open and public spaces for the citizens. Combining recreation with education, it creates a meaningful infrastructure that encourages people's participation.

The zoo is a distinctive precinct that places animals, which ideally should have been able to wander the world in a free manner, in captivity. In an ideal condition, one would want a world without zoos. However, till the human race is able to bring about a balance to their development aspirations and the implications to the environment, zoos are the only refuge for many endangered and scheduled species.

Zoos are also the places where conservation breeding can occur in conditions that are protected. For them to continue the valuable work that they are engaged in, their design and development needs care and consideration. The new vision incorporates the concern for the environment and outreach to the people with an aim to create empathy for the animals.

I am sure that this Zoological Park would be a must-see landmark for all animal lovers and international visitors to the district.

Ms. Sanchita Sharma, IFS
Ex-Officio Director, Bardhaman Zoological Park &
Divisional Forest Officer, Burdwan Division, PurbaBardhaman
Directorate of Forests, West Bengal
Date:

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Annexure

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Chapter I
INTRODUCTION

1. INTRODUCTION

In the past zoological parks throughout the world were established with an objective for providing entertainment to the visitors by exhibiting various wild animals in captivity. But on introduction of National Zoo Policy, 1998, modern zoos in India have undergone drastic changes in concept and objectives. More stress has been given on conservation breeding, conservation education and research for conservation than entertainment.

The Bardhaman Zoological Park was established in the year of 1960 as Ramnabagan Mini Zoo. In the year of 1978, Bardhaman Deer Park came into existence at the heart of the Burdwan city under Burdwan North sub-division, Block Burdwan - 1, Burdwan Municipality with an area of 14.044 Ha in the district of Purba Bardhaman.

West Bengal with a variety of forest types may be broadly divided into five natural geographic divisions—the Mangrove, Jungle Mahal and the Gangetic Plain in the south and the sub-Himalayan and Himalayan area in the north. The Gangetic Plain contains fertile alluvial soil deposited by the Ganges (Ganga) River and its tributaries and distributaries. The Indus-Ganga plain also known as the "Great Plains," (large floodplains of the Indus and the Ganga–Brahmaputra river systems) is bound on the north by Himalaya which feed its numerous rivers and are the source of the fertile alluvium deposited across the region by the two river systems. The southern edge of the plain is marked by the Vindhya- and Satpura Range, and the Chota Nagpur Plateau.

It also features numerous marshes and shallow lakes formed out of dead river courses. Indeed, the Ganges, which now runs through the narrow middle section of the state before entering Bangladesh, has been moving steadily eastward for centuries; very little of its water now goes to the sea via the western distributaries, of which the principal one is the Hooghly. Farming on the Indus-Ganga Plain primarily consists of rice and wheat grown in rotation. Other crops include maize, sugarcane, and cotton. The main source of rainfall is the southwest monsoon which is normally sufficient for general agriculture. The many rivers flowing out of the Himalayas provide water for major irrigation works. Due to a rapidly growing population (as well as other factors), this area is considered at high risk for water shortages in the future.

Kolkata, the state capital is situated on the eastern bank of the river Hooghly in the southern portion of the state, West Bengal. Another important river, the Damodar joins the Hooghly southwest of Kolkata. The elevation of the plain increases slowly toward the west; the rise is most marked near the Chota Nagpur plateau of neighboring state Jharkhand. The sub-Himalayan tract, known as the West Bengal Duars, or Western Duars, is a part of the Tarai lowland belt between the Himalayas and the plain

In Bardhaman Division, the Barddhaman is the western most district of West Bengal which lies between 22°56′ and 23°53′ N and between 86°48′ and 88°25′E. The district lies mainly between the Ajoy, the Bhagirathi or Hooghly and the Damodar rivers. The district is bounded on north by Paschim Bardhaman, Birbhum and Murshidabad, on the east by Nadia, on the south by Hooghly, Midnapore. On the west by Bankura and Purulia. The river Ajoy separates the district from Birbhum and Murshidabad districts forming natural boundary line.

Western part of the district consists of barren, rocky and rolling country with a late rite soil rising into rocky hillocks on the right back of the Ajoy River and shut it on the west, north and south by the hills of Chota nagpur and the Santhal Parganas.

Bardhaman with a headquarter at Bardhaman is the seventh most populous district in India with an approx. area of 7,024 km^2 and according to the 2011 census Bardhaman district has a population of 1,100 inhabitants per square kilometer,. The name of Bardhaman city, which lends its name to the district, comes from the 24th Jain monk Tirthankar Mahavir Bardhaman. Probably Mahavir was from a village named Ajahapur situated close to the NH2, near Memari Railway Station. The district is well connected with other states through New Delhi- Kolkata Main and Kolkata-Northeast Railway lines. In post-independence, Bardhaman became an important economic hub in West Bengal because of its location, and also due to the natural resources available in the region (especially Coal.)

Bardhaman is the most advanced district in West Bengal both industrially and agriculturally. The eastern part is enriched by the alluvial soil of Bhagirathi River (minor stream of river Ganges), and is one of the most productive agricultural regions in West Bengal. The alluvial plain to the east is covered with an enormous number of tanks for drinking water and for irrigation. The Indus-Ganga belt is the world's most extensive

expanse of uninterrupted alluvium formed by the deposition of silt by the numerous rivers. The plains are flat and mostly treeless, making it conducive for irrigation through canals. The area is also rich in ground water sources. The plains are the world's most intensely farmed areas.

There are not many established Protected Areas (PA'S) in Gangetic plains as most of the forests have already been cleared for agriculture. The district has no so-called forests, but a large tract of about 100 sq. miles in the Ausgram Police Station and the western uplands of the Assansol sub-division are covered with Sal (*Shorea robusta*) and shisham, or Indian rosewood (*Dalbergia sissoo*); the forests are interspersed with reeds and tall grasses.

Until recent history, the open grasslands of the Indus-Ganga Plain were inhabited by several large species of animal. The open plains were home to large numbers of herbivores which included all three of the Asian rhinoceros (Indian rhinoceros, Javan rhinoceros, and Sumatran rhinoceros). Earlier the Gangetic plains had a variety of mammalian as well as avifauna. Tigers were formerly common in the district, especially in the jungles of the Asansol sub-division adjoining the Jharkhand, but have now entirely disappeared. Hyenas and leopards are not common now. Wolves are scarce, and are mostly met with in the jungles north of Kanksa. Wild pigs are numerous throughout the district and monkeys also abound including the variety known as Hanuman. Sambar, Barking Deer, Black Buck, Spotted Deer, Jackal, Fox, Sloth Beer are occasionally seen in different forest patches. In the Ganges there were large concentrations of gharial, mugger crocodile and river dolphin controlling fish stocks. In the hilly areas an occasional python is met with, but poisonous snakes are very common and include several kinds of cobra, the krait and the deadly Russell's viper. Other most frequently seen varieties are the Daras and various species of harmless grass snakes.

The low-lying swampy areas of Barddhaman being in line of migration provide a very good sheltering place for the migratory birds in winter. The common avifauna of the district are pea-fowl, jungle-fowl, jungle crow, nil kantha, pied crested cuckoo, hornbill, hoopoe, griffon vulture, long-billed vulture, scavenger vulture, lagger falcon , lapwing, white necked stork etc, beside large varieties of residential birds .

However, over a period of time, Bardhaman district has lost a number of animals due to ecological changes, habitat degradation, and other related anthropogenic activities such as hunting, poaching and illegal trades. Some of the animals which were once present but have been lost include Tiger, Hyena, Leopard, Wolf etc.

As per Rule10 (3) (1) of the Recognition of Zoo Rules, 2009, it is a mandatory for a zoo in India to prepare a long term Master Plan and Master (Lay out) Plan for its development. Accordingly, Master Plan and Master (Lay out) Plan have been prepared following Central Zoo Authority guidelines. The Central Zoo Authority approved the Master (lay out) Plan of, Purba Bardhaman District, West Bengal, vide letter No. File No.22-67/2004-CZA(473)(NE). It was approved by the Central Zoo Authority in its 101st meeting held on 28th June, 2021.

The development programme in this master plan is designed only by following the well-defined steps as enunciated in the guidelines formulated by Central Zoo Authority (CZA) to cater the theme of coordinated development.

The Zoo is directly under the control of Ex-Officio Director, and Divisional Forest Officer, Burdwan Division and Member Secretary, West Bengal Zoo Authority, Govt. of West Bengal and is also recognized as Mini Zoo by the Central zoo Authority, Govt. of India, vide letter no F. No. 22-67/2004-CZA (473)(M) dt. 10.02.2006.

The Central Zoo Authority evaluated the Bardhaman Zoological Park, the evaluation was carried out by R. K. Singh, IFS (Retd.), Ex- Director, Nabab Wajid Ali Shah Zoological Park (Deputed by CZA to carry out Evaluation) on 01.05.2022. The evaluation report as submitted by the evaluation officer was deliberated in the 107th meeting of the Technical Committee of the Central Zoo Authority held on April 19th, 2023. Accordingly, the Central Zoo Authority has renewed the recognition of Bardhaman Zoological Park, Burdwan, West Bengal for a period up to June 5th, 2025 under Section 38-H(1), (3) & (4) of the Wild Life (Protection) Act, 1972. This is subject to the ratification of this decision in the next meeting of the Central Zoo Authority.

1.1 History

The history of the Bardhaman Zoological Park also known as Ramnabagan Mini Zoo dates back as 1960, which has been developed within the Ramnabagan Wildlife Sanctuary, a natural forest patch flourished during the feudal reign of Rajas and Maharajas of Bardhaman Taluk. After the promulgation of the Estate Acquisition act, it was handed over to the Forest Department of West Bengal for management. The area had been declared as reserved forests vide Notification No. 2275-For. dt. 07. 06. 1960. In the year 1978, the area had been converted to a Deer Park with the introduction of 6 nos. of spotted deer. Subsequently, the whole area of 14.31ha. has been declared as Wildlife Sanctuary vide G.O. No. 4345/For-11B-7/80 dt. 30.09.1981. As there is no zoo located in the district of Bardhaman and nearby areas, people from Bardhaman town and other parts of the district became interested to take a glimpse of wild animals and birds of the Gangetic plains for developing a healthy relationship between animals and human beings.

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 from the Central Zoo Authority, Govt. of India. Accordingly, Ramnabagan Wild Life Sanctuary has been recognized as a Mini Zoo vide Central Zoo Authority's memo number F. No. 22-67/2004-CZA (473)(M) dt. 10.02.2006. Later the Central Zoo Authority, New Delhi vide letter No. F. No. 22-67/2004-CZA (473)(M) dated 22.04.2008 renewed the recognition to Ramnabagan Mini Zoo, Bardhaman up to 30.04.2010. Latest recognition up to 5th June 2025 was conveyed by the Central Zoo Authority .

1.2 Vision

The vision of the Bardhaman Zoological Park, Bardhaman is to provide a glimpse of wild animals and birds of the Gangetic plains to the general public for developing a healthy relationship between animals and human beings.

1.3 Mission

- To develop amongst visitors' empathy for wild animals and motivate them to support conservation of wildlife
- To act as a centre for receiving ill, injured, seized and orphaned animals

of Purba Bardhaman District and nearby districts like Paschim Bardhaman, Birbhum, Murshidabad, Nadia, Hooghly, and Bankura for temporary shelter, treatment and release the same in wild subject to availability of suitable habitat or otherwise scientific upkeep with strict adherence to the guidelines framed for the purpose.

1.4 Objectives

A. Conservation Breeding:

Breeding and raising threatened animal species with the goal of preventing their extinction by replenishing zoos, and eventually enhancing the declining wild fauna.

B. Conservation Education:

To assist the growth of community conservation attitudes, conservation awareness, and capacity building.

C. Animal Housing:

To ensure housing of captive animals and birds with special emphasis on health care, ethical standards, animal welfare and excellent animal husbandry.

D. Awareness:

To serve the cause of Wildlife conservation by arousing interest and concern for wildlife by organizing exhibitions and seminars among public.

E. Conservation Research:

To facilitate research and scientific study on animal behaviour, behavioural and environmental enrichment, nutrition and reproductive biology.

1.5 Strategies

This Mini Zoo is themed to display the animals found in the locality particularly in Gangetic plains in wild conditions and to appraise the visitors regarding their natural habitats and their conservation values, to understand biology, ecology and behavior of animals displayed. The strategies are:-

- To house and display of broad representatives of diverse and

endangered animals and birds with emphasis on the Indian fauna belonging to the region considering the climatic conditions suitable for them

- To display animals in pleasant and aesthetic natural settings in accordance with their habit and habitat specifications
- To ensure standard animal health care and establish self-sustaining populations of genetically and behaviourally viable animals

1.6 Topography

Bardhaman district with its varied tectonic elements and riverine features is a transitional zone between the Jharkhand plateau which constitutes a portion of peninsular shield in the west and Ganga-Brahamaputra alluvial plain in the north and east. In general the Jharkhand plateau consists of the met sedimentary rocks of Precambrian age, Gondwana sedimentary rocks and upper tertiary sediments. Laterite has developed on these older rocks as well as on early Quaternary sediments. Towards south, the alluvial plain merges with Damodar-kasain-Subarnarekha deltaic plains. The western half of the district resembles a promontory jutting out from the hill ranges of Chotonagpur plateau and consists of barren, rocky and rolling country with a late rite soil rising into rocky hillocks, the highest being 227 m.

Ramnabagan Wild Life Sanctuary within an area of 14.31 ha. is located in mouza Baburbag, J.L. No. 40, P.S. Bardhaman (Sadar) within the municipal limits of Bardhaman town. It lies in 87°.30′ E and 23°.15′ N. The elevation of the Zoo is 20m from MSL (Mean Sea Level). Topography is flat.

1.7 Geology

Bardhaman district is one of the premier districts in India in terms of value of mineral. Besides coal, important minerals found in the district are iron ores, calcium carbonate, abrasives, silica bricks and mounding sands, glass sands, building materials, Manganese, Bauxite, late rite etc .

1.8 Rock & Soil

Different types of soil are encountered in different topographical biological and hydrological as well as geological condition in Bardhaman district. In

the west coarse gritty soil blended with rock fragments is formed from the weathering of pegmatite, quartz veins and conglomeratic sandstones, whereas sandy soil is the characteristic of granite rocks and sandstones. The soil is of reddish colour, medium to coarse in texture, acidic in reaction, low in nitrogen, calcium, phosphate and other plant nutrients. Water holding capacity of this soil increases with depth as well as with the increase of clay portions. The alluvial soil is formed of alluvium brought down by the Ajay, Damodar, Bhagirathi and numerous other rivers. This soil is sandy, well drained and slightly acidic in nature.

1.9 Flora and fauna in Zoo premises

Flora (freeliving):-

(1) Teak (*Tectona grandis*)

(2) Sal (*Shorea robusta*)

(3) Jarul (*Lagerstroemia flosreginae*)

(4) Arjun (*Terminalia arjuna*)

(5) Piasal (*Pterocarpus marsupium*)

(6) Bahera (*Terminalia belerica*)

(7) Tamarind (*Tamarindus indica*)

(8) Mango (*Mangifera indica*)

(9) Debdaru (*Polyalthia longifolia*)

(10) Big bamboo (*Baambusaarundinesia*)

(11) Small bamboo (*Dendracalamusstrictus*)

(12) Mahua (*Madhuca indica*)

Besides, there are different shrubs, herbs, climbers and weeds like Atari (*Combretum decundrum*), Asamlata (*Chromolaena odorata*), Bhabri (*Lantana camara*), Bichua (*Girardiniadiversifolia*), Bankalmi (*Ipomoea cornea*), Kalamegh (*Andrographis paniculata*) Nishinda (*Vitex negunda*),

Satamuli (*Asparagus racemosa*), Alkushi (*Mucuna pruriens*), Kunch (*Abrus precatorius*), Kurchi (*Holarrhena antidysenterica*) etc. all over the area.

Fauna (free living):-

(1) **Birds :**

i. Parakits (*Psittacula spp*.)
ii. Cuckoos (*Cuculidae*)
iii. Storks (*Ciconiidae*)
iv. Owls (*Strix ocellata*)
v. Common Crow (*Corpus sp*.)
vi. King Fisher (*Halcyon sp).*
vii. Wood—Pecker (*Dendrocopos sp.)*

(2) **Snakes:**

i. Indian Cobra (*Najanaja* Linn.)
ii. Vipera (*Ptyasmucosus* Linn.)
iii. Dhaman (*Xenochrophis piscator* Schneider)
iv. Jal Dhora (*Amphiesmastolata* Linn.)
v. Hele Sap (*Bangaruscaenileus* Schneider)
vi. Common Indian Krait *(Bungarus caeruleus)*

(3) **Mammals:**

i. Pangoline (*Manis crassicaudata*)
ii. Civet Cat *(Viverridae spp*.)
iii. Common Langoor *(Presbytis entellus*)
iv. Spotted Dove (*Streptopelia chinensis*)
v. Common Mongoose (*Herpestes edwardsi* Geoffroy)
vi. Common House Rat (*Rattus rattus* Linn.)
vii. Fruit Bat (*Pteropus giganteous*)
viii. Squirrel (*Funumbulus pennant*)

(Annexure- IV)

1.10 Climate

The area experiences three seasons in a year. The dry season lasts from March to early June; the wet season is from June to September and the cold

season covers the rest. The mean maximum temperature on an average is 27° C in December and January; 29° C in February; 34° C in March and 34° C to 40° C in April, May and June. With the onset of Monsoon, the average day temperature stabilises at about 30°0 C. Night temperature increases from 13° C in January to 26° C to 30° C in June and it remains unchanged till September, when it begins to fall to 24° C in October, 18° C in November and 13° C in December.

1.11 Rainfall

The rainfall is 1150 mm per annum. The lowest humidity is 58 % during February and highest is 83% during July-August. In dry season, the humidity on an average is 71%.

1.12 Temperature

The mean maximum temperature on an average is 27° C in December and January; 29° C in February; 34° C in March and 34° C to 40° C in April, May and June. With the onset of Monsoon, the average day temperature stabilises at about 30°0 C. Night temperature increases from 13° C in January to 26° C to 30° C in June and it remains unchanged till September, when it begins to fall to 24° C in October, 18° C in November and 13° C in December.

1.13 Humidity

The lowest humidity is 58 % during February and highest is 83% during July-August. In dry season, the humidity on an average is 71%.

1.14 Seasons

The season may be divided into four seasons' viz., Summer season, 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.

1.15 Approach

The area is situated within the municipal limits of Bardhaman town and is about 4 km away from Bardhaman Railway station. It is about 500 m away from G.T. Road (N.H.2) on Bardhaman -Durgapur stretch. It is well

connected with G.T. Road. There is a good network of approach roads all along the periphery of the zoo.

1.16 Demography

According to the 2001 census, the population of Burdwan Municipality was 285,602 and its area was 26.30 sq. km. The 2011 census reported that the population of Bardhaman Municipality was 314,265, with 159,936 males and 154,329 females. The female sex ratio in Bardhaman Municipality is 965, compared to the state average of 950.

1.17 Legal Status of the Land

The Bardhaman Zoological Park comes under the jurisdiction of Baburbag Forest Mouzas of attached Forest Range of Burdwan Forest Division. The forest was declared as Protected Forest as per of Govt. of West Bengal's Notification no. 2275-For dated: 07.06.1960 Status—Protected Forests. R-O-R (Annexure-VIII)

1.18 Sources of Pollution

There are a few minor pollution sources in the Zoo premises. Occasional dumping of solid wastes like plastic pouches, water pouches, pan masala pouches etc. is evident. However, stringent enforcement of the rules like restriction in taking food items, plastic bottles, polythene bags etc. is implied. No other pollution sources have been identified, however composting of leftover food staffs is proposed.

Chapter II

APPRAISAL OF PRESENT ARRANGEMENT & CONSTRAINS

The Bardhaman Zoological Park is going through a developmental phase. Since its establishment, has endured all whims of crisis and success because of its strategic location and the love of the people. It combines creativity and heritage with innovative zoo management ideas. Modifications and improvements have been implemented as needed or at the time of building new enclosures, in accordance with updated zoo management policies and regulations. The zoo has a well-established administrative structure and management that responds to the needs of the animals housed and meets visitor expectations as a result of cumulative work overtime. The pretty well-organized layout plan, with a broad subject of taxonomic basis, is enclosed here as existent layout. It shows the existing enclosures, visitor amenities, administrative buildings and other infrastructure facilities.

Appraisal of Present Arrangement and Constrains

2.1 Animal Section
Existing Inventory of Animals in captivity:

The Bardhaman Zoological Park has been categorised as Mini Zoo.
Detailed list of animals is mentioned below:

INVENTORY

FORM-II
[See rule 11 (1)]

PART - A
Bardhaman Zoological Park (Ramnabagan Mini Zoo), Burdwan, West Bengal

Proforma for Annual Inventory Report
Inventory Report for the Year : 2023-2024

Endangered Species*

 # - Modified Closing Balance

S.No.	Animal Name	Scientific Name	Opening Stock (01-Apr-2023)				Births			Acquisitions			Disposals			Deaths			Closing Stock (31-Mar-2024)			
			M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T
Aves																						
1.	Jerdon's Baza	*Aviceda jerdoni*	0	0	3	**3**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
2.	Black Baza	*Aviceda leuphotes*	0	0	2	**2**	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
3.	# Indian Peafowl	*Pavo cristatus*	2	1	1	**4**	0	0	0	1	1	0	0	0	0	0	0	0	3	3	0	6
Total Aves	**3**		**2**	**1**	**6**	**9**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**3**	**4**	**10**
Mammalia																						
1.	Rhesus Macaque	*Macaca mulatta*	2	3	1	**6**	0	0	0	0	0	0	0	0	0	0	0	0	2	3	1	6
2.	Bonnet Macaque	*Macaca radiata*	0	1	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
3.	Sloth Bear	*Melursus ursinus*	0	1	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4.	Leopard	*Panthera pardus*	2	2	0	**4**	0	0	0	0	0	0	0	1	0	0	0	0	2	1	0	3

S.No.	Animal Name	Scientific Name	Opening Stock (01-Apr-2023)				Births			Acquisitions			Disposals			Deaths			Closing Stock (31-Mar-2024)			
			M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T
Total Mammalia	**4**		**4**	**7**	**1**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**6**	**1**	**11**
Reptilia																						
1.	Marsh Crocodile	*Crocodylus palustris*	2	3	0	**5**	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	5
2.	Saltwater Crocodile	*Crocodylus porosus*	1	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Total Reptilia	**2**		**3**	**3**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**0**	**6**
Total			**9**	**11**	**7**	**27**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**10**	**12**	**5**	**27**

*Animals under Sch-I and Sch-II of Wild Life (Protection) Act, 1972

Curator (Animals)

Director

PART - B

Bardhaman Zoological Park (Ramnabagan Mini Zoo), Burdwan, West Bengal

Proforma for Annual Inventory Report

Inventory Report for the Year : 2023-2024

Other than Endangered Species*

 # - Modified Closing Balance

S.No.	Animal Name	Scientific Name	Opening Stock (01-Apr-2023)				Births			Acquisitions			Disposals			Deaths			Closing Stock (31-Mar-2024)			
			M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T
Aves																						
1.	Golden Pheasant	*Chrysolophus pictus*	1	1	0	**2**	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
2.	Emu	*Dromaius novaehollandiae*	2	1	0	**3**	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3
3.	# Lesser Adjutant Stork	*Leptoptilos javanicus*	1	1	0	**2**	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	3
4.	Silver Pheasant	*Lophura nycthemera*	0	1	0	**1**	0	0	0	2	2	0	0	0	0	0	0	0	2	3	0	5
5.	# Rose-ringed Parakeet	*Psittacula krameri*	4	4	0	**8**	0	0	0	0	0	0	0	0	0	0	0	0	5	3	0	8
Total Aves	**5**		**8**	**8**	**0**	**16**	**0**	**0**	**0**	**2**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**8**	**4**	**21**
Mammalia																						
1.	# Chital/ Spotted Deer	*Axis axis*	28	52	32	**112**	8	15	4	0	0	0	30	55	5	1	3	0	15	25	5	45

S.No.	Animal Name	Scientific Name	Opening Stock (01-Apr-2023)				Births			Acquisitions			Disposals			Deaths			Closing Stock (31-Mar-2024)			
			M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T
2.	# Indian Crested Porcupine	*Hystrix indica*	1	1	5	**7**	0	0	6	0	0	0	1	1	0	1	0	0	0	1	9	10
3.	Indian Muntjac	*Muntiacus muntjak*	1	2	0	**3**	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3
4.		*Semnopithecus*	2	2	0	**4**	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	4
Total Mammalia	**4**		**32**	**57**	**37**	**126**	**8**	**15**	**10**	**0**	**0**	**0**	**31**	**56**	**5**	**2**	**3**	**0**	**18**	**30**	**14**	**62**
Reptilia																						
1.	Indian Star Tortoise	*Geochelone elegans*	13	0	0	**13**	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13
2.	American box turtle, Common Box Turtle, Eastern Box Turtle, Mexican box turtle, Yucatan box turtle	*Terrapene carolina*	1	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Total Reptilia	**2**		**14**	**0**	**0**	**14**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**0**	**0**	**14**
Total			**54**	**65**	**37**	**156**	**8**	**15**	**10**	**2**	**2**	**1**	**31**	**56**	**5**	**2**	**3**	**0**	**41**	**38**	**18**	**97**
Grand Total			**63**	**76**	**44**	**183**	**8**	**15**	**10**	**3**	**3**	**1**	**31**	**57**	**5**	**2**	**3**	**1**	**51**	**50**	**23**	**124**

Curator (Animals)

Director

Animal Section:
Staff engaged: Keeper: one, Animal Attendant: Two
Constraints

a) Lack of adequately trained personnel

As the zoo is under developing stage, there is lack of adequate trained personnel in the zoo.

Mammal Section

Leopard Enclosure

The enclosure is 2000 sqm spread and fenced with iron angle and chain-link. There are 3 night shelters cum feeding cubicles and a squeeze chamber in the side enclosure. To ensure the protection energized fencing is provided at the top of the chain link fencing to prevent the escape of leopards from the enclosure. There are 3 nos. (2:1) of leopard housed in the enclosure at present.

Golden Jackal (*Canis aureus*)

An area of 690 sqm was identified in front of Children Park for Golden Jackal enclosure. Landscape around animal exhibit/ enclosure comprised of plantations of appropriate tree and shrub species of adequate extent and of such shape that the enclosure will not be visible to the visitors from any place other than the animal viewing areas. Presently no animal is present in this enclosure.

Indian Wolf (*Canis lupus pallipes*)

An area of 690 sqm was identified beside Hyena enclosure for the Indian Wolf enclosure. Landscape around animal exhibit/ enclosure comprised of plantations of appropriate tree and shrub species of adequate extent and of such shape that the enclosure will not be visible to the visitors from any place other than the animal viewing areas. All the hard exteriors of the enclosure i.e. the enclosure barrier and the frontage of the night shelters is effectively camouflaged through

planting of bamboo, dwarf tree species and shrubs. Presently no animal is present in this enclosure.

Sloth Bear Enclosure

An area of 1800 sqm has been allotted for the Sloth Bear Enclosure. Enclosure has a moat, night shelter with a kraal. There is only 1 no. (0:1) of Sloth Bear housed in the enclosure at present.

In future this enclosure is proposed to be converted into Bengal Tiger Enclosure.

Black-footed gray langur

An area of 600 sqm has been allotted for the Black-footed gray langur Enclosure. Enclosure has a night shelter. There are 4 nos. (2:2) of Black-footed gray langur housed in the enclosure at present.

Rhesus Macaque

An area of 600 sqm has been allotted for the Rhesus MacaqueEnclosure. Enclosure has a night shelter. There are 6 nos. (2:3:1) of Rhesus Macaque housed in the enclosure at present.

Bonnet Macaque

An area been allotted for the temporary Bonnet Macaque Enclosure. There is only 1 no. (0:1) of Bonnet Macaque housed in the enclosure at present.

Spotted Deer Enclosure

The total area of the enclosure is 8075 acres. There is one night shelter feeding shed made up of bamboo and thatch for the captive deer. It has chain-link fencing with iron post with a height of 2.5 mt. Now there are 45 nos. (15:25:5) of spotted deer in the enclosure. The feeding shed is also attached at the side of the deer enclosure.

Barking Deer Enclosure

The total area of the enclosure is 4350 acres. There is one night shelter feeding shed made up of bamboo and thatch for the captive deer. It has chain-link fencing with iron post with a height of 2.5 mt. Now there are 3

nos. (1:2) of barking deer in the enclosure. The feeding shed is also attached at the southern side of the deer enclosure.

Indian Crested Porcupine

An area been allotted for the temporary Porcupine Enclosure. Enclosure has a night shelter with a kraal. There are 10 nos. (1:9) of Porcupines are housed in the enclosure at present.

Reptile Section

Marsh Crocodile Enclosure:

This area of the enclosure is 1660 sqm. The pond is well fenced by wire net of 1.5m height to house marsh crocodiles. Surrounding the first fence another wire net fencing of 1.5 m height is constructed to restrict the visitors to go near the enclosure. The shoreline of the pond is sandy and slope is maintained to enable Mugger to easily reach the shoreline. The sand bed is maintained for egg laying and basking of Mugger. Presently this enclosure of the zoo has 2:3 Mugger as on 31.03.2024.

Saltwater Crocodile Enclosure:

The total area of the enclosure is 1000 sqm. The pond is well fenced by wire net of 1.5 m height to house the animals to the pond. Surrounding the first fence another wire net fencing of 1.5 m height is constructed to restrict visitors from animal proximity. Presently there are 1:0 crocodile housed in this enclosure.

Aviary Section

Flying Bird Aviary:

The total area of the aviary is 500 sqm. The enclosure is made up of iron enclosure fitted with wire net. This has a height of 11 m. The cage is also provided with a water reservoir.

Presently this aviary is used to house native species like Rose-ringed Parakeet.

Pheasantry:

The total area of the Pheasantry is 500 sqm. It has a dimension of 40 m(L) X 10 m(B) X 3 m(H). Out of that an area is available for pheasants and another area is for Peafowl. The total area is divided into 4 chambers to accommodate different types of pheasants. The balance area is kept as service gates for zoo keepers. Presently this enclosure of the zoo has 2 nos. (1:1) Golden Pheasant, 5 nos. (2:3) Silver Pheasant.

2.2 Veterinary Section

Staff engaged: Veterinary Assistant-1

There is a treatment room and a postmortem room exists in the. Since the Zoo is going through a developmental phase, Veterinary Officer from Block Livestock Development Office called once in a week for regular check-up and treatment. Medicines are purchased from Burdwan and vaccines are brought from other zoos.

Staff assisting this section:

Zoo Keeper, Animal Attendant, Attendant and other supporting staff are assisting this section under the supervision of the Zoo Supervisor, as and when required.

Constraints:

A full time veterinary officer required to be posted in the Zoo. More veterinary assistant will require according to the development of the zoo. Moreover, no quarantine enclosure for newly rescued animals, isolation chamber for treatment of the sick animals, doctor's chamber & facility for storage of medicines, refrigerators are available with the Zoo.

Improvements of veterinary facilities are required like indoor patient ward, sophisticated equipment, medical research and documentation.

2.3 Maintenance Section

Staff engaged: 0

Constraints:

Various maintenance works are being looked after by the Zoo Supervisor along with other Zoo staff. If necessary, outside agency is engaged for

specific purpose. The arrangement of water for staff and leopard enclosure is ensured by electric pumping system. Electricity for lights in leopard enclosure is provided through solar panels and recently by electric power also. At present, there is no rest shade for zoo in-charge or staff available in the Zoo.

2.4 Garden Section

Garden Attendant: 0

For aesthetic purposes, grasses and seasonal plants are planted. However, the natural Vegetations are retained inside the Zoo premises.

Constraints:

The prime constraint face during maintenance of the lawns & Gardens is inundation during monsoons and damage of plants. Proper landscaping and planning of appropriate plant species is to be made to provide a naturalistic environment within theZoo to enable the visitors to have communication with nature and get motivated to livein harmony with nature.

2.5 Security Section

Staff engaged: Security Personals: 8

Security is one of the most important aspects of Zoo management. Boundary wall of 2m with chain link fencing exist to stop the entry of infiltrators and stray animals at strategic locations. The security section of the zoo is looked after by security guards and gate keepers under the supervision of the Zoo supervisor. There are eight security personnel who have been appointed for day and for night. CCTV Cameras have been installed to watch the trespassing in the zoo area.

Constraints

Regular updating of equipment for the security personnel is essential. More security personnel need to be engaged to strengthen the day-night security. Security amenities like walky-talkies are required. Boundary wall to be constructed along the entire perimeter of the Zoo. More CCTV to be installed to watch cover entire perimeter of the zoo and animal's enclosures.

2.6 Power Supply Section
Staff engaged: 0

Power supply is conventional in the Zoo from West Bengal State Electricity Board.

Constraints: During natural calamities, the power supply may get hampered for several hours to several days. It is required to develop a solar power system to support minimum power supply for CCTV, energized fence, office etc.

2.7 Feed and Store Section
Staff engaged: 0

Present arrangement:

This is the most important section as far as animal diet is concerned. The clean and safe diet goes a long way in maintaining the health and upkeep of animals. However, storing of quality food, preparation and supply of food to all animals requires lot of logistics. There is a kitchen to process food and a store room for storage of food items. For storing perishable food items, the zoo kitchen also contains a refrigerator.

Outside agencies supply the food grains etc. for the animals on monthly basis and for leopards beef is supplied on daily basis. The quality and specificity of the food is checked by Divisional Forest Officer (DFO) / Veterinary Officer with the assistance of Zoo Supervisor.

Constraints: Alternate supply chain is not well developed and also need to work out an alternative food regime for species specific requirements. There is also lack of availability of high-pressure washing equipment (water jet), crate with lids provided for transportation of food items from stores to different animal enclosures, deep freezer, fly traps etc.

There is no feed preparation room with storage facility in the Zoo. Moreover, there is no trolley for transportation of the feed to the enclosures. As the Zoo harbors fish-eating birds and reptiles a tank for live storage of fish is needed.

Deep fridge to store perishable food items is not available at present and needs to be procured in the unlikely event of non-supply of perishable food items during natural disasters or general strike in West Bengal.

Presently no staff is engaged exclusively for the store & feed supply section of the Zoo. The Zookeepers and animal attendants are carrying out the duties and responsibilities of this section under the supervision of the Zoo supervisor.

2.8 Sanitation Section
Staff engaged: 1 (One)

A good zoo is certainly one which has also made provisions for good sanitation facilities. Regular drainage for regular discharge of effluent is a must. Hygiene of the enclosures and zoo surroundings is ensured throughout, to prevent diseases to the animals. Better sanitation takes care of the health of the animals. Well defined drainage system is provided in leopard night shelters. However, there is scope for improvement in the drainage system. This section is dealt with by the sanitary attendant under the supervision of the Zoo Supervisor and other staff.

Constraints: Lack of running water facility with in-sufficient overhead tanks makes the process cumbersome. Furthermore, permanent drains are needed for disposal of liquid waste. Require more sanitary attendants to make zoo clean.

2.9 Construction and maintenance section

There is no separate construction & maintenance section in the Zoo at present.

Constructions of civil, electrical and mechanical nature are being carried out by inviting open tenders from eligible contractors. Various other maintenance works in the Zoo are being performed by local skilled persons on contract or on daily wages under the supervision of Zoo supervisor along with other staff members.

The Executive Engineer and Assistant Engineer of West Bengal Zoo Authority provide necessary assistance to plan the designing of enclosures, preparation of estimates and supervision during execution.

2.10 Water supply section:

Water is required in large quantities for many zoo activities. As a result,

water management is of prime importance in the planning of a zoo. For staffs and leopard enclosure, Two overhead tanks has been set up to store water, lifted from deep-tube well. Pump is operated by electricity & by diesel driven generator during power off.

Constraints:

The supply of more freshwater is necessity for maintenance of animals and public sanitation facilities.

2.11 Research and Education

Staff engaged: Research Assistant: 0

In future research programme may be undertaken in collaboration with the nearby colleges, if permitted. However, behavioural study of animals and water quality monitoring of crocodile ponds are carried out routinely to observe any pollution load beyond tolerance limit of the inmates of the ponds. A NIC (154 sqm.) is exist in the southern part of the Zoo for public awareness and education programme.

Constraints: Zoo Biologist/ Research Assistant and Zoo Educator to be recruited to identify issues of study and to conduct systematic, scientific study and to establish network with University and other Institution to carryout collaborative research work on the important issues on a regular basis. Bardhaman Zoological Park doesn't have a continuous zoo education program or a set education policy, because there aren't enough staff members working in this area of the zoo.
There is lack of information booklets and materials on animals of Zoo and on conservation aspects.

2.12 Transport Facilities

Staff engaged: 0
Constraints: The zoo does not have any vehicle, to transport rescued animals. Four transportation cages are not sufficient to carry animals as per need. There is also a demand of vehicle for transporting essential

materials. Battery operated cars for senior citizens and specially challenged visitors are also needed.

2.13 Visitor Facilities

Present arrangement:

Presently all basic visitors' facilities like animal and directional sinages, sitting arrangement, toilets and drinking water points are present in the Zoo premises. Based on CZA guidelines, the following amenities have been developed for visitors.

- The Zoo has a separate entry and exit gate and a ticket counter.
- There is well planned visitors circulation path.
- Appropriate sinages for directing visitors in the trail and showing the way to various enclosures are in place.
- Two (2nos.) toilets have been constructed for public convenience.
- One (1no.) water point has been developed.
- Two visitors rest shed with sitting arrangement have been created.
- Warning signboards have been developed to discourage the visitors from feeding or teasing animals.
- First aid facilities are available in case of any emergencies.
- Sufficient parking space has been earmarked for parking of vehicles outside the main gate.

Constraints:

The Zoo does not have Wheel chair, cafeteria, Cloak Room, Child care unit for visitors. There is lack of facilities like waiting hall etc. in the zoo . Require more signage for directing visitors in the trail and showing the way to different enclosures. Furthermore, the existing drinking water supply facilities are not adequate. More facilities for physically challenged people need to be established.

2.14 Disposal of Solid and Liquid Waste

Staff engaged: 0

The solid waste generated in the zoo is predominantly organic in nature and composed of grass, leaf litters, leftover food items and animal excreta.

These are taken to the compost pit near nursery. As food items and plastic are strictly restricted for the visitors, generation of non-biodegradable wastes is less; and if generated, the collected non-biodegradable items are transported to the chamber at the north-eastern side of the zoo.

Constraints

No specific management plan has been developed for liquid waste.

2.15 Zoo Administration Section

General Zoo Administration Section:

The Divisional Forest Officer, Burdwan Division is the Ex-Officio Director, of the zoo. The Director is looking after all the administration of the zoo and he is assisted by the 17 nos. of zoo staff.

Constraints:

Entry gate &Ticket Counter

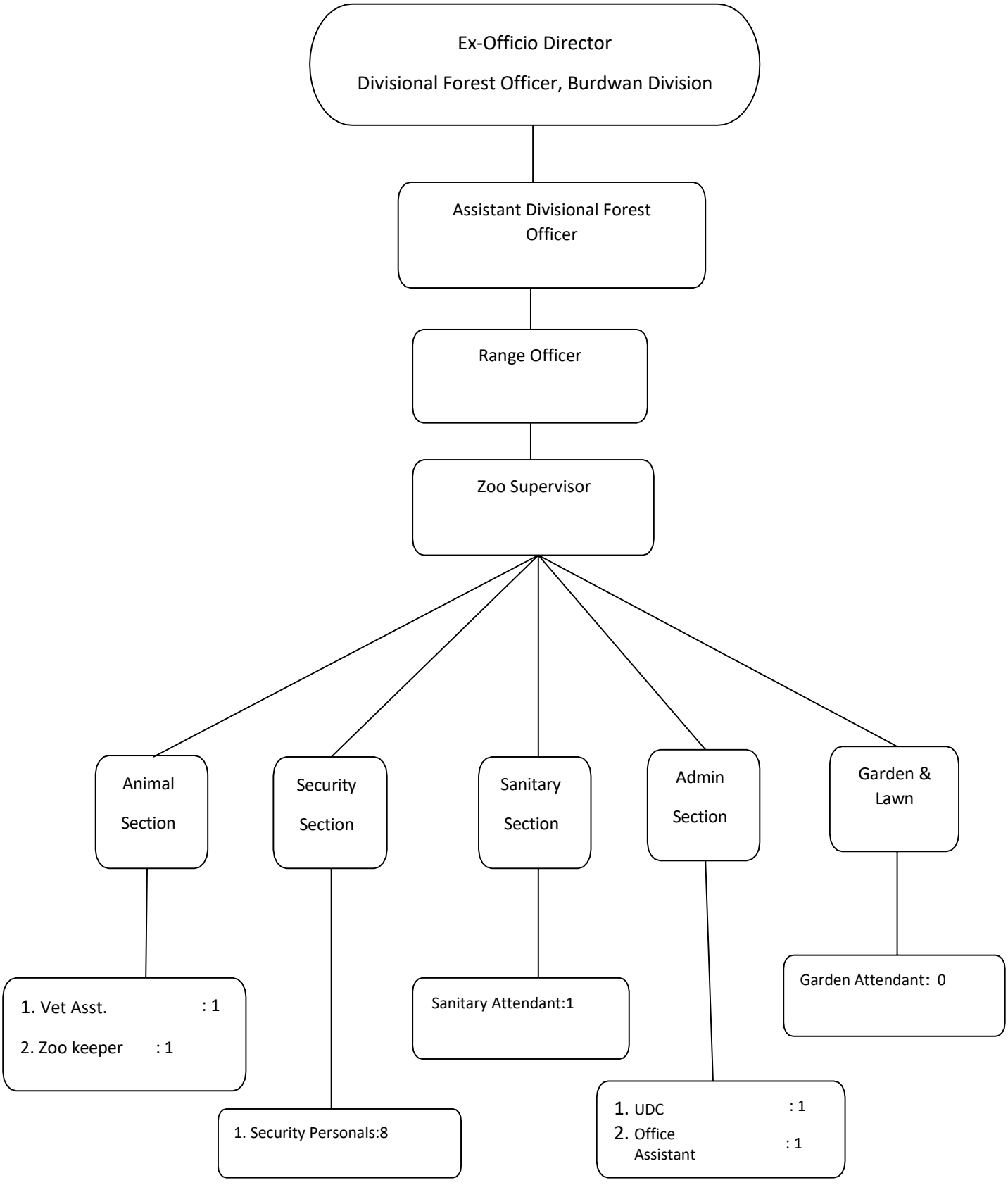
The entry gate and ticket counter are at the northern side of the zoo adjacent to the main road for selling of entry ticket to the visitors.

Staff engaged:

Ticket Attendant/Clerk0

Gate Keeper: 0

The present organizational structure is as follows:-



2.16 Animal Collection Plan

The current animal collection plans as approved vide Letter no. File No.22-67/2004-CZA(473)(NE); dated 27.07.2021 for approval. The Plan was prepared with the intent of protecting the endangered native species of wild life.

At Bardhaman Zoological Park, we have complied the rules, such as collecting local wild animals in their natural habitats. Provisions for future expansions are taken into account because the Mini Zoo has the capacity to house 1-2 common exotic wild species.

Existing Animal Collection Plan

Sl. No.	Species	Present stock with the Zoo				Proposed collection				Animals to be Acquired or removed				Source of procurement
Mammals														
		M	F	U	Total	M	F	U	Total	M	F	U	Total	
1	Common Leopard *Panthera pardus* (Linnaeus, 1758)	0	0	0	0	2	2	0	4	2	2	0	4	Transfer from recognized zoo
2	Sloth Bear *Melursus ursinus* (Shaw, 1791)	0	1	0	1	2	2	0	4	2	1	0	3	Transfer from recognized zoo
3	Leopard Cat *Prionailurus bengalensis* (Kerr.1792)	0	0	0	0	2	3	0	5	2	3	0	5	Transfer from recognized zoo
4	Rhesus Monkey *Macaca mulatta* (Zimmermann,1780)	2	2	0	4	2	4	0	6	0	2		2	Transfer from recognized zoo
5	Palm Civet *Paguma larvata*(Hamilton Smith, 1827)	0	0	0	0	2	2	0	4	2	2	0	4	Transfer from recognized zoo
6	Stripped Hyena *Hyaena hyaena* (Linnaeus,1758)	0	0	0	0	2	3	0	5	2	3	0	5	Transfer from recognized zoo
7	Indian Wolf *Canis lupus pallipes* Sykes, 1831	0	0	0	0	2	3	0	5	2	3	0	5	Transfer from recognized zoo
8	Bengal Fox *Vulpes bengalensis*(Shaw, 1800)	0	0	0	0	2	3	0	5	2	3	0	5	Transfer from recognized zoo
9	Jackal *Canis aureus* Linnaeus, 1758	0	0	0	0	2	3	0	5	2	3	0	5	Transfer from recognized zoo

10	Spotted Deer *Axis axis* Erxleben1777	7	14	0	21	6	10	0	16	1	4	0	5	Transfer from Recognized zoo
11	Barking Deer *Muntiacus muntjac* Zimmermann,1780	0	0	0	0	4	6	0	10	4	6	0	10	Transfer from recognized zoo
12	Sambar *Rusa unicolor*(Kerr,1792)	0	0	0	0	4	4	0	8	4	4	0	8	Transfer from Recognized zoo

13	Four Horned Antelope *Tetracerus quadricornis* (Deblainville,1816)	0	0	0	0	2	2	0	4	2	2	0	4	Transfer from recognized zoo
14	Bonnet Macaque *Macaca radiata* (E.Geoffroy, 1812)	0	1	0	1	2	4	0	6	2	3	0	5	Transfer from recognized zoo
15	Common Langur *Semnopithecus entellus* (Dufresne,1797)	0	0	0	0	2	4	0	6	2	4	0	6	Transfer from recognized zoo
16	Porcupine *Hystrix indica* Kerr,1792	0	0	0	0	2	2	0	4	2	2	0	4	Transfer from Recognized zoo
Birds														
1	Peafowl *Pavo cristatus* Linnaeus, 1758	1	4	0	5	2	2	0	4	1	0	0	1	Transfer from recognized zoo
2	Red Jungle Fowl *Galus Galus* (Linnaeus, 1758)	0	0	0	0	2	2	0	4	2	2	0	4	Transfer from recognized zoo
3	Silver Pheasant *Lophura nycthemera* (Linnaeus,1758)	0	1	1	2	2	2	0	4	2	1	0	3	Transfer from recognized zoo
4	Golden Pheasant *Chrysolophus pictus* (Linnaeus,1758)	0	1	1	2	2	2	0	4	2	1	0	3	Transfer from recognized zoo
5	Exotic Birds													Transfer from Recognized zoo
Flying Birds														
6	Rose Ringed Parakeet *Psittacula krameri* (Scopoli, 1769)	0	0	4	4	2	2	0	4	1	1	0	2	Transfer from recognized zoo
7	Rosy Pelican *Pelecanus onocrotalus* Linnaeus,1758	0	0	0	0	2	2	0	4	2	2	0	4	Transfer from recognized zoo
8	Flying Indian Birds of Indigenous origin				0				60				60	Transfer from Recognized zoo
WaterBirds														
9	Lesser Adjutant Stork *Leptoptilos javanicus* Horsfeild,1821	0	0	0	0	2	2	0	4	2	2	0	4	Transfer from recognized zoo

10	Openbill Stork *Anastomus noscitans* Boddaert,1783	0	0	0	0	2	4	0	6	2	4	0	6	Transfer from recognized zoo
11	Egrets *Ardea alba*	0	0	0	0	2	2	0	4	2	2	0	4	Transfer from Recognized zoo
12	Herons	0	0	0	0	2	2	0	4	2	2	0	4	Transfer from
	*Ardeolagrayii,*Sykes,1832													Recognized zoo
13	Other Birds													10%oftotal animal population
Reptile														
1	Salt Water Crocodile *Crocodilus porosus* Schneider,1801	1	0	0	1	3	3	0	6	2	3	0	5	Transfer from recognized zoo
2	Marsh Crocodile *Crocodilus palustris* Lesson, 1831	0	0	0	0	0	0	0	0	2	3	0	5	Transfer from recognized zoo
3	Tortoise Indian Star *Geochelone elegans* (Schoeph,1801)	14	2	0	16	20	20	0	40	6	18	0	24	Transfer from recognized zoo
4	Turtles	3	6	0	9	10	10	0	20	7	4	0	11	Transfer from Recognized zoo
5	Water Monitor Lizard *Varanus salvator*	0	0	0	0	2	2	0	4	2	2	0	4	Transfer from Recognized zoo

M: Male
F: Female
U:Unknown Sex

N. B. Keeping these above animals will make people aware about the importance of Conservation as well as educate the people to identify animals with their habit and habitat of different flora and fauna for long term conservation of biodiversity in this region

2.17 Research

Zoos and aquariums have a long history of conducting research that has aided in the advancement of fundamental scientific knowledge and facilitated the ability of institutions to make knowledgeable judgments regarding the management of their animal populations.

A well-validated body of information based on widely acknowledged principles is the result of good research and is suited for dissemination. The

zoo's employees, as well as students, qualified volunteers, or outside research partners, may carry out the research work. Overall, the health and wellbeing of particular wild animals or groups, as well as the protection of wild species and ecosystems, are the most significant parts of the knowledge gained from zoo research. Actions that significantly improve the survival of species and ecosystems are referred to as "conservation," whether they are taken in the natural environment (in situ) or away from it (ex situ). Results from research are especially helpful for problem identification, characterization, and resolution as well as for setting priorities and making decisions for conservation, animal welfare, or other goals including education and public relations. Zoo research can contribute significantly to the advancement of science on a number of areas and be applicable in a wide range of settings, including the field of wildlife management. The possibilities for zoo research are essentially limitless and include non-invasive, benign studies involving concepts from engineering and mathematics, such as biomechanical or biomaterials studies of flight (aerodynamics), navigation, and migration in bats, birds, and insects; or of swimming (hydrodynamics) in mammals, reptiles, frogs, fish, and invertebrates. Zoo-based research does not always have to be directly and obviously "practical" or motivated by pre-existing hypotheses. The Strategy emphasizes the significant long-term importance of speculative, 'blue-sky' research in zoos and aquariums.

Animal care, assisted reproduction, behaviour, bioinformatics, biomaterials or "gene" banking, biotechnology, contraception, database management, diet, disease, DNA analysis, domestication, environmental enrichment, husbandry, identification, life histories, low temperature biology (cryobiology), parasites, population analysis, reproduction, and stud

management are just a few of the topics that basic and applied research programs in zoos or aquariums can cover.

2.18 Conservation breeding

The Conservation Breeding Program is a science that aims to conserve a species by preventing the approaching natural population collapse driven by numerous elimination pressures (such as habitat loss, habitat fragmentation, industrialization, poaching, illegal trade, and climate change, among others). The Conservation Breeding Program's objective is to preserve the genetic diversity of the species and restore it to the wild to build a self-sustaining population. Zoo animals are kept as insurance for use in the future with the only purpose of enhancing and supplementing the existing population, or they should only be utilized for restocking/reintroduction if the species becomes extinct in the wild. Zoos should manage these populations so that each individual can be utilized for display and that there is a surplus stock available in case extinction occurs or the in-situ population needs to be boosted. These people are also utilized as teaching resources to raise awareness of the need to conserve these endangered animals.

Sequence of actions must be taken for conservation breeding in accordance with CZA guidelines:

1. Recognition of the founders.
2. Marking of founders with rings, ear tags, or transponders.
3. Creation of animal observation and history sheets for the founders that have been identified.
4. The National Studbook Keeper compiles the Studbook.
5. Communication with the species' (if any) International Studbook Keeper.

6. The ability to purchase the founders from foreign zoos (if necessary), as well as information about the zoos where founders may be purchased.
7. The founders' physical condition was examined at the National Referral Centre (Indian Veterinary Research Institute, Bareilly) and the zoo's veterinary hospital.
8. The founders' genetic health will be examined using blood samples or other body parts with assistance from LaCONES, Hyderabad.

2.19 Education and Awareness

The zoo was established primarily to entertain visitors while also educating them about animals. This Zoo is frequently visited by many students from various schools, colleges, and universities for educational purposes. Additionally, DFO/ADFO/Range Officers participated in the study trips to provide information on a variety of topics related to wild animals, their habitats, and the need for conservation. The detrimental impacts of the overuse of natural resources are also discussed, along with how adopting sustainable lifestyles and living in harmony with the environment will preserve life on Earth.

Zoos are an effective tool for educating people about the close relationship that exists between protecting natural areas and maintaining the life-sustaining processes of nature since they are frequently visited by huge numbers of people.

The Zoo management applies the following approaches towards education of visitors & public in general:

- The management of the zoo uses the following strategies to educate visitors and the general public.

- Signages that are properly created to highlight the biological and ecological details of the species on display, as well as their number in the wild and conservation status.
- Informative & conscientious Warnings that highlight the importance of protecting forests and wildlife, wetland ecosystem conservation, the role of zoos in wildlife conservation, criminal laws against hunting and wildlife trafficking, myths about wildlife products, etc. are all important issues that require everyone's attention if we are to find solutions.
- Guided tours of nearby school students are organized from time to time by the Zoo.
- Online seminar/ webinar and quizzes have been organized.
- Different special days like Environment Day, Wildlife Day, Earth Day etc. have been organized.
- **Nature Interpretation Centre:-**

A NIC (154 sqm.) is existing in the southern part of the Zoo for public awareness and education programme.

Chapter III:
FUTURE OBJECTIVES, VISION, MISSION, THEME & STRATEGY

3.1 Future Objectives

In earlier days, the zoo was mainly established for the purpose of entertainment. But the concept of zoo has drastically changed. Now a day's more stress has been given on conservation, education and research than entertainment. This has been made clear in the National Zoo Policy, 1998. Keeping this in view the objectives, theme and mission of the Bardhaman Zoological Park have been framed as follows:-

A. Conservation Breeding: Breeding and raise of endangered species of wildlife in India and around the world with the goal of preventing their extinction through restocking other zoos and eventually enhancing the declining natural fauna.

B. Conservation Education: To promote conservation education, community attitude development, capacity building, and increased community awareness.

C. Animal Housing: To assure the housing of captive animals and birds with a focus on excellent animal husbandry, health care, and ethical standards, Rescue and rehabilitation of the wild animals of North Bengal Plain.

D. Awareness: To promote wildlife conservation by igniting public interest and concern for wildlife through the organization of exhibitions and seminars.

E. Conservation Research: To promote scientific investigation into animal behaviour, environmental enrichment, disease control, nutrition, and reproductive biology.

3.2 Vision

This zoo plans to develop a system for improving knowledge of the proper maintenance and ex-situ conservation of the globally vulnerable fauna and flora, as well as regional biodiversity and community ex-situ conservation sensitization. The zoo will serve as a location to research animal behaviour, oversee conservation efforts, and create species-specific conservation and management plans. As a facility for endemic species recovery, the zoo will

seek to conserve breeding of endemic species and preserve insurance populations.

3.3 Mission Statement

- Communicating the message of conservation education through effusive and learning experiences without compromising the probable standards of display of wild animals common to Gangetic plain under the existing policies and rules.
- To connect visitors and animals through best available animal welfare and care, best educational and inspirational experiences, fostering public appreciation and support for wild animals and conservation.

3.4 Theme

The theme of the zoo is to display the animals found in the locality particularly in Gangetic plains in wild conditions. The visitors are to be apprised regarding their natural habitats and their conservation values and to facilitate the visitors to understand biology, ecology and behavior of animals in display.

3.5 Strategies

The strategies to achieve the goals will be through housing and display of broad representatives of diverse and endangered animals and birds with emphasis on the Indian fauna belonging to this region and adaptive to the geo-climatic conditions. These are:-

a) Promoting good husbandry practices that safeguard the physical and mental health of the animals in our care through expert animal and veterinary care and a thorough animal management strategy.
b) Education, including enlisting the help of and educating staff members, carrying out in-reach and outreach programs, holding conferences and workshops for volunteers and others, and displaying natural animal displays as well as directional, informative, and interpretive signage.
c) The representation of wild animals and their habitats in animal exhibits, landscaping, graphics, and Zoo programming must foster visitor understanding and concern.

d) Allocating funds to conservation breeding initiatives that will help preserve particular species.

e) By utilizing personnel, universities, and other zoological organizations, supporting and taking part in scientific research that advances our knowledge of, and understanding of, endangered animals.

f) Providing a positive visitor experience through contemporary exhibit design, efficiently run visitor services (such as restrooms, gift shops, rest areas, cloak rooms, wheelchair parking, etc.), and formal and scientific landscaping to make the most of the natural and park-like surroundings.

Bardhaman Zoological Park will try to be self-sustaining and financially stable through innovative marketing techniques and increasing tourist foot traffic.

g) Raising funds to augment the operation of the Zoo. Enhancing public amenities and infrastructure (such as well-maintained exhibitions and visitor pathways, restrooms, visitor sheds, and drinking water facilities, etc.) would significantly contribute to boosting image of the Zoo.

The following possibilities would be explored besides the revenue generated from entry tickets:

- Appropriate organization advertising in the Zoo.
- Building food courts, cafeterias, and gift shops inside the zoo.
- Transportation rides, photography, and videography.
- Adoption of exhibitions, including feeding of animals, upkeep of cages, and medical attention, etc.
- Website of the Zoo: The Zoo has to be developed a website with up-to-date information, including the grievances resolution mechanism, in order to provide needed information to the tourists and other agencies.
- Friends of Zoo- possible Donors: The administration of the zoo would invite possible donor groups and/or individuals to the zoo's activities and functions in order to identify them. In order to foster empathy for the Zoo animals, organizations who have demonstrated a strong interest in donating funds for social and public causes can be introduced to the facility.
- Networking with other industries: Zoos that house charismatic and endangered species struggle to attract more tourists while amusement parks, museums, and outdoor adventure activities draw crowds. In order to inform their visitors about the experiences, the Zoo has to offer, the Zoo

management will network with tour companies, transportation companies, hotels, movie theatres, and shopping centers.

The objectives as mentioned above are to be achieved by housing and display of broad representatives of diverse and endangered animals and birds belonging to this region considering the climatic condition suitable to them. The animals are displayed in pleasant aesthetic natural settings in conformity with their almost natural habitat and their biological needs, to ensure standard animal health & hygiene and expert veterinary care, by providing sufficient space to the animals as per CZA guide lines.

Chapter IV
FUTURE ACTION PLAN

The future action plan is aimed to provide direction for development of the zoo in coming 20 years i.e. 2024-25 to 2044-45. The proposal is based on the topography of the site, water availability, vegetation, climate, visitors profile, conservation, education and research need and convenience of management. For convenience, the proposal has been prepared section wise. The recommendations of the Central Zoo Authority during the evaluation of the zoos from time to time has also been kept in view while formulating the proposal for new structures or modification of existing structures.

4.1 Animal Collection Plan

Conservation being the main objective of the zoo management, the following goals is visualized to achieve the stated objectives.

1. Ex-Situ conservation of threatened species, especially those that are endemic to the geographical region.
2. Using a thematic exhibition of wild animals to provide a strong conservation message to visitors about the world's endangered species and conservation strategies.
3. Display of charismatic wild animals that are popular with visitors and have the ability to become the centre of attention, increasing zoo visitors.
4. Achieving a genetic population of all shown species that is self-sustaining.
5. Protecting the sick, injured, and orphaned animals that were brought to the zoo.

The first three objectives must be set with proper consideration for the zoo's historical breeding and maintenance performance of the species, suitability of the local climate for long term survival of the species, availability of space and infrastructure for housing, upkeep and health care of the species under naturalistic settings as per rules and guidelines of the Central Zoo Authority.

Display theme

Initially, the zoo was grown up haphazardly without any planning. At present, the zoo management proposed to adopt “broad taxonomic display”

of animal sps. of Gangetic plain and the said display will be as follows:

a. **Mammals: -**

i. Carnivores: Bengal Tiger, Leopard, Hyena, Indian Wolf, Jackal, Fishing cat, Leopard Cat, Jungle Cat.
ii. Herbivores: Giraffe, Spotted Deer, Barking Deer, Mouse Deer, Swamp Deer, Hog Deer, Indian Crested Porcupine, Himalayan Porcupine.
iii. Omnivores: Sloth Bear
iv. Primates: Black Footed gray Langur, Hoolock Gibbon.

b. **Reptiles: -**

i. Masrh Crocodile
ii. Saltwater Crocodile
iii. Indian StarTortoise
iv. Python
v. Local snakes
vi. Monitor Lizards
vii. Iguana
viii. Common Box Turtle

c. **Birds: -**

i. Flying Bird (Non-Native)
ii. Flying Bird (Native)
iii. Birds of Prey
iv. Flightless Bird
v. Pheasants
vi. Water Birds

Proposed Animal collection Plan

Keeping in view of the theme of the Purba Bardhaman in the collection plan, main thrust would be given on animal sps. of gangetic plain especially.

Animal Collection Plan of Bardhaman Zoological Park

SI No	Species	Present Stock				Proposed collection			Animals to be acquired or disposed				
		M	F	U	T	M	F	U	T	M	F	U	T
Mammals													
1.	**Common Leopard** (*Panthera pardus*)	2	1	0	3	2	2	0	4	0	1	0	1
2.	**Bengal Tiger** (*Panthera tigris*)	0	0	0	0	2	2	0	4	2	2	0	4
3.	**Giraffe** (*Giraffa camelopardalis reticulata*)	0	0	0	0	1	1	0	2	1	1	0	2
4.	**Hippopotamus** (*Hippopotamus amphibious*)	0	0	0	0	1	1	0	2	1	1	0	2
5.	**Jackal** (*Canis aureus*)	0	0	0	0	2	2	0	4	2	2	0	4
6.	**Hvena** (*Hyaena hyaena*)	0	0	0	0	2	2	0	4	2	2	0	4
7.	**Fishing Cat** (*Prionailurus viverrinus*)	0	0	0	0	2	2	0	4	2	2	0	4
8.	**Jungle Cat** (*Felis chaus*)	0	0	0	0	2	2	0	4	2	2	0	4
9.	**Leopard Cat** (*Prionailurus bengalensis*)	0	0	0	0	2	2	0	4	2	2	0	4
10.	**Indian Wolf** (*Canis lupus pallipes*)	0	0	0	0	2	2	0	4	2	2	0	4
11.	**Sloth Bear** (*Melursus ursinus*)	0	1	0	1	1	1	0	2	1	0	0	1
12.	**Hoolock Gibbon** (*Hoolock hoolock*)	0	0	0	0	2	2	0	4	2	2	0	4
13.	**Common Langur** (*Semnopithecus entellus*)	2	2	0	4	2	2	0	4	0	0	0	0

14.	**Mouse Deer** (*Tragulus javanicus*)	0	0	0	0	2	2	0	4	2	2	0	4
15.	**Swamp Deer** *(Rucervus duvaucelii)*	0	0	0	0	2	2	0	4	2	2	0	4
16.	**Hog Deer** (*Axis porcinus*)	0	0	0	0	2	2	0	4	2	2	0	4
17.	**Spotted Deer** (*Axis axis*)	15	25	5	45	10	10	0	20	-5	-15	-5	-25
18.	**Barking Deer** (*Muntiacus muntjak*)	1	2	0	3	2	2	0	4	1	0	0	1
19.	**Indian Crested Porcupine** (*Hystrix indica*)	0	1	9	10	2	2	0	4	2	1	-9	+3 -9
20.	**Himalayan porcupine** (*Hystrix brachyuran*)	0	0	0	0	2	2	0	4	2	2	0	4
Reptiles													
21.	**Salt Water Crocodile** (*Crocodylus porosus*)	1	0	0	1	1	1	0	2	0	1	0	1
22.	**Marsh Crocodile** (*Crocodylus palustris*)	2	3	0	5	3	3	0	6	1	0	0	1
23.	**Bengal Monitor Lizard** (*Varanus bengalensis*)	0	0	0	0	2	2	0	4	2	2	0	4
24.	**Yellow Monitor Lizard** (*Varanus flavescens*)	0	0	0	0	2	2	0	4	2	2	0	4
25.	**Water Monitor Lizard** (*Varanus salvator*)	0	0	0	0	2	2	0	4	2	2	0	4
26.	**Iguana** (*Iguana iguana*)	0	0	0	0	2	2	0	4	2	2	0	4
27.	**Burmese Python** (*Python bivittatus*)	0	0	0	0	2	2	0	4	2	2	0	4
28.	**Reticulated Python** (*Python reticulatus*)	0	0	0	0	2	2	0	4	2	2	0	4
29.	**Indian Rock Python** (*Python molorus*)	0	0	0	0	2	2	0	4	2	2	0	4

30.	**Russell's Viper** (*Daboia russelii*)	0	0	0	0	2	2	0	4	2	2	0	4
31.	**Spectacled Cobra** (*Naja naja*)	0	0	0	0	2	2	0	4	2	2	0	4
32.	**King Cobra** (*Ophiophagus hannah*)	0	0	0	0	2	2	0	4	2	2	0	4
33.	**Banded Krait** (*Bungaurus fasciatus*)	0	0	0	0	2	2	0	4	2	2	0	4
34.	**Indian Star Tortoise** (*Geochelone elegans*)	13	0	0	0	5	5	0	10	-8	5	0	-8 +5
35.	**Common Box Turtle** *(Terrapene Carolina)*	1	0	0	1	5	5	0	10	4	5	0	9
Flightless Bird													
36.	**Emu** (*Dromaius novaehollandiae*)	1	1	1	3	2	2	0	4	1	1	-1	+2 -1
Pheasants													
37.	**Peafowl** *(Pavo cristatus)*	0	0	0	0	2	2	0	4	2	2	0	4
38.	**Red Jungle Fowl** *(Galus Galus)*	0	0	0	0	2	2	0	4	2	2	0	4
39.	**Silver Pheasant** *(Lophura nycthemera)*	2	3	0	5	3	3	0	6	1	0	0	1
40.	**Golden Pheasant** *(Chrysolophus pictus)*	1	1	0	2	3	3	0	6	2	2	0	4
Flying Birds													
41.	**Blue & Yellow Macaw** *(Ara ararauna)*	0	0	0	0	5	5	0	10	5	5	0	10
42.	**Rose-ringed Parakeet** (*Psittacula krameri*)	5	3	0	8	5	3	0	8	0	0	0	0
43.	**Rufous Babbler** (*Passeriformes Leiotrichidae*)	0	0	0	0	5	5	0	10	5	5	0	10
44.	**Hill Mayna** (*Gracula religiosa*)	0	0	0	0	5	5	0	10	5	5	0	10

45.	**Common Myna** (*Acridotheres tristis*)	0	0	0	0	5	5	0	10	5	5	0	10
46.	**Jungle Myna** (*Acridotheres fuscus*)	0	0	0	0	5	5	0	10	5	5	0	10
47.	**White-rumped Munia** (*Lonchura striata*)	0	0	0	0	5	5	0	10	5	5	0	10
48.	**Blue-throated Barbet** (*Megalaima asiatica*)	0	0	0	0	5	5	0	10	5	5	0	10
49.	**Asian Pied Starling** (*Gracupica contra*)	0	0	0	0	5	5	0	10	5	5	0	10
50.	**Brahminy Starling** (*Sturnia pagodarum*)	0	0	0	0	5	5	0	10	5	5	0	10
51.	**Scaly-breasted munia or spotted munia** *(Lonchura punctulata)*	0	0	0	0	5	5	0	10	5	5	0	10
52.	**Black Headed Munia** *(Lonchura Malacca)*	0	0	0	0	5	5	0	10	5	5	0	10
Birds of Prey													
53.	Black Baza (*Aviceda leuphotes*)	0	0	2	2	2	2	0	4	+2	+2	-2	2 U to be disposed & 2:2 to be acquired
54.	Jerdon's Baza (*Aviceda jerdoni*)	0	0	3	3	2	2	0	4	+2	+2	-3	3 U to be disposed & 2:2 to be acquired
Water Birds													

55.	**White Breasted Water Hen** (*Amaurornis phoenicurus)*	0	0	0	0	5	5	0	10	5	5	0	10
56.	**Common Crane** (*Grus grus*)	0	0	0	0	5	5	0	10	5	5	0	10
57.	**Sarus crane** *(Antigone antigone)*	0	0	0	0	5	5	0	10	5	5	0	10
58.	**Indian spot-billed duck** *(Anas poecilorhyncha)*	0	0	0	0	5	5	0	10	5	5	0	10
59.	**Indian Openbill Stork** *(Anastomusn oscitans)*	0	0	0	0	5	5	0	10	5	5	0	10
60.	**Painted Stork** *(Mycteria leucocephala)*	0	0	0	0	5	5	0	10	5	5	0	10
61.	**Lesser Adjutant Stork** (*Leptoptilos javanicus*)	0	0	3	3	3	3	0	6	3	3	-3	+6 -3
62.	**Spoonbill** *(Platelea leucorodia)*	0	0	0	0	5	5	0	10	5	5	0	10
63.	**White Ibis** *(Threskiornis molucca)*	0	0	0	0	5	5	0	10	5	5	0	10
64.	**Little egret** *(Egretta garzetta)*	0	0	0	0	5	5	0	10	5	5	0	10
65.	**Pond Heron** *(Ardeola grayii)*	0	0	0	0	5	5	0	10	5	5	0	10
66.	**Night Heron** *(Nyctcorsax nycticorax)*	0	0	0	0	5	5	0	10	5	5	0	10
67.	**Lesser whistling duck** (*Dendrocygna Javanica)*	0	0	0	0	5	5	0	10	5	5	0	10
68.	**Muscovy Duck** (*Cairina moschata)*	0	0	0	0	5	5	0	10	5	5	0	10
69.	**Red crested pochard** *(Netta rufina)*	0	0	0	0	5	5	0	10	5	5	0	10

70.	**Magpie Goose** (*Anseranas semipalmata)*	0	0	0	0	5	5	0	10	5	5	0	10

M: Male
F: Female
U:UnknownSex

N. B. Keeping these above animals will make people aware about the importance of Conservation as well as educate the people to identify animals with their habitand habitat ofdifferent flora and fauna for long term conservation of biodiversity in this region.

Sl No.	Class	Native Species	Non-Native Species
1.	Mammalia	20	4
2.	Aves	28	7
3.	Reptilia	14	1
Total		62	12
Ratio- 88.57:17.14			

4.2 Description of the Master Layout Plan of the zoo

Due to the space constraint and lot of available infrastructure and built-in enclosures, the animals proposed in collection plan are grouped into following zones. The area of the zoo is 140440 Sqm (Annexure- I). The Animal enclosure area proposed is 35805 Sqm. which is approx. 25.50 % of the zoo and the green zone is 68158 Sqm. which is 48.53 %.

Area Statement of

I. Total Area of the Zoo: 140440 Sq.m

II. Total Area for the Animal Enclosures: 35805 Sq.m

III. Green Zone: 68158 Sq.m

IV. Rescue Centre: 150 sq.m

V. Visitor's pathway: 5543 sq.m

VI. Service pathway: 1927 sq.m

VII. Building Structure: 602 sq.m

VIII. Park: 4780 sq.m

IX. Fodder Farm: 1409 sq.m

X. **Water Body: 13411 sq.m**

Sl.no.	Animal to be housed	Area Description (Sq.m)
Aves		
1.	Flying Bird Aviary (Non-Native)	560
2.	Flightless Bird Aviary	500
3.	Birds of Prey	280
4	Pheasantry	400 (80+80+80+160)
5.	Aviary (Native Flying Bird)	80+80+80
6.	Water Bird Aviary	625
Mammal		
Herbivore Section		
7.	Mixed Deer Enclosure	6800
8.	Hippopotamus	4400
9.	Giraffe	3425
10.	Porcupine	55
	Primates	
11	Hoolock Gibbon	600
12	Common Gray Langur	280
Omnivore Section		
13.	Sloth Bear	1800
Carnivore Section		
14.	Bengal Tiger	1800
15.	Leopard	1975
16.	Hyena	690
17.	Indian Wolf	690

18.	Jackal	690
19.	Fishing Cat	690
20.	Leopard Cat	690
21.	Jungle Cat	690
Reptile Section		
22.	Snake House	400
23.	Bengal Monitor Lizard	80
24.	Water Monitor Lizard	80
25.	Yellow Monitor Lizard	80
26.	Indian Star tortoise and Box Turtle	60
27.	Saltwater Crocodile	1000
28.	Marsh Crocodile	3400
29.	Iguana	100

Carnivore Section

Bengal Tiger (*Panthera tigris*)

An area of 1800 Sqm has been identified for housing Bengal Tiger in the Zoo. The paddock area, kraal and night shelter with isolation facilities have been planned to be developed for the better upkeepment of the animal. Enclosure will be built at the North side of the park, beside Leopard Enclosure.

Enrichment Plan:

i. Wall Painting: To make them feel that they are in the wild natural habitat.
ii. Water pools: For bathing, cooling and drinking purpose.
iii. Rocky area: For their natural movement.
iv. Wooden logs: For scratching their nails and rubbing their body.
v. Resting platform/Den: To take rest.
vi. Termite mound: Termites are a valuable source of protein, fat and essential amino acids and also the termite mound keeps them busy for the whole day.
vii. Puzzle feeder: To enhance their activities throughout the day.
viii. Placing of feed at an elevated level

ix. Rotation of prey species.
x. Hanging wooden ball inside the animal enclosure.

Hyena (*Hyaena hyaena*)

An area of 690 sqm has been identified in front of Children Park for the Hyena enclosure. Landscape around animal exhibit/ enclosure comprised of plantations of appropriate tree and shrub species of adequate extent and of such shape that the enclosure will not be visible to the visitors from any place other than the animal viewing areas. All the hard exteriors of the enclosure i.e. the enclosure barrier and the frontage of the night shelters will be effectively camouflaged through planting of bamboo, dwarf tree species and shrubs.

Enrichment plan:

Area proposed for enclosure	**<u>Enrichment</u>:**
690 sq.m	**Environmental (or structural) enrichments:** Trees, shrubs and structures providing shade will be provided for shade. Logs and Tree Branches: Big logs can be packed at angles to one another. Branches will be placed against logs or other objects. Logs and branches provide areas to hide and scatter food to encourage foraging as well as elevated areas to stand and lie on. Platform: Platforms provide an elevated place to view surroundings, provide a spot for sunning themselves and allow jackals to get off the ground when wet or muddy. We can feed our foxes on top of the platform. Privacy: Hyena is wary animals, even when used to human activity, and are very adept at concealing their

	presence under adverse conditions. Concealed private areas will be provided in fox enclosures. Shrubs, logs, areas of shade cloth, palm fronds and other tree branches, reeds or simple bamboo walls will be used to provide these. **Olfactory (or food-based) enrichments:** Hiding or Scattering Food: Jackals are foragers and hiding or scattering food in their enclosure encourages this natural feeding behaviour. Placing meals inside cardboard boxes or paper towel rolls forces our foxes to work for their food. Placing treats, such as pieces of meat, inside a hollowed-out pumpkin or watermelon with holes encourages foxes to try different retrieval techniques. Whole or partial carcasses can provide hours of stimulation and encourage natural scavenging and feeding behaviour as well as social interaction, including posturing and dominance/submissive displays, between animals. Bloodsicles and Milksicles: These are made by either freezing blood or a few pieces of meat or some kitty milk in small plastic containers and can be offered on warm days. Walking different types of animals on their leads past the fox enclosure provides much interest and visual stimulation. Rubbing coconut oil on objects such as logs and tree limbs will encourage much sniffing, licking, rubbing and rolling. Animal feces, such as horse or elephant dung, results in

	much olfactory investigation. **Customised enrichments:** Foxes are naturally curious animals so any novel objects that encourage them to search, sniff, probe with nose or paw, chew, bury or squabble over provides good enrichment. Novel objects are a good way of hiding food and encouraging foraging behaviours.

Fishing Cat (*Prionailurus viverrinus*)

An area of 690 sqm has been identified for the Fishing Cat enclosure at the opposite side of existing Leopard enclosure.

Enrichment Plan:
The landscaping in the paddock area will be created to simulate the habitat of the enclosure that is similar to a wetland. The habitat will be cultivated with different wetland vegetations such as *Typha selephantinaRoxb*, *Saccharum spontaneum, Colocasia esculenta* etc. Besides, the area is enriched with different shade trees such as, *Vachellianilotica*, *Mangifera indica, Citrus maxima* etc. Trees and logs shall be provided. A sizable natural pond will be created in both display and off display enclosure. In off display area pond, fishes will be reared, so that the captive bred individuals could retain their innate behaviour.

Jungle Cat (*Felis chaus*)

An area of 690 sqm has been identified for the Jungle cat enclosure besides Fishing cat enclosure.

Enrichment:
1. Trees and logs will be given in the enclosure, so that they can climb.
2. Food will be provided 2- times a day.
3. Shelter will be provided.
4. The enclosure will be separated by green belt and visitor circulation pathway

Enrichment Plan:
The small cat enclosures will be closed ones. There will be a night house on the rear end while the front will have viewing side through chain link fence.
(i) Trees and logs shall be provided.
(ii) Adequate shelter will be provided.
(iii) A pond with live fishes will be created.
(iii) Food will be provided 2 times a day.

Leopard Cat (*Prionailurus bengalensis*)

An area of 690 sqm has been identified for the Leopard cat enclosure besides Fishing cat enclosure.

Enrichment:
1. Trees and logs will be given in the enclosure, so that they can climb.
2. Food will be provided 2- times a day.
3. Shelter will be provided.
4. The enclosure will be separated by green belt and visitor circulation pathway

Enrichment Plan:
The small cat enclosures will be closed ones. There will be a night house on the rear end while the front will have viewing side through chain link fence.
(i) Trees and logs shall be provided.
(ii) Adequate shelter will be provided.
(iii) A pond with live fishes will be created.
(iii) Food will be provided 2 times a day.

Primate Section

Hoolock Gibbon (Hoolock hoolock)

An area of 600 sq. m has been identified as Hoolock Gibbon enclosure at the opposite side of Common Langur enclosure. The area has an open space

with ropes & branches and night shelter with isolation facilities for better captive care of the animal.

Enrichment:

Area proposed for enclosure	**<u>Enrichment</u>:**
600 sq m outdoor enclosure (Hoolock Gibbon)	Browse balls (things such as horse balls, browse placed around the exhibit, such as green fodder, fruit and vegetable scatters), Aerial hanging ladder & ropes -> increases activity, conditioning enrichment behaviour and foraging time increases activity & elicit playful behaviour. Plantation of green fodder in enclosure for leaf enclosure for leaf eating -> promotes feeding capability. Hanging fruit dispenser increases activity, exploratory behaviour and foraging time. Log with bark -> Augment play behaviour Wooden swings -> Elicit behaviour such as scratching on the logs Temporary shed -> Increases space use.

Omnivore Section

Sloth Bear (*Ursus thibetanus)*

An area of 1800 sqm has been identified for the Bear enclosure beside Jungle Cat Enclosure. The paddock area, kraal and night shelter with isolation facilities have been planned to develop for the better upkeepment of the animal.

Area proposed for enclosure	**Enrichment:**
1800 sq.m	**<u>Enrichment</u>:** **Environmental (or structural) enrichments:** These include platforms, hammocks, soft mud, swings, pools and strategically planted trees. Each of these enables the bears to exercise their climbing skills and build strength. Environmental enrichments also encourage the bears to use their long, inwardly curved claws to dig. Pools of water in their fields also allow them to splash around during hot summer months. **Olfactory (or food-based) enrichments:** These consist of structural enrichments that are smeared with a generous quantity of honey and peanut butter. Sloth bears are encouraged to use their acute sense of smell to trace them. Alongside, chopped fruits and treats like coconuts and dates are also provided to the bears. **Customised enrichments**: Items such as balls, pipe feeders, rolling barrel feeders, tyre feeders, and braid feeders comprise these enrichments. They are often filled with fruits or treats and strategically placed around the fields by our caregivers. Enrichments are customised for animals with special needs: geriatric, blind, injured, or disabled animals. For instance, bells are fastened to the hanging enrichments for blind animals so that the auditory cue makes it easier for them to locate it.

Herbivore Section

Mixed Deer Enclosure

The area of the mixed Deer enclosure will be the same as existing spotted deer enclosure. Species to be housed in this enclosure are Spotted Deer, Barking Deer, Mouse Deer, Swamp Deer. A separate partition will be made to house Mouse Deer species and rest all deer species will be kept together.

Porcupine (*Hystrix indica*):

An area of 55 Sqm has been identified for the Porcupine enclosure.
For Porcupine, 0.5 m deep soil will be given as substrate in the enclosure. A six centimeter thick reinforced concrete base with 5 cm × 5 cm chain-link mesh netting will be provided at the bottom of the soil layer to prevent escape of the animals. On all four sides above the concrete base up to height of 1.0 meter, reinforced concrete wall is proposed to be erected. To facilitate proper ventilation and natural sunlight, chain-link mesh netting will be provided on all four sides above the level of concrete base. An earthen mound of 2 m × 2 m × 1 m dimensions will also be provided to facilitate digging by porcupine.

Enrichment Plan:

1. Provision for digging, foraging.
2. Provision of underground hollows for sleeping
3. Provision of a deep soil floor in the enclosure and turning over this soil every month or more to provide novelty.
4. Provision of multiple denning options (e.g. bedbox, hollows and burrows) so the animals can exercise choice hence decrease stress.
5. Changing furniture (branches) every second month, to provide novelty and alternative physical pathways so the animal exercises slightly differently.

Food Enrichment:

1. Hiding food underground, requiring animals to locate and dig up the nest.

2. Placing food inside a paper box, into which small holes (15mm) have

been drilled. Porcupines use their tongue to extract the food from these boxes.
3. Provision for chewing of foods.
4. Hiding their diet in palm fronds.
5. Hiding treats for porcupines to sniff out.

Exotic Mammal

Giraffe (*Giraffa camelopardalis reticulata*)

Giraffe enclosure will be constructed covering an area of 3425 sqm. The area has an open space, escape zone, kraal, and night shelter with isolation facilities for better captive care of the animal.

Area proposed for enclosure	**Enrichment**
3425 sq. mt.	**Feeding & manipulable enrichment** • Arboreal foraging box (Cane baskets hung from trees, filled with green fodder, fruits) -> Increases foraging time. • Rotatory leaf dispenser (6m tall log with 2m underground and 4m on the surface. The pole should have protruding rotatory wood branches on it to hang the green fodder and a basket of diameter 0.3m with holes on all four sides big enough to let feed foraged by the tongue of animal) -> Increases activity, exploratory behavior and foraging time. • Grass bales/Hessian bags -> Increases foraging time **Environment enrichment** • Log with bark ->Increases play behavior. • Coir ropes on logs -> Elicit behavior such as scratching on the logs • Temporary shed -> Increase space use

	• Wheelbarrows, ladders and bales of hay -> Keeps the animal active & busy • Meshed troughs -> Increases activity

Hippopotamus (*Hippopotamus amphibious*)

Hippopotamus enclosure will be constructed covering an area of 4400sqm. The area has open space, grassland, vegetation zone, feeding area, night shelter and open space for grazing and movement of the mega herbivore. A large water body has been created along with the enclosure development as part of enrichment.

Area proposed for enclosure	**Enrichment**
4400 sq. mt.	• Having large grass areas for the hippo to naturally graze is important. Scatter feeding of grass and hay and offering grass and hay throughout the night can help replicate their feeding behaviours. Feeding fruits, vegetables and leaves in the water can be good enrichment. • Water bodies must be large enough to accommodate a family group. It must be at least 2 metres deep to allow for complete submersion. It must have shallow edges for ease of access for the animals and to allow them to rest in the shallow water. • The size of the enclosure is important in keeping a large, group well in captivity. It needs to be complex as well, with plenty of grazing opportunities, logs and rocks, different substrates and mud wallows. Allowing hippo to create “middens” (specific areas where they will defecate on land) is important for communication. • Giving hippopotamus’ the space and opportunities to decide where they want to spend their time is important. Having shelters and housing gives them choice in different weather conditions.

	• Social interaction and play are stimulated in and around a mud wallow. As well has health benefits to the hippopotamus' skin, mud wallows are important for mental and physical health. Care must be taken to monitor the mudto make sure it does not become stagnant.

Reptile section

Salt Water Crocodile (*Crocodylus porosus*)

The Salt Water Crocodile enclosure was constructed at the Southern side of the zoo with an area of 1000 sqm. The pond was fenced by wire net of 1.5 m height to house the animals. Surrounding the first fence, one more wire net fencing of 1.5 m height will be constructed to restrict the visitor's activities. The shoreline of the pond is sandy and slope is maintained to enable crocodile to easily reach the shoreline. The sand bed is maintained for egg laying and basking of salt water crocodile.

Marsh Crocodile (*Crocodylus palustris*)

The enclosure has an area of 3400 sqm. The pond is well fenced by wire net of 1.5m height to house the animals to the pond. Surrounding the first fence another wire net fencing of 1.5 m height has been constructed to restrict visitor's activities.

Area proposed for enclosure	**Enrichment**
Land allocation: Salt Water Crocodile: 1000 Sqm. Marsh Crocodile –	The enclosures will be covered by chain link fence all around and toughened glass at the visitor's side. A water body with a depth 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 exhibit. Enrichment: (1) Shady trees will be provided.

3405 Sq m.	(2) Sand beds with palicades will be provided. (3) Flow of water will be maintained to check over heating in summer.

Monitor Lizard

A total of 240 sqm area will be designated as Lizard area comprising of three species of monitor lizards. The area of each enclosure will be of 80 sqm. It is located in South-western corner of the zoo. This area will be segmented for three different species and proper enrichment will be provided ensuring the entrance of sunlight.

Each Monitor Lizard enclosure will have a pool, a feeding area, a sunbathing area, a green zone, and a place for nesting. Water bodies will be built within the paddock area. There will be trees, perches and logs. Misting will also be done and temperature will be controlled during the winter months. There will be an access to viewing of animals through toughened glass.

In each enclosure, 2:2 individuals will to be housed.

Species to be housed are

Yellow Monitor Lizard (*Varanus flavescens*)

Water Monitor Lizard (*Varanus salvator*)

Bengal Monitor Lizard (*Varanus bengalensis*).

Snake House

One Snake house is proposed to build within an area of 400 sqm. This will be constructed beside Salt Water crocodile enclosure to house three species of Python and 4 species of other snakes of local area. For each Python species 80sqm and for other snakes species 40sqm allocated to construct enclosures.

Enclosure enrichment for snakes

1. The enclosure will be imitated by the surroundings in which that particular reptile is found in.

2. Drainage, Sanitation, heating, Lighting and ventilation are important parameters.
3. The space of the enclosure will be large enough to permit a proper temperature gradient to be set up and maintained.
4. Glass cages will be made to have excellent visibility.
5. Snakes have an excellent sense of smell to make up for their bad eyesight. Adding new smells to their enclosure can be a great way to improve the quality of their life, Moss would be an excellent choice and it will also provide snake with a new texture to move across. Basil can be used in small quantities. Potted plants such as pothos, spider plants, and bamboo can also be used inside the enclosures.
6. Rocks will be added (make sure they have no sharp edges) which will give snake something new to slither over and smell, plus they can use it to help pull their shed off.
7. Vines, leaves, and hammocks are great for snake enrichment too. For small snakes, paper towel tubes can provide a cool tunnel to slither through and hide in.
8. Proper hiding places to be placed. Like artificial ant hill or tunnels.
9. Ceramic heaters, heating mats, under gravel heaters, Heating plates or pig blankets will be used for controlling of temperatures.
10. Proportional temperature controller like Resistive temperature detector will be used.
11. Proper sunlight or artificial light of certain wavelengths can be used as diurnal reptiles use certain wavelengths for D_3 synthesis. In open enclosures, mercury vapour lamps can be used to create twilight essence. Fluorescent tubes and infrared lamps should be kept at a distance of 50 cm which will supply a wide spectrum range of lights.

Tortoise and Turtle Enclosure:

An enclosure for Indian Star tortoise (*Geochelone elegans*) and Common Box Turtle (*Terrapene carolina*) proposed to be constructed over an area of 60 sqm beside Iguana enclosure.

For Tortoise and Turtle shade will be provided, small igloo shaped shelter will be constructed. The enclosure will be ensuring entrance of enough sunlight. A small water poodle will be built where they can soak themselves in water.

Enrichment:
(1) Water bodies will be constructed within the enclosure
(2) Wooden platforms will be built at a height
(3) Logs will be fixed for playing.
(4) Groove of bushes will be provided for hiding.
(5) Scratching posts will be provided to retain their natural behavior.

Iguana (*Iguana iguana*)

An area of 100 sq. m has been developed as open air enclosure for the Iguana. The enclosure has feeding zone, basking zone, green zone and site for nesting of Iguana. It is proposed to house 2:2 individuals in the enclosure.

Aviary

The total area of the aviary is 2605 sq. m. presently the aviary has some native flying birds. The plan is to add more birds from different zoos.

Following types of Aviary proposed to be made:

i. Non-native Flying Bird Aviary (560 sqm)
ii. Flightless Bird Aviary (500 sqm)
iii. Birds of Prey (280 sqm)
iv. Water Bird Aviary (625 sqm)
v. 3 Native flying Bird Aviary (240 sqm)
vi. Pheasantry (400 sqm)

Non-native Flying Bird Aviary

An area of 560 sqm has been allocated for flying bird aviary to be constructed by the side of the Marsh crocodile. The height of chain link fencing will be 6.00m and the distance between fencing and standoff barrier will be 1.00m. Species to be housed are Yellow & blue Macaw.

Area proposed for	**Enrichment Plan**

enclosure (sq. mt.)	
560 sqm	The minimum prescribed size of CZA for the outdoor enclosures of Aviary will be followed. Flying Bird Aviary will be covered with wire mesh of size of 2 cm x2 cm. **Exhibit Enrichment** (1) Perches of various heights, widths, lengths, shapes/textures/materials and diameterswill be provided. This can be done with potted plants and trees. (2) Small size tree / bushes will be planted. (3) Nest boxes, logs, earthen pots, platforms, and burrows, will be provided for nesting. (4) Nesting material will be provided. (5) A range of substrates such as sand, peat moss, or soil will be provided for dust bathing of birds. (6) Each enclosure will be provided water body with pools or small pans. (7) Sprinklers can also be used in the display on a regular basis, or the birds can be misted by hand. **Dietary Enrichment** It's simple to incorporate a bird's diet into its daily enrichment. Food items should be presented in a unique and fascinating way to enhance foraging. Live prey such as insects, fish, lizards, and squid will be provided using slow release feeders in an exhibit on a regular basis. Scattering food items throughout the exhibit, piercing produce on tree limbs and breaking up feeding times during the day can be helpful. Offering flowered browse to nectar feeders can achieve the same goal. Rats or fish can be hidden inside PVC pipes, burlap sacks or Kong toys, or frozen in a block of ice for bird of prey species to provide more

	stimulation during feeding and foraging activities. **Novel Enrichment/Social Enrichment** Many birds have a curious and even playful nature. To encourage them to display their curious behaviors, novel items can be introduced in the exhibit .Like providing a wide variety of toys and rotating and changing out toys weekly. Musical Instruments for birds is an Artistic Contribution toward Auditory Enrichment.

Flightless Bird Aviary

Emu Enclosure:

The paddock area for Emu enclosure will be 500 Sqm. There will be Kraal and feeding cell for the birds. A galvanized Chain link mesh fence is to be made of the size 75mmX 75mm of 10gauge. The height of the fence will be 2500mm.

For Emu, enclosure floor will be grassed and non-slip surfaces. The edges of enclosures, alongside the fence, will be gravelled, that birds, especially emus, will step on the fence and wear out the ground.

Birds of Prey

The existing Rhesus macaque enclosure will be converted to Birds of Prey aviary having area 280 sqm. It is situated beside the Pheasantry. Species to be housed in this enclosure are Black Baza and Jerdon's Baza.

Water Bird Aviary

It will be constructed on the South-western of area 625 sqm. The Centre height of the aviary will be 8-12mt and the height of side chain link fence will be 3-4mt. Species to be housed in this enclosure are White Brested Water Hen, Common Crane, Indian Spot-billed duck, Sarus Crane, Indian Open bill stork, Painted Stork, Lesser Adjutant Stork, Spoonbill, Lesser Whistling Duck, White Ibis, Night Heron, Little Egret, Pond Heron.

Area proposed for	Remarks

enclosure	
Land allocation: (Aquatic birds aviary- 625 sq m	Small islands of different sizes with adequate trees and bushes will be created. The periphery of the water body will have thick row of typha plants. There will be a system of releasing the water and its exit. Pinioned birds will be released to create bird sanctuary type environment to attract free living local and migratory birds. Adequate food will be provided. Fish fry will be released to grow fish in the water body.

4.3 Staff requirement for Animal section:

The proposed staff requirement is tabulated below:

- Zoo keepers (6 no) & Animal attendants (9 nos.) are presently engaged on contractual basis, under the overall supervision of the Zoo Supervisor.
- Engagement of other 4 nos. Banasahayaks may be outsourced.
- Engagement of Assistant Zoo Supervisor (1 no.) may be done on regular basis.
- Engagement of Zoo Biologist may be outsourced on contract basis.

4.4 Vehicles &equipments for Animal section

Following vehicles, equipments& implements will be required to run this section smoothly:

- 4 wheeler vehicle: 1 no.
- 2 wheeler vehicle: 1 no.
- Squeeze cages (mobile): 4 nos.
- Animal transportation cages: 5 nos.
- Pressure pumps: 2 nos.
- Computer & accessories.

- Misc. Equipments such as food distribution vans, weighing machines, nets, ropes etc.

4.5 Proposals to address the inadequacies and short comings identified:

4.5.1 Animal Section:

Staff strength: 02 Keeper

Lack of adequate trained personnel

Trained personnel are necessary for the animal section to look after the animals in the zoo. We are conducting different capacity building for the staff in collaboration with different zoo in state of West Bengal.

4.5.2 Store and feed supply Section:

Staff strength: Nil

1. Alternate supply chain must be in place in case any emergencies and stoppage of food articles beyond normal circumstances. Doctors are advised to work out an alternative food regime for species specific requirements.
2. High pressure washing equipment (water jet) would be procured to clean the kitchen.
3. Crate with lids would be provided for transportation of food items from stores to different animal enclosures.
4. Battery operated vehicle required to be procured exclusively for transportation of feed items from centralised store.
5. Feed sample preserving system.

Staff requirement:

Following staff will be required for smooth operation of this section:

- Cook cum store keeper: 1 no.
- Kitchen Attendant: 7 no.

Engagement may be outsourced on contract basis.

4.5.3 Sanitation & Drainage section:

The prime constraint of this section identified in the appraisal report is water logging in the different animal enclosures as well as for the entire Zoo premises. Since the zoo is undergoing through the development, Zoo Authority has to develop proper drainage system with the construction of each enclosure.

Staff requirement:

Following staff will be required for smooth operation of this section:

- Sanitary attendants: 5 nos.

Engagement may be outsourced on contractual basis.

4.5.4 Construction & maintenance section:

No separate construction & maintenance section is proposed. The existing arrangement of inviting open quotations & tenders from eligible contractors for construction & maintenance of civil, electrical and mechanical nature and supervision by the Engineering section of WBZA is found to be effective.

Staff strength: Nil

4.5.5 Security Section:

Staff strength:, 8 Security & Night Guard

1. More Video – Surveillance system (CCTV Cameras) to be installed at important locations to improve the effectiveness of security system.
2. Regular training to the security personnel to be more accountable.
3. Rotation of security personnel to prevent familiarity for providing better security.
4. Updating equipments.

More Security Guards and Gatekeeper are required.

4.5.6 Water supply section:

For successful long term operation of any Zoological park, efficient planning and management of water has to be given high priority. The present water distribution mechanism of the Zoo needs to be further extended to the proposed enclosures to be constructed.

4.5.7 Power Supply section:

Regarding power supply, the work of renovation of the electrification network and further extension to the existing animal enclosures and to the additional land required to be taken up in future. Solar street lights as an alternative to electric power supply for further extension of the power supply network will be installed at selected locations at the administrative block and the Zoo premises.

4.5.8 Garden Section:

Staff strength: Nil

Presently it is being managed by other staffs. However, we need to increase the vegetation cover keeping the species of animals in mind.

1. The entire garden area will be redesigned with landscaping, to give it a fresh and new look.
2. Undulating large lawns shall be created with good quality grass.
3. The Garden would be enriched with greenery to support free living biodiversity.
4. Encouragement shall be given to grow quality seedlings of various varieties, in and around the animal enclosures and give motivation and pride to the employees.
5. Solid Waste Disposal area shall be more scientifically managed and Vermin – composting to be introduce

   Gardener required.

4.5.9 Research and Study:

Bardhaman Zoological Park desires to conduct a number of research projects to assess biodiversity conservation, wildlife management, animal health issues and management of captive animals in the park. To ensure optimal outcomes collaboration with the number of organization will be given priority. The research teams will be made up of Veterinary College, Zoo veterinarians, collaborating scientists and students of graduate, post graduate and Ph.D levels. The research findings will further increase our expertise in the management of captive animals.

Staff strength: Nil

1. The Zoo shall meticulously record the detailed observations on the biological behaviour, population dynamics and veterinary care of the exhibited animals and develop a detail datasheet. The physical activities of the zoo inhabitant animals, such as, infighting, inter group responses, feeding, mating and reproductive behaviour should be noted thoroughly.

2. There should be detailed record on new born animals, health of young animals including congenital abnormalities and mortalities. The Zoo shall share the collected data with renowned institution for developing different methods for increasing longevity, maintaining genetic diversity and behavioural viability, and enhancing reproductive potential of endangered species housed in zoo.

3. A detailed data regarding healthcare, nutrition and quantity of food provided to the zoo inhabitants, should be noted and updated on a regular basis.

4. The zoo shall keep recording data on water, electricity and other energy resources utilized in upkeeping and maintaining different animals. The data can be utilized for evolving strategies for optimum utilization of resources.

5. The zoo shall publish the data about ex-situ conservation techniques and scientific observations on relevant local/national/international journals.
6. The Zoo shall establish network with University and other institutions to carryout collaborative Research works on the important issues, on a regular basis.
7. Priority shall be given to the issues like Breeding, Artificial insemination, creation of gene bank, Stress – related studies, effect of enrichments on improving natural behaviour etc.
8. The Biologist / Researcher shall be provided with Computer / Internet facility and other basic requirements.

Future Proposals on Research Programmes

- Bacterial screening of faecal samples collected from different captive wild animals housed in Bardhaman Zoological Park.

4.5.10 Transport and Communication:

Staff strength: Nil

Constraints in Transport and Communication

1. The major and immediate requirement is a Van for the Zoo. Other requirements include a vehicle for transporting solid waste, food.
2. High Speed Internet connection should be taken for the Library, Hospital and office.

Battery operated cars are required for physically challenged and aged visitors.

4.5.11 Visitor's Facilities:

1. More modernized toilets are to be set up keeping in view of the requirement to hygiene and fresh air. Toilets would be provided with the facility to take care of the needs of physically challenged people.
2. Trained Zoo Guides would be pressed into service, as added facility to visitors, to educate visitors.
3. All the existing drinking water points should be renovated with water purifiers.
4. Booklets and CD's on Animals of Zoo and on conservation aspects should be made available for people.
5. One Cloak room will be there near entrance gate.
6. More Visitor Shelter will be constructed.
7. Cafeteria will propose to be made.
8. Child care room proposed to be constructed.
9. Children's park will be made.
10. Existing NIC will be developed more.
11. Proper directional and informative sinages with be installed.

4.5.12 Disposal of Solid and Liquid Waste:

The only constraint in disposal of solid waste is transport of the garbage. This problem needs to be addressed by coordinating with the local Municipality. A waste management unit has been proposed to set up for daily organic waste management.

4.5.13 Future provision for development:

4.5.13.1 Library:-

We have a plan to develop a library for resource materials, publication which will be accessible for the research work on captive management of zoo animals.

4.5.13.2 Nature Interpretation Centre:-

A NIC is existing in the southern part of the Zoo and has been planned to develop more for public awareness and education programme.

4.5.13.3 Child care room:-

Child care room proposed to be constructed within the zoo premises.

4.5.13.4 Restaurant:-

Area for more restaurants for public is already available in the zoo premises.

4.5.13.5 Waste treatment plant:-

A small unit of waste management has been planned to setup in part of zoo.

4.5.13.6 Incinerator:-

An incinerator will be set up in the southern part for managing the proper disposal of animal body after necropsy.

4.5.13.7 Souvenir Shop:-

A souvenir shop has been planned to open the zoo near main entrance of the zoo and the unit will be a theme based shop.

4.5.13.8 Animal adoption:-

Animal adoption is one of the most promising programme for involving community in zoo animal conservation. We have monthly and annual adoption schemes of adoption of zoo animals and name of the adopter will be displayed in a prominent place.

4.5.13.9 Cloakroom:-

A cloak room has been planned to develop near entry gate for the convenience of the visitors.

4.5.13.10 Rescue Centre:-

Rescue centre for wildlife play key role in animal welfare, nature

conservation and bio- diversity. The National Zoo Policy (1998), states that – "Zoos shall continue to function as rescue centers for orphaned wild animals, subject to the availability of appropriate housing and upkeep infrastructure".

A Rescue centre of area 150 Sqm is proposed to be developed in the southern area in which five sections will be constructed. One for housing Leopard, one for housing small cats, one for primates, one for housing reptiles and the other will be solely for other seized birds.

The Rescue centre will have the capacity to house 10 Turtles, 10 Tortoise, 3 Python, 3 Venomous Snake and 3 non-venomous Snakes, 10 Small native flying birds, 5 non-native flying birds, 5 Pheasants.

4.6 Constitution of Health Advisory Committee

As per the directives of the Central Zoo Authority, Health Advisory Committee has been constituted by West Bengal Zoo Authority (ref. 1106/1(9)/5M-85/2005(Pt.-2), dated. 07.03.2018).

Details of the Health Advisory Committee:-

Sl. No.	Name of the member	Designation
1	Joint Director, ARD IAH &VB (R&T) Belgachia, Kolkata-37	Chairman
2	Dr.Joyjit Mitra, Specialist (Sero-Epidemiology), RDDL(ER), IAH&VB Belgachia, Kolkata-37	Member
3	Dr. Debasish Chatterjee, Asst. Director, ARD (Vety), (Disease Investigation), IAH&VB Belgachia, Kolkata-37	Member
4	Dr. Proloy Mandal, Asst. Director, ARD (Vety), IAH&VB, Belgachia, Kolkata-37	Member

4.7 Veterinary Section:

At present, the Veterinary section of the Zoo comprises of an animal treatment room, a post mortem room, a Rescue Centre and Doctor's room. It is hereby proposed to expand and upgrade the existing animal treatment room to a well equipped Veterinary Hospital, in consonance with Recognition of Zoo Rules, 2009.

Veterinary Section of the zoo is running by hiring consultant veterinary officer and required one fulltime Veterinary officer.

The proposed Veterinary hospital will have the following facilities:

- A separate operation theatre for surgery and treatment.
- An X-ray unit with dark room.
- A dispensary/pharmacy with storage facility for wide range of medicines.
- A nursery unit for hand rearing orphaned baby animals.
- A self contained laboratory for conducting pathological tests.
- Appropriate housing for indoor patients.
- Office, veterinary care reference library, record room, toilet.
- Tranquilizing equipments like dart gun, blow pipe and tranquilizing drugs.
- Sufficient number of squeeze cages and transportation cages for animals of different sizes.

- A Rescue centre of area 150 Sqm is proposed to be developed in the extended area in which five sections will be constructed. One for housing Turtles and Tortoises, one for Python, one for Venomous Snakes, one for housing non-venomous and the other will be solely for other seized birds

- **Marking and tagging:**

Animal Tagging and Marking Plan

Mammals

1. Identification by natural marks such as photographs is well suited to large and complex body markings which have unique stripe or spot patterns.

2. Ear tags are suitable for herbivores with some limitations i.e. physical restraining during tagging may cause severe hazards and suitable anaesthetic agent for herbivores not available.
3. Micro chipping will be done in carnivores and elephant after procuring microchip and reader/transponder from appropriate supplier.

Birds

1. Leg Ring or Leg Bands are available in a large range of sizes to suit all birds and pheasants. They are manufactured from a range of materials the most common being plastic, aluminium and stainless steel.
2. Patagial tagging refers to the fitting of a plastic tag to the "patagium" or frontal flap of the skin to the wing of a bird and has been used worldwide with great success on a wide range of Birds species including vultures and condors, swans and eagles.
3. Neck Collar is a method of marking which is more suitable for birds with long necks such as geese and swans.

Reptiles

1. Visible Implant Elastomer (VIE) and Visible Implant Alpha Tags may be conveniently used for marking reptiles.
2. Ventral Scale Clipping for permanently marking snakes given by William Broen and William Parker 1976. It involves two features a) clipping ventral b) a serial enumeration system.

Electronic Transponders/ Microchips

The Microchips are biologically inert and do not need any batteries for charging. Standard subcutaneous injection of approximately 2mm to 13 mm microchip is quick and easy. A low energy radio signal is generated by the reader that will energize the chip to transmit its code. These codes are used as identification numbers. Time is measured in milliseconds at the receiving end.

The protocol for microchip is as follows:

1. The animal is restrained manually to avoid shaking and disturbance.
2. The mid-dorsal region between the shoulder blades is swabbed with 70% ethanol.

3. A microchip is implanted using a subcutaneous injection technique.
4. A Signal at receiving device is assessed to confirm the transponder's implantation.
5. Return the animal to its cage.

The device for the tagging is as follows:

IDT RFID Injectable tag (RFID Animal Identification Tag): TDT RFID Injectable tag is used suitable for monitoring, tracking and identification of pets, fishes, equines, livestock, wildlife and endangered species for health record keeping. They are thrusted through injectable applicator. These tags are fully compliant to ISO 11784/11785 animal ID standards. Tags are encapsulated in bio gloss which are impermeable and non toxic to the animals. The glass tag is laser sealed. The microchip is the size of a rice grain and implanted beneath the skin.

Staff requirement for Veterinary section:

The proposed staff requirement of this section is as follows:

- Veterinary officer: 1 no.
- Veterinary assistant: 1 no.
- Veterinary attendant: 1 no.

Engagement of Veterinary Officer would be on regular basis. One Veterinary Assistant has already been engaged during last financial year on contract basis. Existing Bansahayaks can be allotted the duties of Veterinary attendant.

4.8 Zoo Education:

The key to wildlife conservation is environmental awareness and sustainable thinking, or the understanding that our environment is a fragile and dispensable place and that we must make educated decisions that do not cause negative consequences for current or future generations. It is imperative that the environment be protected and cared for to the best of our abilities and knowledge. Much of environmental awareness revolves around the educating of individuals about our environment itself, what problems exist, and what we can do to alleviate these issues. While there

are dozens of environmental threats that impact our world today, some more than others have a direct effect on wildlife.

These environmental issues are all very serious concerns in the 21st century. They are all affecting our wildlife in different and often irreversible ways. The key to environmental awareness: education. If we are able to educate society regarding the negative impacts these issues have on our planet, we create a sense of understanding about the topic itself, and an urgency to help eradicate the situation as soon as possible.

Resource material and education information will be made available to the general public and zoo visitor. This will be leaflets, guidebooks, teachers' notes, resource packs and worksheets.

Today, when natural habitats are under severe stress and many species of wild animals have become endangered, zoos must not only maintain their own populations but also supplement the decreasing populations of endangered species in the wild. Zoos could serve as a platform for educating people about protecting habitat, ecosystems, and forests as well as sustaining the natural processes that support life because they receive a lot of visitors. Zoos that have been well planned and constructed can educate visitors about the perils of having a hostile or uncaring attitude towards nature. The main goal of creating a zoo education programme is to raise visitors' empathy and awareness of the importance of wildlife conservation and maintaining the ecological balance.

Zoos are an important source of cultural and educational information. When visiting a zoo, everyone should have the chance to observe and learn about wildlife up close. The zoo will have a strategy in place for instructing both the general public and visitors. Through zoo, the Zoo Authority hopes to increase people's awareness of and appreciation for the natural environment. Visitors can learn about conservation through audio-visual tools, written instructional materials, and attractive and effective signage that explains the activities of various species.

Conservation Education Guidelines of Bardhaman Zoological Park (Mini Zoo) is to bring together a diverse group of animal collections and the conservation education missions will be fulfilled in an equally diverse range of ways, depending on the type of resources, audiences, messages

and with the available infrastructure. Bardhaman Zoological Park recognizes that the size of the collection will have an influence on the scale of the conservation education provision, and suggests that size and education provision should be in proportion.

We connect children and visitors of all ages to the wonder, awe, and excitement of the animal kingdom through innovative, hands-on programming and our nationally-recognized facility.

- Every enclosure in a zoo has a sign board displaying scientific information regarding the animals exhibited in it.
- Zoo is publishing leaflets, brochures and guidebooks and making the same available to the visitors, free of cost.
- Zoo has arrangements for recording, in writing, the detailed observations about the biological behaviour, population dynamics and veterinary care of the animals exhibited as per directions of the Central Zoo Authority. The database has been exchanged with other zoos as well as the Central Zoo Authority.

Education and Outreach Activities

The Bardhaman Zoological Park is in a close liaison with other Zoos of West Bengal and India to spread the messages of Conservation of Nature and Natural Resources.

- The central theme of the zoo education programme being the linkage between the survival of various species and protection of their natural habitat, enclosures which allow the animals to display natural behaviour are crucial to zoo education. The Master Layout Plan and Enclosures drawing and designs are made, therefore to display animals in such enclosures only where the animals do not suffer physiological and psychological restraint.
- Attractive and effective signages and interactive displays have been prepared to explain activities of various species to visitors.
- For driving the conservation message, published education material and audio-visual devices methods are used.
- Formal education programme are also being organized for strengthening the education message by understanding visitor motivation and when do they come to the zoo.

- Different days which are significant for wild animals are celebrated in Zoo. Schools and colleges are invited for participation in the programmes. Different programmes, e.g. sit-and-draw competition, quiz competitions; cultural programmes are planned for the participating students.
- Favourite animal in the zoo.
- Zoos normally conducted interpretive programmes on lesser cats, turtle/ Tortoises, crocodiles and Birds and also have plan for making programme on other non charismatic creatures for making awareness among visitors about their importance in the ecosystem.
- Beside signage, the zoo also made a plan for guided tours, talks by knowledgeable persons and audio-visual shows for effectively communicating the message for conservation to the visitors.
- Bardhaman Zoological Park is in constant help of universities, colleges and non-governmental organisation to educate the students about the benefits of supporting nature conservation programmes.
- Bardhaman Zoological Park support environment friendly practices. Like ban of polythene bags inside the zoo. Such efforts are indirect interpretation methods to make visitors aware about the natural feeding habits of the animal and how polluting zoo with plastic could harm zoo animals.
- Zoo Website: Visitors will get detailed information on the zoo from the website. Bardhaman Zoological Park website is also a good source of providing information on health and safety of visitors during the zoo visit.
- Public conveniences: To make the zoo visit more exciting and comfortable for visitors Bardhaman Zoological Park offers basic facilities like toilet, drinking water, green spaces to rest, Child care Centre etc. Bardhaman Zoological Park also provided enough dustbins so as to keep the area clean and hygienic.
- Zoo shop: Common merchandize which will be available in Bardhaman Zoological Park shop includes T-shirts, brochures, badges, folders, caps, greeting cards, soft toys, stickers, key chains etc with Bardhaman Zoological Park Park logo, Mementoes. Other items include wildlife related handicrafts, book marks, pen stands etc.

- Visitors with Special Needs: zoo has made provisions for people with special needs. The Bardhaman Zoological Park has a plan to conduct special programme for differently-abled persons.
- Specific animal weeks (Tiger week, bear week):
- The entire week will be dedicated to a single species and all the programmes and activities will be thematically planned on the same. Free materials available from Zoo Outreach Organisation are used as educational resources.
- Programmes on non charismatic animals Library: Some of the zoos in India organize species specific programmes, for example focussing on bats, bear, frogs etc. These are structured programmes mainly targeting student groups. Talks on the particular animal's habitat, ecology, conservation issues etc, games, distribution of materials (mask, rakhi's, hand outs etc.) are some activities designed for this type of programme.
- Programmes for colleges/universities: from veterinary, agriculture institutes, students from botany and zoology courses come to the zoo to carry out project works on various topics related to wildlife. Fine arts students are getting involved in designing signages in various zoos.
- Volunteer programmes: Bardhaman Zoological Park will have a plan to involve volunteer groups who provide their services during peak visitation seasons. zoo will train these volunteers to carry out educational programmes, guided tours, enclosure cleaning etc, on a regular basis, in most zoos volunteers are involved only during peak visitation season in carrying out activities during 'green' days, managing huge crowds and keeping a Programmes for General Public, Students
- Animal birthdays: This concept of celebrating animal birthdays and thus popularizing the zoo is coming up in Bardhaman Zoological Park
- Guided tours: Request-based guided tour will be available in Bardhaman Zoological Park. Zoo guides, volunteers, education officers, curators, biological assistants, scientific officers are people who will be involved in this activity.
- Adopt an Animal: The programme of animal adoption in Bardhaman Zoological Park is not only a means to raise funds for the zoo but more and more people are positive about this idea and are showing

their interests in adopting animals. This is a direct method to involve and sensitize visitors towards nature and wildlife.

- Zoo week: Bardhaman Zoological Park will have a plan to celebrate Zoo Week. Interactive activities, guided tours, slide shows etc. are some of the programmes to be carried out during this week.
- Animal feeding times: Since this kind of activity attracts lot of visitors and many Zoos are taking up this concept now, Bardhaman Zoological Park is making a plan to gather visitors in large numbers during animals feeding time, to be a part of this activity.
- Developing a Cadre of Volunteers.

4.9 Conservation Breeding

The Conservation Breeding Programme is a science of conserving a species by preventing imminent population collapse in the wild due to a large number of eliminative pressures (i.e. habitat loss, habitat fragmentation, industrialization, poaching, illegal trade and climate change etc.). The aim of the Conservation Breeding Programme is to conserve the genetic diversity of the species and restock or reintroduce the species to re-establish self sustaining population in its natural wild habitat.

Chapter V
PERSONNEL PLANNING

5.1 The zoo personnel

At present there are 17 staffs that form the work force of the Bardhaman Zoological Park, Burdwan Division is the Ex-Officio Director of the Bardhaman Zoological Park. All the 9 different category staff is engaged for carrying out housekeeping and zoo related activities under the control of the Divisional Forest Officer, Burdwan Division and Ex-Officio Director.
The majority of the zoo's employees are temporary workers. They have all developed the necessary expertise over time based on their experience and extended relationships with permanent employees and subject-matter specialists in these disciplines. Services of these casual workers need to be regularized. Some of them have been imparted training in specialized fields and some of them have been sent for training to other zoos.

The staff members receive specialized assignments based on their skills, disposition, and interests.

5.2 Staff recruitment

There is large scale recruitment requirement developed in various cadre of the zoo for which it is proposed to create and fill up these vacant posts either through contractual or permanent recruitment.

The arduous nature of work and specialized skill involved in various category of the zoo need to be considered as essential service and all such vacancies need to be filled up expeditiously by the West Bengal Zoo Authority. There are certain important and specialized jobs in the zoo management viz. animal management, sanitation inside the enclosures, and feed distribution for which no outsourcing desirable.

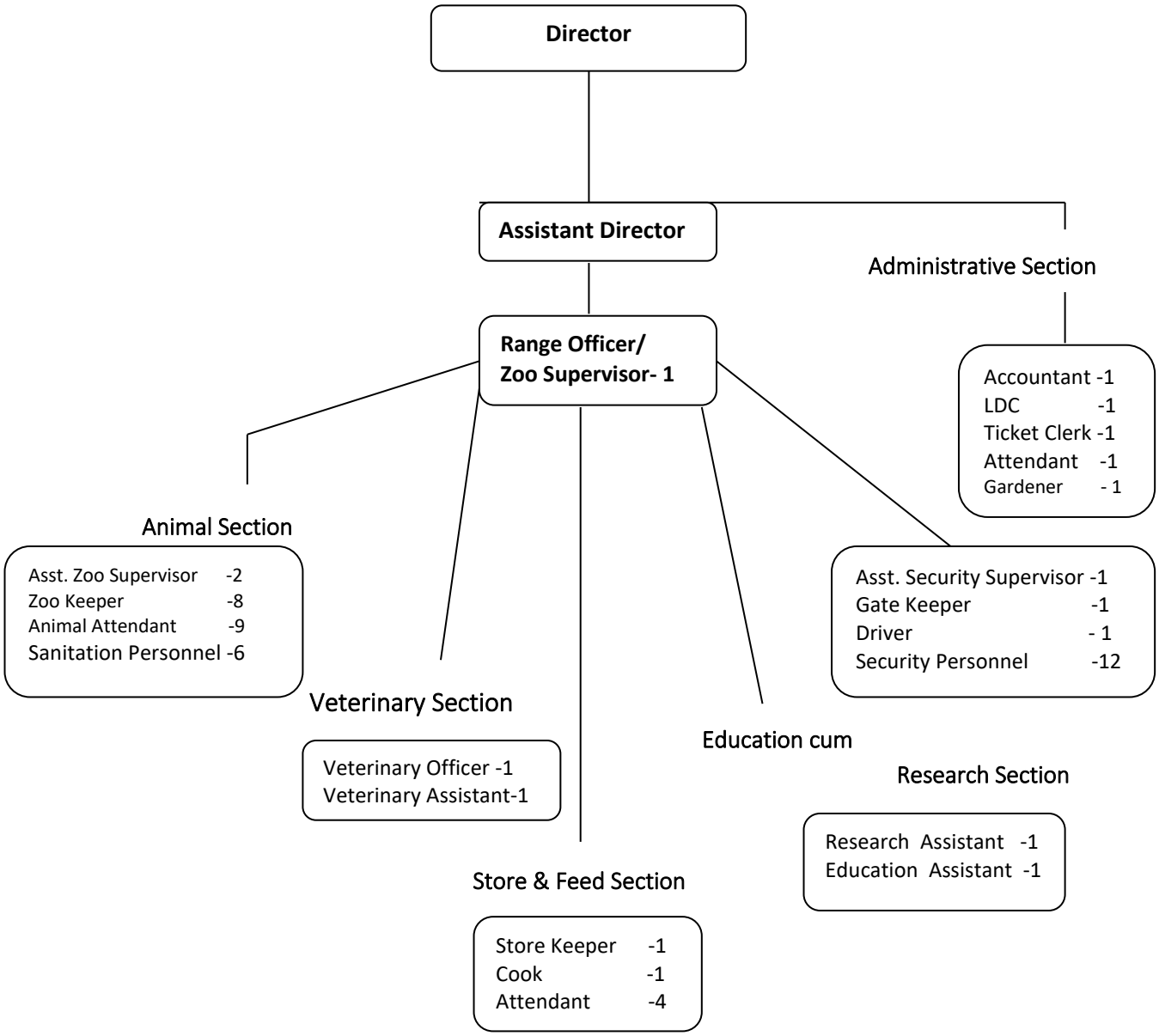
5.3 Work outsourcing

In the present condition it is better to execute certain works by outsourcing to service providers, private agencies or even credible NGOs who have desired expertise, skill and trained manpower. This would enhance the capability of the management and would reduce botheration in terms of time and effort. Outsourcing of sanitation outside the enclosure area, parking area, security, food court etc. can be outsourced. Outsourcing of the nature shop, maintenance of electricity, lawns, gardens, toilets etc. can also be considered for a definite period of time.

5.4 Proposed Personnel Plan of Bardhaman Zoological Park

Sl. No.	Section	Name of The Post	Post Sanctioned	Post Filled Up	Proposed
1	Administrative Section	Director/ Ex-Officio Diretcor	1	1	0
2		Assistant Director/ Assistant Divisional Forest Officer	1	0	1
3		Research Assistant	1	0	1
4		Zoo Supervisor	1	1	0
5		Assistant Zoo Supervisor	2	0	2
6		UDC	1	1	0
7		Office Assistant	1	1	0
8		LDC	1	0	1
9		Ticket Clerk	1	0	1
10		Zoo Biologist	1	0	1
11		Education Assistant	1	0	1
12		Driver	1	0	1
13	Animal Section	Zoo Keeper	8	2	6
14		Animal Attendants	9	0	9
15	Kitchen & Store Section	Attendant	7	0	7
16		Store Keeper	1	0	1
17	Veterinary Section	Veterinary Officer	1	1	0
18		Assistant Veterinary Officer	1	1	0
19	Sanitary Section	Sanitary Attendant	6	1	5
20	Garden Section	Garden Attendants	6	0	6
21	Security Section	Estate / Security Supervisor	1	0	1
22		Assistant Estate / Security Supervisor	1	0	1
23		Gate Keeper	1	0	1
24		Security	12	8	4
Grand Total : :			67	17	50

Proposed staffing pattern and interaction planning



Chapter VI:
DISASTER MANAGEMENT

Fortunately, Bardhaman Zoological Park has so far not experienced any major disaster problems. However, the zoo should be always ready to meet any eventualities. The anticipated natural disaster includes fire, flood, cyclone etc. The anticipated man-made disaster includes fire incidence, civil disturbance etc. The staffs of Bardhaman Zoological Park not yet received any proper training on disaster management. Capacity building may enhance their ability and motivation level to combat the emergency situation results from disasters. The Bardhaman Zoological Park is procuring appropriate equipment and increasing trained manpower at present for disaster management. In order to enhance the capability of the staffs, they are proposed to be exposed to mock drills from time to time so that they would develop appropriate knowledge and skill to face various disasters in time. Trained and motivated staffs are to be kept in readiness round the clock to deal with problems in anticipating weather condition. The zoo may be closed for the visitors during the disaster period depending on the magnitude and emergency management service requirement.

6.1 Fire Control

Incidence of fire may be within the animal facility or other places within the zoo premises can be tackled by deploying the existing staff with additional external support. In case the fire is detected within the animal facility, the priority will be immediate removal of the animals to safer zone. The administration would utilize discretionary judgment on the spot to minimize response time. We will keep sufficient fire extinguishing facility in the administrative office, security room and zoo hospital to combat such eventuality. The water supply system for fire-fighting is presently included in the revised water pipeline layout plan. The roads are accessible to the Fire and Emergency Service Department vehicle and nearest to the enclosure. The powers supplies lines are proposed to equipped with electricity circuit breakers in case the fire or short-circuit of electricity supply line. Basic capacity building programme and mock drill for the staffs on fire-fighting is also practiced and there is always a scope to intensify the drills.

6.2 Flood / Water logging during heavy rainfall

In Bardhaman Zoological Park to avoid water logging during heavy rainfall during monsoon a proper drainage system is under development. Presently the modified drainage system, land-shaping, highland development in enclosure and addition of mechanical system to drain out the water from the enclosures overcome the problem of temporary water logging. There is also a contingency plan for dealing with exigency associated with flood includes construction of an alternate water supply system and storage tank. As the existing water supply system may defunct during severe cyclonic flood situation thereby disrupting supply of safe drinking water to animal enclosures and staffs barrack. The measures have to be taken to ensure uninterrupted supply of electricity in animal sections, security section and administrative block has already been taken.

6.3 Cyclone Situations

To combat cyclonic storms, Bardhaman Zoological Park has proposed to procure power chain saws to remove uprooted trees from the main and feeder routes. Further the generator back up supports to resumes electric supply and running electrical pump sets are also required within zoo premises. Water tankers, vehicles, stored food grains, search lights, generators will be procured or developed in near future to meet the exigencies. Agencies like West Bengal Fire and Emergency Service and West Bengal State Disaster Management Authority will be contacted to provide necessary help during the crisis.

6.4 Law and Order Breakdown

In case of civil disturbance, it is the first and foremost duty of zoo authorities to evacuate the visitors to safer areas in an organized way to avoid panic and stampede. An extra-wide emergency exit gate has been proposed to combat such situation. The zoo has proposed to install alarm system, public address system and two-way radio system for effective communication, minimize response time and to take effective measures. It is also proposed deploy additional private security to strengthen the existing security system during peak season. The zoo has already proposed

to install additional number of CCTV cameras in various strategic locations for 24x7 effective monitoring. Local police station and district administration will also be involved to deal with the situation and to ensure safety of the visitor and to restore peace.

6.5 Feed supply

In order to meet the exigencies, it is proposed to set up well managed in zoo store and kitchen facility. It is also proposed to keep extra meat (i.e buffalo meat) stock at least for a three days and live chicken can be stock in kitchen store. One large deep freezer with back-up generator facility needs to be installed for meeting the exigencies. Provision of electricity and water supply will be arranged in the facility. During strikes or agitation by workers and other staff, alternate arrangement for carrying out routine emergency zoo works are being ensured through service providers. The dry foods are being stored for one month in advance to meet the exigencies. A facility of green fodder has already been developed in the zoo premises by developing a vegetable garden and by planting fodder trees as part of greening activity to meet the regular and emergency supply.

6.6 Heat wave

In summer, the maximum temperature in the area rises about 40^0C - 42^0C. The zoo animals are vulnerable to heat waves experienced during summer months. The proposed contingency measures practiced in the zoo includes utilizing the existing water tanker with spraying facility, hand sprayers, providing straw, coolers, ice blocks, anti-stress medicine etc. A team consisting of veterinary staffs, biologists and keepers need to be deployed during mid-day in pinch summer period with water sprayers, ice boxes, anti-stress drugs for immediate treatment of sick animals suffering due to heat wave. Elaborate summer arrangement need to be ensured well ahead of onset of summer special seasonal foods are also proposed to be provided to animal store duce dehydration during summer months.

6.7 Cold wave

The minimum temperature in the area falls around 10^0C in month of January. To mitigate cold waves during winter months, winter arrangements need to be proposed to procure in Bardhaman Zoological

Park. This includes providing protective coverings around bird enclosures, electric bulb in enclosures, infrared lamps and heat chambers in proposed reptile house, blankets wrapped with straw to proposed reptiles and primate enclosures. Special seasonal foods are also being provided to animals as nutritional supplements.

6.8 Linkages with others

The linkages of the zoo management with other line departments and agencies for managing the disasters viz the police, district administration, disaster management team fire brigade, credible NGOs, hospitals and other experts will be of definite help during emergency and disaster periods.

6.9 Line of Command and SOP

In order to facilitate rescue and rehabilitation activities during disasters, there should be proper line of command. The role of administration needs to be clearly defined so that the even to absence of any officer, proper line of command would be maintained. A SOP will be developed for effective disaster management and to act during emergency situation.

6.10 Training and Capacity building

Officers, keepers and other staffs at grass root level are capable but not yet received any proper training to work efficiently during disasters. Capacity building may enhance the ability and motivation level of staff to combat disasters.

6.11 Mock drills

A schedule and protocol for conducting mock drills for first aid, emergency situations

In the Bardhaman Zoological Park, emergency procedure training is regularly conducted for the workers. The institution's staff is trained in emergency drills to make sure they are aware of their roles and responsibilities as well as how to respond appropriately in an emergency. Sessions on safety awareness should emphasise individual accountability for a safe and secure workplace, situational awareness during routine

operations and emergencies, personal fitness, basic communication skills, and other elements needed for a safe working environment.

- It has been planned to undertake training and preparations for animal escapes through classroom instruction and drills that are scheduled for multiple times per year (at least once per quarter).
- To enable the zoo's management to assess whether all staff are aware of emergency procedures and to identify potential problem areas, emergency drills will be conducted at least once every quarter for one of the basic types of emergency (fire, weather/environment, injury to staff or a visitor, animal escape).
- For seasonal or temporary guest services workers who operate in cafés and parking lots, as well as maintenance staff and horticultural staff, classroom training will be given utilising an interactive Power Point presentation.
- Employee responses and response times will be evaluated right away following each drill in order to make any necessary adjustments to response protocols and ensure the best possible response during a genuine crisis.
- Supervisors will be in charge of conducting follow-up inspections to ensure adherence to safety measures.
- To make sure that protocols are being followed, that staff training is effective, and that what is learnt is then applied to fix and/or improve the zoo's emergency procedures, these exercises will be documented and assessed.
- Improvements to the procedures shall be appropriately indicated in the records of these exercises, and regulatory bodies may review these records.

1. **Fire Drills**

There will be at least yearly fire drills.
• Keepers and security personnel will need to be aware of their obligations in every circumstance.
• Keepers' responses during drills will be quite similar to their reactions during a genuine emergency.

• Keepers and security staffs are responsible for counting the people who evacuate and assemble in a designated place or to help direct fire engines coming in through a nearby perimeter gate.
Treat every practise as if it were an actual emergency.

2. Human Injury Drills

For first aid and other different health issues involving personnel or visitors, the zoo will have a written plan that is accessible to all workers. The contingency plan must to list all certified first responders employed by the zoo along with the local ambulance, police, and other emergency numbers.
Each member of the Zoo staff should be aware of their specific duties when stabilising and assisting someone who has been hurt. Each facility will conduct annual human injury drills, with keepers' roles being practised during these drills.

The human injury drills that take place in a zoo setting are highly intriguing since they might include a wide range of situations or emergency methods. Keepers may anticipate multiple injuries when the "escapee" attacks and hurts more and more people if the injury drills are conducted alongside an animal escape drill. Keepers can hone their roles as vital members of the response team for their institution by participating in these kinds of realistic drills.
Generally speaking, the animal collection has to be protected from any weather.
Snow storms, heat waves, hurricanes, tornadoes, ice and wind storms, and flooding are all hazards that need to be avoided by all animals.

What a keeper does

The first step is to look up his or her responsibilities in the emergency procedure document for the zoo.
The second goal is to constantly assure the highest level of animal welfare.
This implies that keepers should monitor the weather as closely as leadership does and make sure the zoo's infrastructure and life support systems are in good operating order. If keepers are worried about a facility or system breakdown that could endanger the lives of the animals in their

care, they must alert supervisors and other keepers in advance of impending weather.

3. Weather emergency Drill

Because it is so difficult to successfully practise for weather catastrophes, the zoo will do "tabletop exercises" instead. Simply put, a "tabletop" is a comprehensive planning exercise in which all relevant personnel sequentially verify roles and responsibilities for the crisis response plan, personnel readiness, and crisis management while going through the crisis response plan (often with a large facility map on the table in front of them).

The zoo's emergency plan includes flooding and cyclones/windstorms and will outline departmental and personal roles and duties. The zoo's management thought that it would be a good idea to have an evaluation/readjustment exercise for all staff members and a "tabletop (planning) exercise" for all staff members each year a few months before the flood and windstorm season.

The responsibility of the keepers in this situation is to ensure the integrity of their exhibit spaces (for example, by keeping animals indoors and inspecting the area's general security before the storm) and to notify supervisors of any issues at least two months prior to the windstorm season.

The zoo feels ready, and each member in the room has a specific role and responsibility in the weather event. The zoo evaluates keeper responsibilities and preparation on a weekly basis to make sure everyone is prepared as the windy season approaches; this is an extension of the tabletop.

Animal-Human Incidents

Unauthorised visitors in exhibits and unexpected animal-human encounter are examples of animal-human incidents.

Additionally, appropriate protocols will be in place to handle an attack that causes an injury. According to the criteria of the emergency drill at the zoo or aquarium, these measures will be routinely practised. Every time there are injuries, the institution is required by law to prepare and keep on file a written report detailing the circumstances leading up to the incident, how the injuries were treated, and any modifications that were made to the facility's safety procedures as a result.

4. Evacuation Drills

A quarterly evacuation drill will be held at the zoo.

A copy of the zoo's emergency manual, detailing area protocols, and an up-to-date list of the zoo's emergency phone numbers can be kept at home or in a cell phone by the zoo's keepers, security personnel, and other departments. Anytime could be a good opportunity to use this knowledge.

5. Animal Escape Drills

Animal escape exercises will be carried out to train zoo workers on a quarterly basis, just as other drills. Staff should receive training on the animal escape emergency response procedure before participating in practise drills that are publicly publicised. The zoo's management should conduct surprise drills only after it has tested the staff members' actual response times and skills.

Additionally, visitors must be "evacuated" or "sheltered in place" from the escaped wild animal.

6.12 Proposed Equipment Procurement for Dealing with the Disaster

Some of the basic preparedness includes keeping essential equipment and materials mentioned below,

(i) Alarm system

(ii) Public address system

(iii) Radio communication

(iv) Rubber boots

(v) Helmets

(vi) Shovels

(vii) Pick-Axe

(viii) Welding cutting machine and gas cutter

(ix) Portable chain saw

(x) Portable generator

(xi) Portable pumping set

(xii) Ropes & nets

(xiii) Portable cages

(xiv) Construction material

(xv) Chain link, angles, clamps, iron rods and cement

(xvi) Tractor-trolley and portable earth removing equipment

(xvii) Fire-proof dress and goggles

(xix) Wooden planks & bamboos

Chapter VII:
CONTINGENCY PLAN

7.1 Rescue of animals from wild

Bardhaman Zoological Park presently have a facility for rescued wild animal. The rescued animals may be released in the wild after necessary treatment after keeping some time in quarantine if those animals are physically sound and suitable for rehabilitation in the wild. If the rescued animal required to be permanently displayed then it would be housed in quarantine area for a specific period before put to public display.

The following actions need to be initiated for handling the rescued animals.

7.1.1 Trap cages

In order to transfer problematic animal sufficient number of trap cages for different species are to be kept ready in zoo at any point of time. Trap cages are also to be kept ready which would also serve the purpose of temporary housing and transit of the rescued captured animals.

7.1.2 Vehicles

At present, no pick-up van is available in the zoo for attending animal transfer, rescue operations or small animal transport. However specialized rescue vehicle filled with required infrastructure is needed.

7.1.3 Tranquilizing equipment and chemicals

It is proposed to train the zoo staffs and rescue team members to use the tranquilization equipment and chemicals to handle to problematic animal for immediate treatment or escape animal for safety of animal and visitors. It is also proposed to store the equipment is main administrative building for authorized access.

7.2 Escape of animals from enclosures

At present zoo has boundary wall completely around the zoo premises. The zoo staffs routinely check all the perimeter chain link fence of animal enclosures. Utmost care is being given for safety of the public inside the zoo during park hours. At present zoo is proposing to increase night security guard to conduct routine checking of all enclosures during night hours and early morning to prevent any escape of captive animals. The zoo already

proposed to procure and install more CCTV camera with night vision facility in enclosure, night shelters and other strategic locations.

Escape of zoo animals is sudden and creates emergency situations to tackle immediately. If the situation arises during zoo hours when visitors are in large number, the immediate job is to cordon of the area so as not to allow any visitors to approach the escaped zoo animal. Then to use the alarm system of the zoo to alert all staff including security. The proposed Rapid Response Team need to be kept ready immediately to capture the escaped animal either through trapping or through tranquilization. For this the tranquilization equipment need to be kept ready at zoo office. All responsible staff of the zoo must keep the telephone numbers of rapid response team members and other key persons. In case of emergency, the police, fire brigade, ambulance to be contacted over telephone and the required telephone numbers to be displayed at zoo hospital, administrative building, security kiosk and offices. One vehicle along with driver need to be kept ready to meet emergencies. The trap cages, tranquilising equipment and nets are to be also kept ready with lock & key with designated officers.

For warning people & staff about emergencies

In emergency situation viz, escape of large cats, fire, law & order situation etc. there is a for proper evacuation mechanism in the zoo. For this the zoo has alarm system and public address system in the administrative building, entry/exit gate. It is highly prioritised to arrange fixed station and walkie-talkie (Radio communication) in the zoo.

The following safety measures proposed to be taken to prevent escape of animals from enclosures:

i) Escape drills conducted periodically among zoo staff to keep them more vigilant and well groomed.
ii) Periodical trimming of trees is being carried out both inside and outside enclosure close to fence so as to avoid falling of branches which may serve as an escape route for capture animals viz carnivores, primates and reptiles.

iii) Moat water level is being maintained within the safety limit so that the captive animals who are good at swimming unable to cross the barriers.
iv) Repair and maintenance of doors, windows and annual painting of chain link mesh fence is being done to prevent rusting.
v) The animal keepers, animal attendants and co-workers are sensitized during training and other interaction to prevent and deal with the issues of animal escape.
vi) The stand of barrier and enclosures are meticulously designed so as to maintain the safety of visitors.

Use of tranquilization gun and techniques of chemical restraint.

This is a very useful technique to capture problematic wild animals and zoo animals in distress so as to give them specific treatment. This can be an effective method for capture-recapture, translocation, reintroduction, hormonal implant for undertaking research studies. This is a very skilled and specialized job as one has to know about immobilization system, the drugs, darts, use of tranquilizing equipment etc. The drug doses vary and so also the kind of drug from wild carnivores to wild herbivores. Various capture techniques should be imparted to staff and practiced by a specific group within the zoo.

Rapid Response Team

In order to tackle the problem of escape of animals from enclosures, one rapid response unit comprising higher officials, biologist, veterinary team, and concerned animal keeper is being constituted. Necessary trap cages, nets, tranquilization equipment and drugs are being kept ready to start trapping the escaped animal. Simultaneously evacuation mechanism of visitors is being taken up.

7.3 Monkey and Dog menace

The Bardhaman Zoological Park has no such problems but the staffs are always keeping a close watch to the safety of animal and their feed to overcome the sudden problem of stray animals. The zoo premises are surrounded by boundary wall and protected from stray dogs.

7.4 Arrangement of animal feed in case of strike (non-supply by contractors)

We have proposed to store different feed items to tide over contingency situations such as strike periods by staff, strikes called by various political parties, non-supply of the feed contractors, natural calamities as uninterrupted supply of feed need to be considered much ahead of the real situations. All dry feed needs to be kept ready in well maintained storage facilities at least for fifteen days. Similarly, perishable food items like fruits and green items to be procured and stored departmentally for at least three days without banking upon the feed contractor. Apart from this a fodder farm and a vegetable garden is developing in the zoo for self-dependency. Presently the zoo does not have deep-freezing facilities. This will be proposed to procure to store perishable food items including buffalo meat, chicken and eggs at least for a week. Day old chick, white mice etc. might be kept ready at least for a week. We are also proposing to develop a mice and insect breeding centre near store area for reptiles. The natural water bodies in different zones also have sufficient numbers of fishes as feed. Identification of service providers to be done much ahead to take their help to tide over the problems.

7.5 Snake bite

Bardhaman Zoological Park abounds with variety of snakes due to its natural vegetation and habitat conditions. There are free living poisonous snakes inside or outskirts of the campus. Moreover, many poisonous snakes will be exhibited in proposed Reptile Section. The animal keepers who are working in reptile section are vulnerable to snake bite. The bite proof gloves and other necessary instruments will be procured. It is proposed to keep sufficient doses of anti-venom serum in zoo hospital to meet any emergency situation and also a communication should be established with nearest hospital for availability of AVS. More than one number of well-maintained first-aid boxes are being kept ready at zoo. The zoo keepers need to be trained for first-aid measures to be taken immediately in case of snake bite. Tetanus and anti-venom injections need to be procuring for emergency uses in the zoo hospital. Always a special care is taken for animal enclosures to make it free from rodents, snakes etc.

7.6 Visitors getting injured/ visitors falling inside enclosure & First-Aid facility

Bardhaman Zoological Park attracts a good number of visitors every year. In case of some accident, visitor falling inside the enclosure, animal attack, snake bite or any sort of injury the zoo need to be equipped with first-aid kits at various points. In case some visitors fall into enclosure or wet/dry moat, there is telescopic aluminium ladder and rope require to be procured and available in administrative office for rescuing. Animal keepers and security staff will be deployed on rotation to meet such situation. The rapid response team members will be engaged to meet any such untoward incidence in the zoo. Proper stand-off barriers to be erected to avoid falling of visitors to any enclosure moat.

Proper do's and don'ts signages are already been fixed in important zones to sensitize the visitors. The minor injury can be treated with first-aid facility. First-Aid facilities need to be available in the zoo for minor injuries of visitors at different points like administrative office, entry gate, security room etc. However, in case of serious injury, arrangement to be made for taking the injured visitors to nearest hospital by the vehicles available in the zoo.

7.7 Fighting among animals

Infighting usually noticed during rutting season of deer and antelopes among males. Similarly fighting occurs among carnivores, primates, crocodiles. In this case the fighting animals in case of carnivores one to be driven back to night shelter to avoid injury. Animal Keepers need to be been trained in this regard so that they can separate the fighting animals. Occasional fighting occurs between mating pairs of carnivores for which their attitude and mating behaviour, acceptability of the partner to be watched carefully before allowing them to actual start of mating. Preferably zoo vets are to be kept standby with drugs and tranquilization equipment near kraal where mating of large carnivores is allowed.

7.8 Epidemics

In case of any epidemic or communicable disease, the zoo will take proper sanitization measures like Arial spray of anti-viral or anti-biotic medicines in case of avian influenza, and the zoo has a well-planned master layout describing isolation units, quarantine section and incineration site for

disposal of dead animals etc. The zoo needs a well trained and experienced veterinary team maintains regular schedule of vaccination, deworming and regular health monitoring. Outbreak of communicable diseases viz. Anthrax, Foot & mouth disease, Haemoragicsepticemia, avian influenza etc. creates serious threat to captive animals in the zoo. The stray dogs and pet cats are also potential sources of diseases viz. Ehrlichosis, Feline Panleucopenia for which vaccination protocol is being taken up in the zoo. In order to prevent source of infection from fodder grass which were brought from outside has to be minimise and captive fodder farm in the zoo has been upgraded for sustainable supply of quality fodder for zoo herbivores. The zoo veterinarians meticulously do the quality check of animal feed to prevent spread of any diseases to zoo animals.

7.9 Breakdown of power supply

In case of breakdown of power supply, the zoo has already developed alternate power supply for supply of water through pump sets, CCTV operation, keep live energized fence, power supply in enclosures through Diesel Generator and Solar Power etc. Sufficient fuel is kept ready at any point of time to run all generators and pump sets in the park. Inverters have to be provided to administrative office, zoo hospital, ticket booking counter and zoo hospital. Solar street lights need to be fixed at entry point, fodder farm, gate, and administrative section. Solar home-light system may be provided to zoo hospital, administrative office and officers' quarters.

7.10 Free ranging animals/Feral animal menace

The zoo has a good number of avifauna, butterflies, few snakes etc as free ranging animal. There is also evidence of presence of rodents, mongoose in the zoo. The zoo has trained staff for pest control. The rodent trap and repellent are also proposed to use at regular intervals in different locations in zoo premises. The animal feeds are stored in concreted store house with proper precautions to avoid the problem of rodents. Animal enclosures are maintained, cleaned and checked every day with full attention to avoid any feral animal menace.

Chapter VIII:
CAPACITY BUILDING

Skilled and knowledgeable personnel are essential to maintain and up-keep Zoo. 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 zoo.

8.1 In-house training

A cursory look at the history and growth of zoo does indicate the efficient functioning of the zoo 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 staffs. A group of junior staffs would be attached to such senior staff for some time, so that all the fine skills 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 On the Job training:

(a) Collection of biological material & their interpretation

The zoo staff especially those who are working in veterinary wing must be trained to collect biological material and to examine and interpret as and when required.

(b) Necropsy and other wildlife health care

Often zoo management found themselves in a bewildering state and any sudden break out of any epidemics viz. anthrax, tuberculosis, foot & mouth diseases, avian influenza. The local disease investigation unit of State Veterinary Department needs to be involved in this regard. Therefore, the zoo staff should be involved in cooperative effort taken by local veterinarian in post-mortem, collection of samples of vital organs for histo-pathological viral and bacterial examinations, their preservation and dispatch, signs & symptoms of common wildlife diseases, external indicators of health to be used for gross periodic health assessment. This sort of training should be repeated at regular interval to make the practice more perfect. The help of State Government Veterinary Department is

being taken. Further the blood samples of both zoo animals must be sent to authorize laboratory for testing.

(c) Use of computers internet and related accessories

A few staff may be trained in order to handle computer internet and such accessories. Knowledge on GIS technique & remote sensing would be very essential in today's world which would be a very handy management tool. Various field data can be analyzed, stored and retrieved giving zoo management an update status.

8.3 Formal training courses

The officers need to attend various training programmes organized by WBZA and CZA from time to time including the training for zoo veterinarians. Different funded training and capacity development programme will be organized for zoo keepers and animal attendants at Bardhaman Zoological Park. The training modules include animal care, education & outreach, veterinary expertise, management etc.

8.4 Encourage specializations

The Bardhaman Zoological Park acts as a Rescue & Rearing Centre for all problematic, orphaned and injured animals of nearby districts. In order to meet the exigencies one anti-depredation and rescue unit will be set up at Bardhaman Zoological Park in future. The zoo staff both at field and official level will participate in multipurpose training course in the country for specialization in the field of animal health care, zoo keeping, environmental enrichment, zoo education and interpretation, conservation breeding programme etc.

8.5 Annual rewards

In recognition of commendable performance in the field of zoo keeping, rearing of orphaned and injured/sick animals, gardening, security, maintenance etc. the dedicated staff are being rewarded on the eve of Zoo Foundation Day, Wildlife Week, Birth Day of animals, Zoo Keepers Day etc. The best maintained enclosures are also being awarded.

8.6 Recreation/Relaxation

In order to inculcate a feeling of togetherness and homeliness, it is proposed to set up an interactive and counselling centre. In order to encourage the zoo personnel to show their inherent hidden talents, cultural evening, sports, get together organized. All the subordinate staff and zoo officials must have a family bonding to take the zoo to new heights. The zoo management should take all compassionate measures to encase a feeling of brotherhood so that there will be no agitation or grievance by the subordinate staff.

8.7 Training of officials

The Zoo Director, Research Assistant, Veterinary Officers must attend specialized training courses so as to gain up to date knowledge on the relevant field which can be applied in our zoo.

8.8 Plan to upgrade skills of zoo staff

There is urgent need to train the existing staff to upgrade their skill in various aspect of zoo management from time to time. This will help the management for smooth running of the park.

8.9 Interaction with other Zoos:

Regional, National and International co-operation

It is desirable to have interaction with other nearby zoos for regional cooperation in planned conservation breeding of endangered species. There is also a need of regular knowledge exchange programme or interaction with the nearby zoos.

Chapter IX:
E-GOVERNANCE

Application of information and communication technology for dissemination of accurate information, exchange of information and interaction with other zoos and organizations, maintenance of records and data in digital format would help the zoo to reach out the stakeholders and clients. Bardhaman Zoological Park has planned use of significant advances in Information Technology sector and has planned to put in lot of efforts to computerize in all aspects to make fast, accurate and paperless office and to store the required data for better management.

Conservation education is one of the important objectives of Zoo. The available technologies such as internet, website hosting, e-mail, digital photography, all helped the zoo to reach out to many print and electronic mass media agencies with little expense in real time.

9.1 GIS Mapping

Using the GPS and satellite imagery the following maps will be prepare for Bardhaman Zoological Park:

- Location and access of Bardhaman Zoological Park.
- Green zone and fodder zone and vegetation type by density.
- Classes Map of existing water holes in Bardhaman Zoological Park.
- Administrative map showing blocks, compartments and sections.
- Enclosures, visitor pathways, other attractions on the zoo premises. Management plan showing proposed facilities in Bardhaman Zoological Park.

Apart from the existing mapping system, all the enclosures, infrastructures, internal roads etc. will be mapped with the help of GPS and satellite imagery. It is proposed also to map the electric power supply lines, water supply system, drainage system etc.

9.2 Entrance Gate

This is most important point from the point of crowd regulation and revenue realization. The entrance tickets issued to the visitors will be computerized with facilities to monitor the flow of visitors and amount realized. The details can be viewed by the Administrator end in real time thus preventing any loss and the details can be stored in Director's computer system reducing the use of book ledgers. This facility will enable accuracy, efficiency and transparency. There will be different layers of

scrutiny and supervision over the entry of visitors with valid tickets. Ticket issuing will be outsourced to reputed agency with clearly defined functions and facilities to be provided. Security will allow the visitors after ensuring valid tickets. A permanent staff will be kept a watch on ticket issuing. The authority could monitor the movement of visitor and issue of tickets from their chambers.

9.3 E-ticketing & E-commerce facility

Due to expected phenomenon growth in visitors, it is planned to integrate E-ticketing with the upcoming website of Zoo. With the help of our bankers, E-ticketing will be put in place in near future, thus reducing the long queue and rush near the entrance gate. A reputed company will be employed for integrating e-ticketing and adoption payment through the website. Setting up payment gateway service using credit card, debit card etc.

9.4 Close Circuit Cameras with TV monitors

Bardhaman Zoological Park is expecting remarkable foot falls in coming years with annual growth 50% visitors' increase. Coupled with multitude of educational and other learning programs, the security and surveillance for the safety of animals, visitors and property, it is inevitable to have different layers of security system in place. CCTV's have become very handy to monitor the movement of crowd and keep an eye on vandalism and theft on busy crowded weekends and festivals. Bardhaman Zoological Park is steadily increasing the number of CCTV's to have continuous monitoring and to take collective steps in day to day behaviour of sensitive animals, sick animals and movement of unauthorized persons and to detect the vandalism and thefts, so as to alert the security system. At present there is one monitoring units in the chambers of Director with Close Circuit Cameras installed at different strategic points. It is proposed to install more cameras at sensitive points for visitors' management, animal care in enclosures, kraals, night shelters.

9.5 Wireless Network

Bardhaman Zoological Park needs an effective wireless network system with handsets, which will be provided to the security personnel stationed at strategic points. The Security Officer will monitor and collect the information at a regular interval throughout the day and several times. It

helps to work efficiently to prevent major mishaps and to take corrective steps. The security unit will be in constant touch with Director or any authorised person and reports immediately any incident of significance.

9.6 Media management

Photographs of new born animals, press release on new acquisition, training camps and any other development related to Zoo will be communicated to both print and electronic media through e-mail attached with digital format to large number of agencies and media channels. This would help the Zoo to reach out to large public and would attract crowds with little expense in real time. Correct and factual reporting of happenings in the Zoo will help us to maintain transparency and credibility. Also the message of conservation education and importance of captive breeding & its significance could be effectively communicated to general public and animal lovers in particular. Animal adoption is mainly due to the positive coverage in the media, so the available technology must be utilized effectively.

9.7 Zoo Official Website and Email

A new official website will be launched with a modern design and advanced features targeted at large, worldwide audience of animal lovers, nature conservators, tourists and children of all ages with a budding interest for the animal world. The new website will be designed and hosted with the assistance of a reputed web management agency. The website is user friendly and covers all the sections with historical background with attractive photo feature section on the existing animals. The website will be constantly updated with the latest information, happenings, animal acquisitions and any issue related to Zoo.

9.8 Introduction of online + POS facilities to website maintenance

Bardhaman Zoological Park has a plan to introduce the Point of Sales facilities for facilitating the visitors to use their VISA card and Master Card for payment of entrance fee / donations / sponsoring towards animal adoption scheme and other official remittances to the zoo.

9.9 Electronic transfer of the amount

Bardhaman Zoological Park will also facilitate visitors for electronic transfer of the amount from their place to the Zoo account in nationalised or scheduled Bank, towards animal adoption / donation and also availing concession for school students.

9.10 Procurement of works/ goods/ miscellaneous services through tenders on E- Procurement Platform of Government of West Bengal

According to Government of West Bengal advisory, all tenders for procurement of works, goods and services are being processed through e-portal and achieving transparency in procurement.

9.11 Computerization of office work

Presently there are two computers installed in the zoo and these are being used for generation of reports, communication of office orders, accounting, exchanging information with other organizations and storing useful data. There is need for networking all the computers by LAN.

Realizing the need for exposure and training, the concerned staff members will be trained at various Institutions so that they become capable of utilizing the advanced software.

9.12 Maintenance of Accounts and office records

Bardhaman Zoological Park is a unit of 'West Bengal Zoo Authority'. It is mandatory on the part of registered societies to present Balance Sheet, at the end of the year, giving a true and fair view of the state of affairs of the Society and Income & Expenditure Account giving true and fair view of the excess of Income-over-Expenditure or excess of Expenditure-over-Income of the Society. It is also statutory requirement to get the accounts audited by a Chartered Accountant.

Bardhaman Zoological Park will acquire efficient and user-friendly software for monthly pay bill preparation, updating and maintaining daily, monthly & annual accounts. An account is being kept updated constantly and both revenue and expenditure is reconciled daily with advanced tally software package. Executive Director could keep a check on both revenue & expenditure against the budgeted amount at any point of time in real time.

In the stores, the feeding articles weight measurement is computerized to achieve accuracy and transparency.

9.13 Hospital Computerization

Separate computers will be provided to doctors apart from general computer, wherein all reports pertain to animal inventory, data entry and reports will be generated. Internet facility will be provided to proposed hospital unit to keep in touch with other counter parts for exchange of information and recent advances in animal health management.

The following activities will be computerized:

1. For chemical stock management, software has been used for updating of all information on daily basis.
2. Data documentation with regard to mortality, natality, acquisition and disposals.

9.14 Animal Data Management

The existing maintenance of animal history records is maintained in zoo in traditional record keeping method. Although many information including stud-book, animal health card, inventory etc. have been computerized yet there is need for further up-gradation in view of many advance records keeping and information sharing system. We intend to take membership of the ZIMS (Zoological Information Management System). The ZIMS is comprehensive software, consisting of the following, in addition to other features

ARKS- Animal Record keeping System
Med ARKS - Medical Animal Record Keeping System
SPARKS - Single Population Animal Records System

The Zoo Information including animals, education & outreach, revenue, medical will be uploaded in Integrated Management Information System of West Bengal Zoo Authority and IMIS facilities of CZA as part of e-Governance.

This could help exchange of information about zoo activities and Animal Status and animal exchange programme.

We are converting our zoo office to an e-office in near future and all the information will be enter, updated, uploaded, and shared only through dedicated software and application system.

Chapter X

BUDGET

10.1Broad Budget Analysis for Implementing the Plan

The plan period of the Master Plan of Bardhaman Zoological Park is for 20 years starting from 2024-25 to 2044-45. It is also one of the newest zoos in the country having housed exotic and endemic species. The zoo is located in midst of developed urban landscape. It has got very good basic infrastructure in place. However, considering suggestions of technical experts of Central Zoo Authority and West Bengal Zoo Authority, it is proposed to change the existing layout plan by adopting the different themes. Number of animals proposed to be displayed has also varies from different ecosystem and bio-geographical realms. At present zoo does not have separate Rescue and Rehabilitation Centre. Considering the above, the budget required is derived based on the current prices.

Year Wise Budget (Non Plan)

Sl. No.	Particulars	Amount (Rs.) 2024-25	Amount (Rs.) 2025-26	Amount (Rs.) 2026-27	Amount (Rs.) 2027-28	Amount (Rs.) 2028-29
1.	Annual establishment charges (salary, incentive, uniform, security, statutory payments etc.)	80,00000	88,00000	96,80,000	1,06,48,000	1,17,12,800
2.	Feed & Fodder	80,00000	88,00000	96,80,000	1,06,48,000	1,17,12,800
3.	Annual outreach and education programme	10,00000	11,00000	12,10,000	13,31,000	14,64,100
4.	Computerisation of office system	10,00000	11,00000	12,10,000	13,31,000	14,64,100
5.	Enclosure maintenance	30,00000	33,00000	36,30,000	39,93,000	43,92,300
6.	Remodelling and Maintenance of transportation cages	15,00000	16,50,000	18,15,000	19,96,500	21,96,150
7.	Zoo Management and Maintenance cost (Engineering, Gardening, Vehicle, telephones, electricity charges, etc.)	50,00000	55,00000	60,50,000	66,55,000	73,20,500
8.	Animal & staff health care (Sanitization, Medicines etc.)	20,00000	22,00000	24,20,000	26,62,000	29,28,200
9.	Miscellaneous (5% of annual budget)	15,00000	16,50,000	18,15,000	19,96,500	21,96,150
	TOTAL	3,10,00000	3,41,00000	3,63,00000	4,12,61,000	4,39,32,000

Sl. No.	Particulars	Amount (Rs.) 2029-30	Amount (Rs.) 2030-31	Amount (Rs.) 2031-32	Amount (Rs.) 2032-33	Amount (Rs.) 2033-34
1.	Annual establishment charges (salary, incentive, uniform, security, statutory payments etc.)	1,28,84,080	1,41,72,488	1,55,89,736.80	1,71,48,710.50	1,73,23,581.60
2.	Feed & Fodder	1,28,84,080	1,41,72,488	1,55,89,736.80	1,71,48,710.50	1,73,23,581.60
3.	Annual outreach and education programme	16,10,510	17,71,561	19,48,717.10	21,43,588.81	23,57,947.69
4.	Computerisation of office system	16,10,510	17,71,561	19,48,717.10	21,43,588.81	23,57,947.69
5.	Enclosure maintenance	48,01,530	52,81,683	58,09,851.30	63,90,836.43	70,29,920.07
6.	Remodelling and Maintenance of transportation cages	24,15,765	26,57,341.50	29,23,075.65	32,15,383.565	35,36,921.92
7.	Zoo Management and Maintenance cost (Engineering, Gardening, Vehicle, telephones, electricity charges, etc.)	80,52,550	88,57,805	97,43,585.50	1,07,17,944.10	1,17,89,738.50
8.	Animal & staff health care (Sanitization, Medicines etc.)	32,21,020	35,43, 122	38,97,434.20	42,87,177.62	47,15,895.38
9.	Miscellaneous (5% of annual budget)	24,15,765	26,57,341.50	29,23,075.65	32,15,383.565	35,36,921.92
	TOTAL	4,98,95,810	5,13,42,269	6,03,73,930	6,64,11,324	6,99,72,456

Sl. No.	Particulars	Amount (Rs.) 2034-35	Amount (Rs.) 2035-36	Amount (Rs.) 2036-37	Amount (Rs.) 2037-38	Amount (Rs.) 2038-39
1.	Annual establishment charges (salary, incentive, uniform, security, statutory payments etc.)	1,90,55,939.80	2,09,61,533.80	2,30,57,687.20	2,53,63,455.90	2,78,99,801.50
2.	Feed & Fodder	1,90,55,939.80	2,09,61,533.80	2,30,57,687.20	2,53,63,455.90	2,78,99,801.50
3.	Annual outreach and	25,93,742.46	28,53,116.71	31,38,428.38	34,52,271.22	37,97,498.34

	education programme					
4.	**Computerisation of office system**	**25,93,742.46**	**28,53,116.71**	**31,38,428.38**	**34,52,271.22**	**37,97,498.34**
5.	**Enclosure maintenance**	**77,32,912.08**	**85,06,203.29**	**93,56,823.62**	**1,02,92,506**	**11321756.60**
6.	**Remodelling and Maintenance of transportation cages**	**38,90,614.11**	**42,79,675.52**	**47,07,643.07**	**51,78,407.38**	**56,96,248.12**
7.	**Zoo Management and Maintenance cost (Engineering, Gardening, Vehicle, telephones, electricity charges, etc.)**	**1,29,68,712.40**	**1,42,65,583.60**	**1,56,92,142**	**1,72,61,356.20**	**1,89,87,491.80**
8.	**Animal & staff health care (Sanitization, Medicines etc.)**	**51,87,484.92**	**57,06,233.41**	**62,76,856.75**	**69,04,542.43**	**75,94,994.67**
9.	**Miscellaneous (5% of annual budget)**	**38,90,614.11**	**42,79,675.52**	**47,07,643.07**	**51,78,407.38**	**56,96,248.12**
	TOTAL	7,69,69,702	8,46,66,672	9,31,33,340	**10,24,46,674**	**11,26,91,339**

Sl. No.	**Particulars**	**Amount (Rs.) 2039-40**	**Amount (Rs.) 2040-41**	**Amount (Rs.) 2041-42**	**Amount (Rs.) 2042-43**	**Amount (Rs.) 2043-44**
1.	**Annual establishment charges (salary, incentive, uniform, security, statutory payments etc.)**	**3,06,89,781.70**	**3,37,58,759.90**	**3,71,34,635.90**	**4,08,48,099.50**	**4,49,32,909.50**
2.	**Feed & Fodder**	**3,06,89,781.70**	**3,37,58,759.90**	**3,71,34,635.90**	**4,08,48,099.50**	**4,49,32,909.50**
3.	**Annual outreach and education programme**	**41,77,248.17**	**45,94,972.99**	**50,54,470.29**	**55,59,917.32**	**61,15,909.05**
4.	**Computerisation of office system**	**41,77,248.17**	**45,94,972.99**	**50,54,470.29**	**55,59,917.32**	**61,15,909.05**
5.	**Enclosure maintenance**	**1,24,53,932.30**	**1,36,99,325.50**	**1,50,69,258.10**	**1,65,76,183.90**	**1,82,33,802.30**
6.	**Remodelling and Maintenance of transportation cages**	**62,65,872.93**	**68,92,460.22**	**75,81,706.24**	**83,39,876.86**	**91,73,864.55**

7.	**Zoo Management and Maintenance cost (Engineering, Gardening, Vehicle, telephones, electricity charges, etc.)**	**2,08,86,241**	**2,29,74,865.10**	**2,52,72,351.60**	**2,77,99,586.80**	**3,05,79,545.50**
8.	**Animal & staff health care (Sanitization, Medicines etc.)**	**83,54,494.14**	**91,89,943.55**	**1,01,08,937.90**	**1,11,19,831.70**	**1,22,31,814.90**
9.	**Miscellaneous (5% of annual budget)**	**62,65,872.93**	**68,92,460.22**	**75,81,706.24**	**83,39,876.86**	**91,73,864.55**
	TOTAL	**12,39,60,473**	**13,63,56,520**	**14,99,92,172**	**16,49,91,390**	**18,14,90,529**

10.2 Construction and Development

For construction and development purpose, modification and new enclosure construction are being considered separately.

As per the proposed layout plan some of the existing infrastructures are to be modified, some are to be redone and new enclosures may also have to be built. Accordingly, a line estimate considering current prevailing rates is prepared for different item of works as detailed below:

I. Construction of New Enclosures

The following enclosures are required to develop as per the proposed layout plan:

Sl. No.	Particulars	Amount Rs.
1.	Hippopotamus Enclosure	**21,40,000**
2.	Giraffe Enclosure	**20,00,000**
3.	Water bird Aviary	**35,00,000**
4.	Gibbon Enclosure	**20,00,000**
5.	Monitor Lizard	**15,00,000**
6.	Mixed Flying Bird Aviary Section	**15,00,000**

Sl. No.	Particulars	Amount Rs.
7.	Flightless Bird Aviary	**11,00,000**
8.	Reptile House	**20,50,000**
9.	Mouse Deer Enclosure	**11,40,000**
10.	Fishing Cat Enclosure	**24,50,000**
11.	Jungle Cat Enclosure	**15,00,000**
12.	Porcupine Enclosure	**5,00,000**
13.	Jackal Enclosure	**26,70,000**
14.	Indian Wolf Enclosure	**26,70,000**
15.	Hyena Enclosure	**13,50,000**
16.	Bear enclosure	**27,00,000**
17.	Tiger Enclosure	**30,00,000**
18.	Leopard Cat Enclosure	**15,80,000**
19.	Children's Park	**20,00,000**
20.	Fodder Farm	**3,80,000**
21.	Rescue Centre	**6,50,000**
22.	Quarantine Centre	**6,60,000**
	TOTAL	**3,90,40,000**

In words: Three Crore Ninety Lakh Forty Thousand only.

II. Construction of new infrastructures as per the proposed layout plan the following enclosures require to be built:

Sl. No.	Particulars	Amount Rs.
1.	Construction of new service road, multipurpose pathway and Land development/drainage of surface run off with the help of recharge pit	**1,48,00,000**
2.	Water supplies up-gradation & extension with overhead tank and tube well boring pump, Under Ground Reservoir(URG) with fire hydrant system, Water pipeline & supply networks	**1,00,00,000**
3.	Construction of toilet block	**13,00,000**
4.	Construction of additional boundary wall	**10,00,000**
5.	Construction of child care unit for visitors	**9,50,000**
6.	Construction of Souvenir Centre	**25,00,000**
7.	Construction of drainage system network and waste water treatment	**27,00,000**
8.	Construction of car parking facility	**15,00,000**
9.	Construction of incinerator	**10,00,000**
10.	Reconstruction of animal feed store & kitchen	**10,00,000**
11.	Renovation & remodelling of veterinary hospital	**10,00,000**
12.	Electrical network and transformer with DG complete electrical network,	**85,00,000**
	TOTAL	**4,62,50,000**

In words: Four Crore Sixty Two Lakh Fifty Thousands Only.

III. Essential expenditure as per the proposed layout plan the following enclosures require to be built:

Sl. No.	Particulars	Amount Rs.
1.	Installation of CCTV & Public Address	**12,00,000**
2.	Purchase of vehicles	**15,00,000**
3.	Survey and documentation	**5,50,000**
4.	Purchase & Up-gradation of available equipment at veterinary hospital	**21,00,000**
5.	Purchase of sanitation equipment, water pumps, miscellaneous equipment for maintenance	**4,00,000**
6.	Purchase of disaster management equipment	**2,50,000**
7.	Purchase of communication equipment	**4,00,000**
8.	Landscaping and beautification	**55,00,000**
9.	Installation of water ATM	**12,00,000**
10.	Animal Transportation Cage	**8,00,000**
11.	Enclosure enrichment	**25,00,000**
12.	Camera, GPS, Search light etc	**9,00,000**
	TOTAL	**1,73,00,000**

In words: One Crore Seventy Three Lakhs Only.

10.3 Day to day maintenance: At present following recurring expenditure is incurred on various items as given below:

SL. NO.	ITEM OF WORKS (HEAD OF SERVICE)	AMOUNT
1	**Wages &Honorarium(CDI AND RETIRED PERSONAL)**	**21,917/-**
1	**NUTRITION AND HEALTH CARE-Diet for zoo animals**	**21,917/-**
3	**ZOO OPERATION COSTS Hire**	**10,598/-**
4	**ELECTRICITY and other CHARGES**	**13,698/-**
5	**REPAIR AND MAINTENANCE**	**4,109/-**
	Total	**72,239/-**

Chapter: XI

Management Plan

Year wise Budget (Plan)

Bardhaman Zoological Park , Purba Bardhaman(in lakhs)																					
Sl. No.	Items of Work	2024 - 2025		2025 - 2026		2026 - 2027		2027 - 2028		2028 - 2029		2029 - 2030		2030 - 2031		2031 - 2032		2032 - 2033		2033 - 2034		Funding Agency
		Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	
1.	Construction of Fishing cat	1	24.50																			WBZA, Department of Forests, West Bengal.
2.	Construction of Water Bird aviary	1	35.00																			
3.	Construction of Giraffe Enclosure	1	20.00																			
4.	Construction of Monitor Lizard Enclosure	1	15.00																			
5.	Construction of Mixed Bird Aviary	1	15.00																			
6.	Construction of Flightless bird Aviary	1	11.00																			
7.	Construction	1	20.																			

	of Reptile House		50																			
8.	Construction of Quarantine Centre	1	6.60																			
9.	Construction of Rescue Centre	1	6.50																			
10.	Construction of Visitor's Shed	2	3.00																			
11.	Construction of Mouse Deer Enclosure	1	11.40																			
12.	Construction of Gibbon Enclosure	1	20.00																			
13.	Construction of Jungle cat Enclosure		15.00																			
14.	Construction of Indian Wolf encl.	1	26.70																			
15.	Construction of	2	3.50																			

	Toilet																				
16.	Construction of Children's Park	1	20.00																		
17.	Construction of Jackal Enclosure	1	26.70																		
18.	Construction of Sloth Bear Enclosure	1	27.00																		
19.	Construction of leopard off-display area	1	13.50																		
20.	Construction of Hyena enclosure	1	13.50																		
21.	Construction of Tiger Enclosure	1	30.00																		
22.	Construction of Fodder Farm	1	3.80																		
23.	Construction of Leopard cat	1	15.80																		

	Enclosure																				
24.	Construction of Child Care Unit	1	9.50																		
25.	Construction of Visitor's path	1080.000m	71.28	7200.00m	47.52																
26.	Construction of Service road	900.000m	55.80	6000.00m	37.20																
27.	Construction of standoff barriers					L.S.	3.00					L.S.	2.00			L.S.	1.50			L.S.	1.00
28.	CCTV installation					L.S.	4.50							L.S.	3.50					L.S.	2.50
29.	Maintenance of Enclosures							L.S.	6.50					L.S.	7.50			L.S.	9.50		
30.	Maintenance of Buildin g structures									L.S.	6.50			L.S.	8.50			L.S.	8.50		
31.	Maintenance of Visitor's path									L.S.	4.50					L.S.	3.50			L.S.	2.50

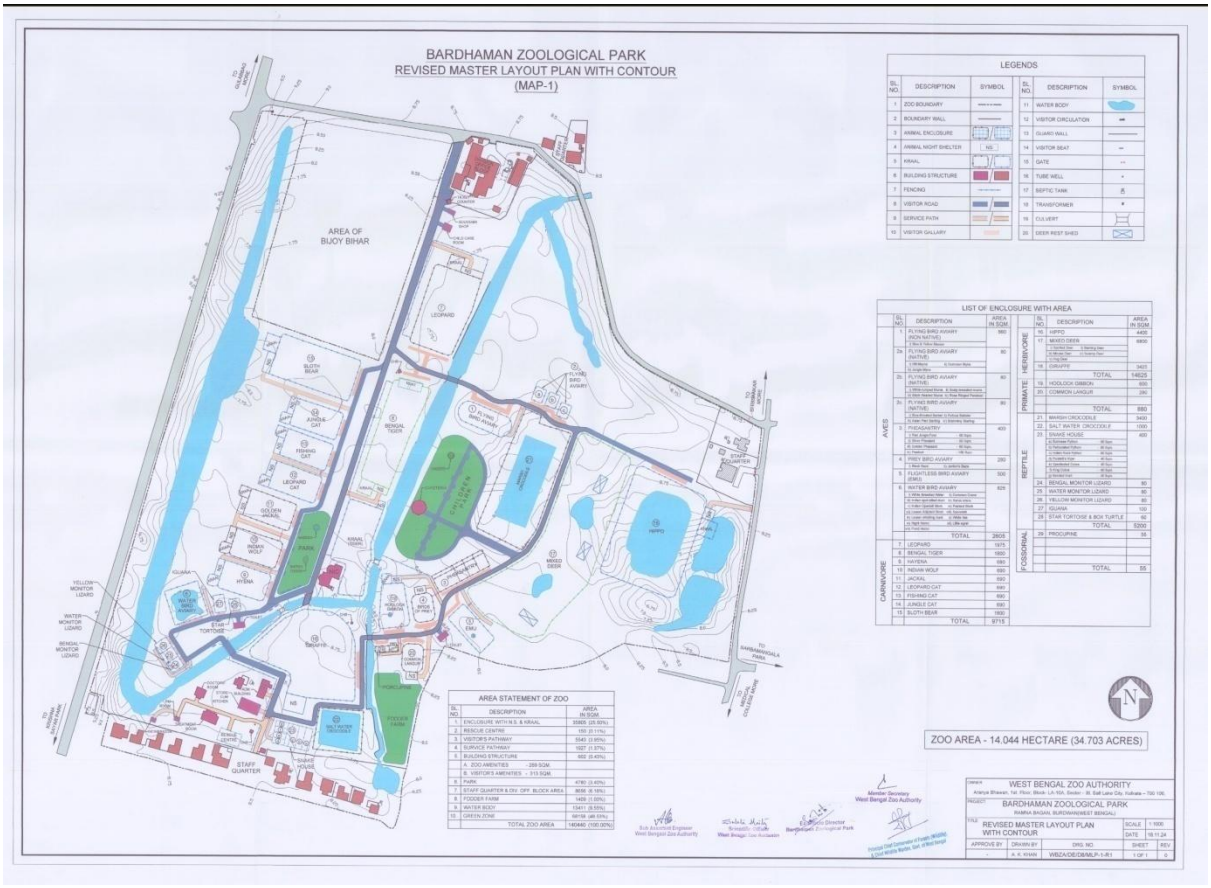
32.	Maintenance of service path											L.S.	4.50					L.S.	5.50			
33.	Maintenance of boundary wall									L.S.	4.50					L.S.	5.50					
34.	Maintenance of power supply									L.S.	3.00					L.S.	2.50			L.S.	2.00	
35.	Establishment of Water tank with water supply					L.S.	8.50									L.S.	4.80					

Sl. No.	Particulars	Amount (Rs.) 20 years
1.	**Annual establishment charges (salary, incentive, uniform, security, statutory payments etc.)**	**4,49,32,909.50**
2.	**Feed & Fodder**	**4,49,32,909.50**
3.	**Annual outreach and education programme**	**61,15,909.05**
4.	**Computerisation of office system**	**61,15,909.05**
5.	**Enclosure maintenance**	**1,82,33,802.30**
6.	**Remodelling and Maintenance of transportation cages**	**91,73,864.55**

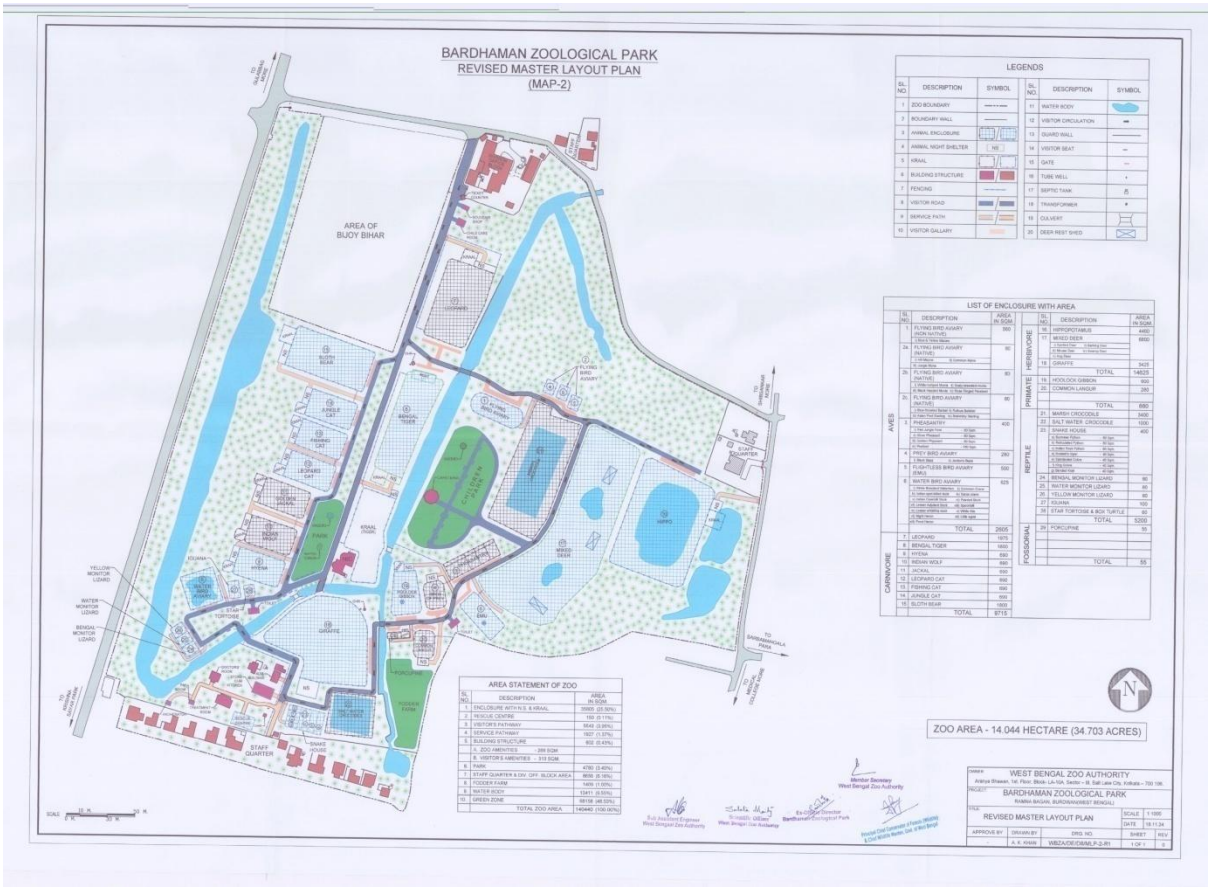
7.	**Zoo Management and Maintenance cost (Engineering, Gardening, Vehicle, telephones, electricity charges, etc.)**	**3,05,79,545.50**
8.	**Animal & staff health care (Sanitization, Medicines etc.)**	**1,22,31,814.90**
9.	**Miscellaneous (5% of annual budget)**	**91,73,864.55**
	TOTAL	**18,14,90,529**

ANNEXURES

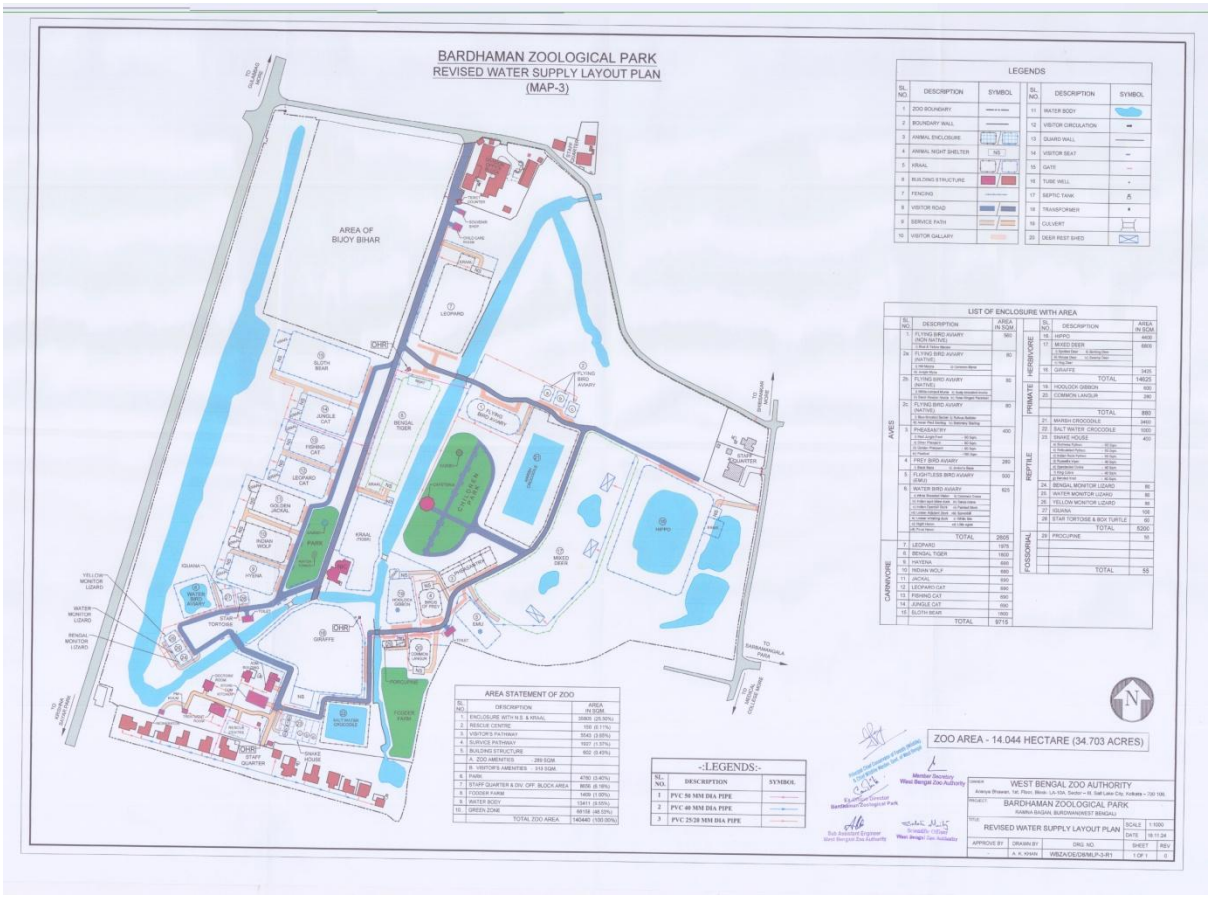
Annexure I: Proposed Master Layout Plan (Revised) with Contour



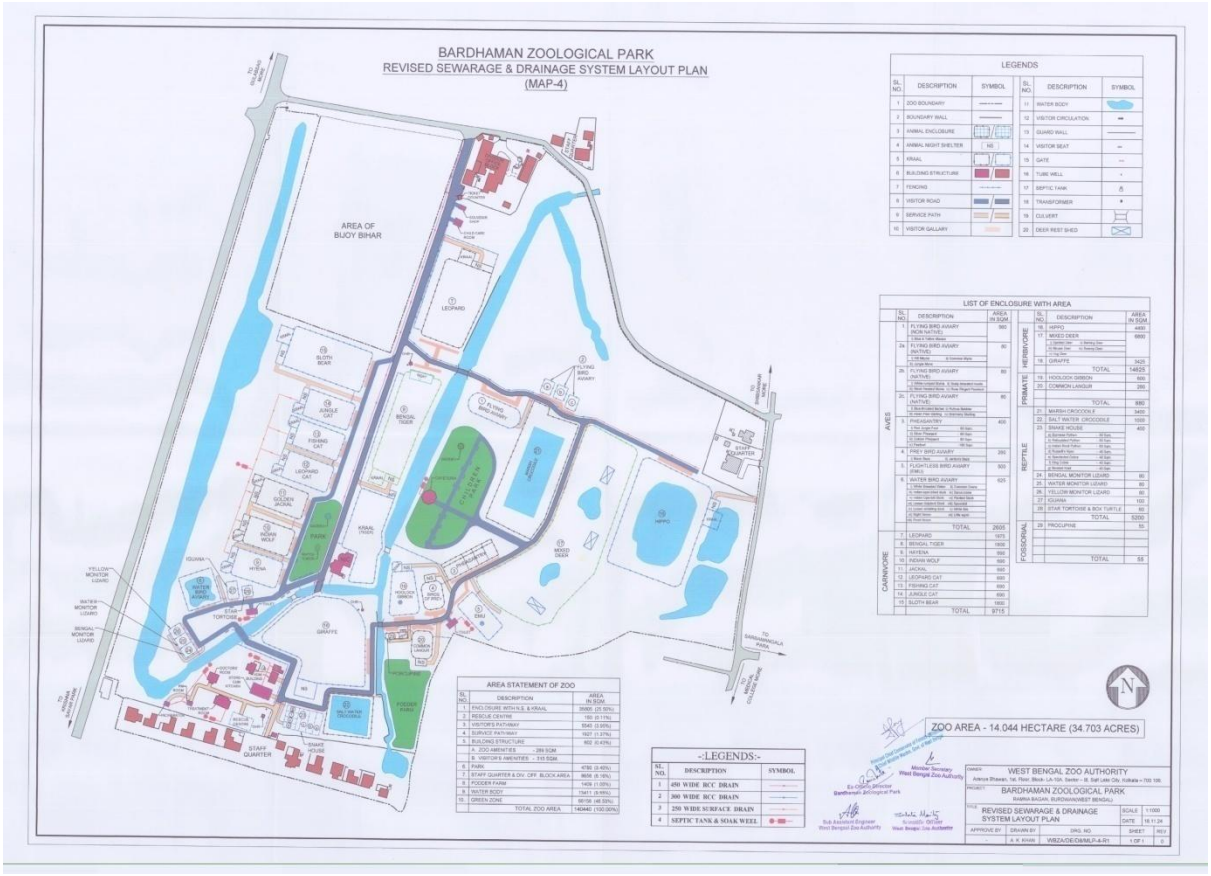
Annexure I (a): Proposed Master Layout Plan (Revised)



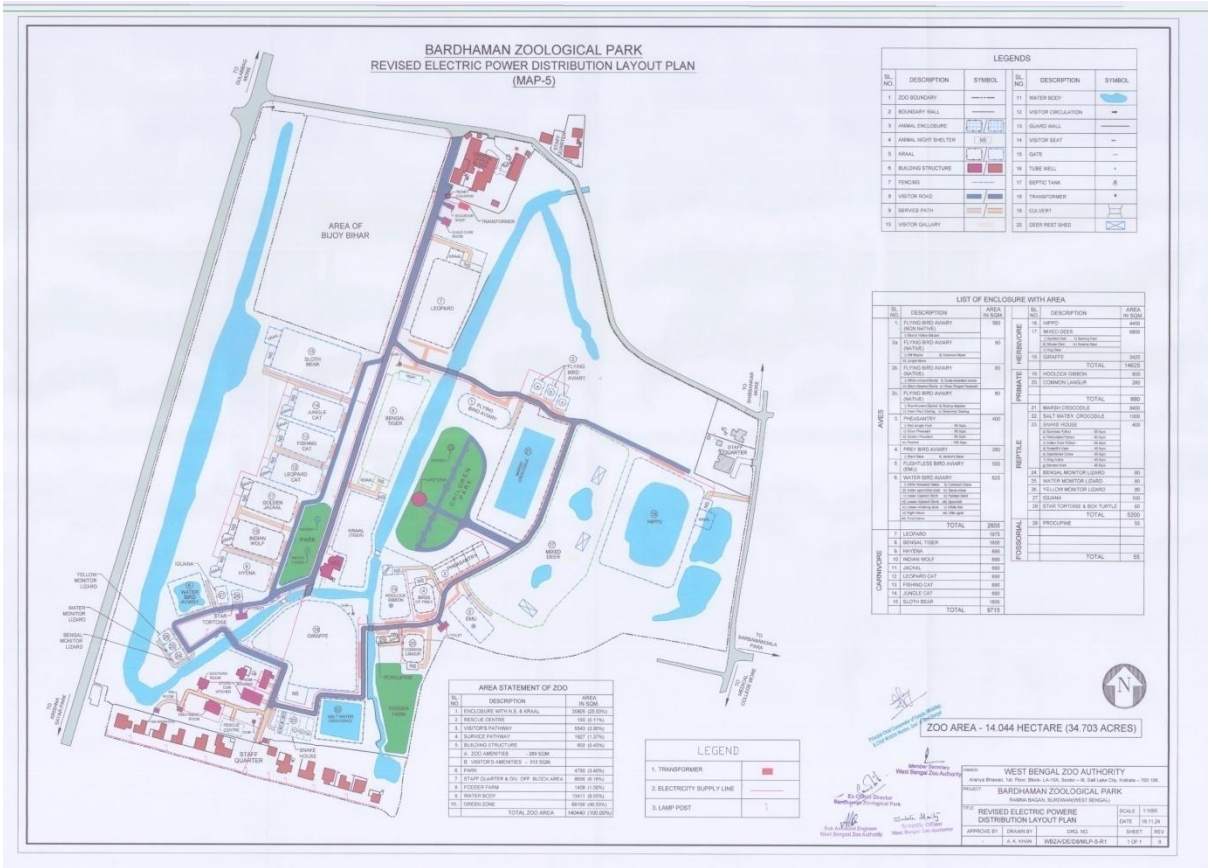
Annexure I (b): Proposed Water Supply Layout Plan



Annexure I (c): Proposed Sewerage and Drainage System Layout Plan



Annexure I (d): Proposed Electric Power Distribution Layout Plan



Annexure II: Approved Master Layout Plan of Bardhaman Zoological Park

Annexure III: Animal Inventory

FORM-II
[See rule 11 (1)]

PART - A
Bardhaman Zoological Park (Ramnabagan Mini Zoo), Burdwan, West Bengal

Proforma for Annual Inventory Report
Inventory Report for the Year : 2023-2024

Endangered Species*

 # - Modified Closing Balance

S.No.	Animal Name	Scientific Name	Opening Stock (01-Apr-2023)				Births			Acquisitions			Disposals			Deaths			Closing Stock (31-Mar-2024)			
			M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T
Aves																						
1.	Jerdon's Baza	*Aviceda jerdoni*	0	0	3	**3**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
2.	Black Baza	*Aviceda leuphotes*	0	0	2	**2**	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
3.	# Indian Peafowl	*Pavo cristatus*	2	1	1	**4**	0	0	0	1	1	0	0	0	0	0	0	0	3	3	0	6
Total Aves	**3**		**2**	**1**	**6**	**9**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**3**	**4**	**10**
Mammalia																						
1.	Rhesus Macaque	*Macaca mulatta*	2	3	1	**6**	0	0	0	0	0	0	0	0	0	0	0	0	2	3	1	6
2.	Bonnet Macaque	*Macaca radiata*	0	1	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
3.	Sloth Bear	*Melursus ursinus*	0	1	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4.	Leopard	*Panthera pardus*	2	2	0	**4**	0	0	0	0	0	0	0	1	0	0	0	0	2	1	0	3

S.No.	Animal Name	Scientific Name	Opening Stock (01-Apr-2023)				Births			Acquisitions			Disposals			Deaths			Closing Stock (31-Mar-2024)			
			M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T
Total Mammalia	**4**		**4**	**7**	**1**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**6**	**1**	**11**
Reptilia																						
1.	Marsh Crocodile	*Crocodylus palustris*	2	3	0	**5**	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	5
2.	Saltwater Crocodile	*Crocodylus porosus*	1	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Total Reptilia	**2**		**3**	**3**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**0**	**6**
Total			**9**	**11**	**7**	**27**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**10**	**12**	**5**	**27**

*Animals under Sch-I and Sch-II of Wild Life (Protection) Act, 1972

Curator (Animals)

Director

PART - B

Bardhaman Zoological Park (Ramnabagan Mini Zoo), Burdwan, West Bengal

Proforma for Annual Inventory Report

Inventory Report for the Year : 2023-2024

Other than Endangered Species*

 # - Modified Closing Balance

S.No.	Animal Name	Scientific Name	Opening Stock (01-Apr-2023)				Births			Acquisitions			Disposals			Deaths			Closing Stock (31-Mar-2024)			
			M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T
Aves																						
1.	Golden Pheasant	*Chrysolophus pictus*	1	1	0	**2**	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
2.	Emu	*Dromaius novaehollandiae*	2	1	0	**3**	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3
3.	# Lesser Adjutant Stork	*Leptoptilos javanicus*	1	1	0	**2**	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	3
4.	Silver Pheasant	*Lophura nycthemera*	0	1	0	**1**	0	0	0	2	2	0	0	0	0	0	0	0	2	3	0	5
5.	# Rose-ringed Parakeet	*Psittacula krameri*	4	4	0	**8**	0	0	0	0	0	0	0	0	0	0	0	0	5	3	0	8
Total Aves	**5**		**8**	**8**	**0**	**16**	**0**	**0**	**0**	**2**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**8**	**4**	**21**
Mammalia																						
1.	# Chital/ Spotted Deer	*Axis axis*	28	52	32	**112**	8	15	4	0	0	0	30	55	5	1	3	0	15	25	5	45

S.No.	Animal Name	Scientific Name	Opening Stock (01-Apr-2023)				Births			Acquisitions			Disposals			Deaths			Closing Stock (31-Mar-2024)			
			M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T
2.	# Indian Crested Porcupine	*Hystrix indica*	1	1	5	**7**	0	0	6	0	0	0	1	1	0	1	0	0	0	1	9	10
3.	Indian Muntjac	*Muntiacus muntjak*	1	2	0	**3**	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3
4.		*Semnopithecus*	2	2	0	**4**	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	4
Total Mammalia	**4**		**32**	**57**	**37**	**126**	**8**	**15**	**10**	**0**	**0**	**0**	**31**	**56**	**5**	**2**	**3**	**0**	**18**	**30**	**14**	**62**
Reptilia																						
1.	Indian Star Tortoise	*Geochelone elegans*	13	0	0	**13**	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13
2.	American box turtle, Common Box Turtle, Eastern Box Turtle, Mexican box turtle, Yucatan box turtle	*Terrapene carolina*	1	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Total Reptilia	**2**		**14**	**0**	**0**	**14**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**0**	**0**	**14**
Total			**54**	**65**	**37**	**156**	**8**	**15**	**10**	**2**	**2**	**1**	**31**	**56**	**5**	**2**	**3**	**0**	**41**	**38**	**18**	**97**
Grand Total			**63**	**76**	**44**	**183**	**8**	**15**	**10**	**3**	**3**	**1**	**31**	**57**	**5**	**2**	**3**	**1**	**51**	**50**	**23**	**124**

Curator (Animals)

Director

Annexure IV: Free living species (Flora & Fauna) found at Bardhaman Zoological Park

Flora (free living):-

(1) Teak (*Tectona grandis*)

(2) Sal (*Shorea robusta*)

(3) Jarul (*Lagerstroemia flosreginae*)

(4) Arjun (*Terminalia arjuna*)

(5) Piasal (*Pterocarpus marsupium*)

(6) Bahera (*Terminalia belerica*)

(7) Tamarind (*Tamarindus indica*)

(8) Mango (*Mangifera indica*)

(9) Debdaru (*Polyalthia longifolia*)

(10) Big bamboo (*Baambusaarundinesia*)

(11) Small bamboo (*Dendracalamusstrictus*)

(12) Mahua (*Madhuca indica*)

Besides, there are different shrubs, herbs, climbers and weeds like Atari (*Combretum decundrum*), Asamlata (*Chromolaena odorata*), Bhabri (*Lantana camara*), Bichua (*Girardiniadiversifolia*), Bankalmi (*Ipomoea cornea*), Kalamegh (*Andrographis paniculata*) Nishinda (*Vitex negunda*), Satamuli (*Asparagus racemosa*), Alkushi (*Mucuna pruriens*), Kunch (*Abrus precatorius*), Kurchi (*Hollarrhenaantidysenterica*) etc. all over the area.

Fauna (free living):-

(4) **Birds :**

viii. Parakits(*Psittacula spp*.)

ix. Cuckoos (*Cuculidae*)

x. Storks (*Ciconiidae*)

xi. Owls (*Strix ocellata*)

xii. Common Crow (*Corpus sp*.)

xiii. King Fisher (*Halcyon sp).*
xiv. Wood—Pecker (*Dendrocopos sp.)*

(5) **Snakes:**

vii. Indian Cobra (*Najanaja* Linn.)
viii. Vipera(*Ptyasmucosus* Linn.)
ix. Dhaman (*Xenochrophis piscator* Schneider)
x. Jal Dhora(*Amphiesmastolata* Linn.)
xi. Hele Sap *(Bangaruscaenileus* Schneider)
xii. Common Indian Krait etc.

(6) **Mammals:**

ix. Pangoline (*Manis crassicaudata*)
x. Civet Cat *(Viverridae spp*.)
xi. Common Langoor*(Presbytis entellus*)
xii. Spotted Dove (*Streptopelia chinensis*)
xiii. Common Mongoose (*Herpestesedwardsi* Geoffroy)
xiv. Common House Rat (*Rattus rattus* Linn.)
xv. Fruit Bat (*Pteropusgiganteous*)
xvi. Squirrel (*Funumbulus pennant*)

Annexure V: Approved Manpower of Bardhaman Zoological Park

Sl. No.	Section	Name of The Post	Post Sanctioned
1	Administrative Section	Director/ Ex-Officio Diretcor	1
2		Assistant Director/ Assistant Divisional Forest Officer	1
3		Research Assistant	1
4		Zoo Supervisor	1
5		Assistant Zoo Supervisor	2
6		UDC	1
7		Office Assistant	1
8		LDC	1
9		Ticket Clerk	1
10		Zoo Biologist	1
11		Education Assistant	1
12		Driver	1
13	Animal Section	Zoo Keeper	8
14		Animal Attendants	9
15	Kitchen & Store Section	Attendant	7
16		Store Keeper	1
17	Veterinary Section	Veterinary Officer	1
18		Assistant Veterinary Officer	1
19	Sanitary Section	Sanitary Attendant	6
20	Garden Section	Garden Attendants	6
21	Security Section	Estate / Security Supervisor	1
22		Assistant Estate / Security Supervisor	1
23		Gate Keeper	1
24		Security	12
Grand Total : :			67

Annexure VI: List of Buildings / Structures Other than Animal Enclosures

1. Ticket Counter – 1
2. Entry Gate – 1
3. NIC – 1
4. Zoo Office cum store – 1 (2 rooms)
5. Toilet – 2
6. Staff Toilet – 1
7. Staff rest room – 1
8. Kitchen – 1
9. Group D Staff barrack- 1
10. Veterinary unit – 1 (2 rooms)
11. Guard Room – 1
12. Food court – 1
13. Water ATM – 1
14. Overhead tank - 2

Annexure VII (a): Notification Regarding Formation of West Bengal Zoo Authority

Annexure - I

Registered No. WB/SC-247 No. WB(Part-I)/2009/SAR-314

The Kolkata Gazette

Extraordinary

Published by Authority

BHADRA **SATURDAY, AUGUST 29, 2009** **[SAKA 1931]**

PART I-- Orders and Notifications by the Governor of West Bengal, the High Court, Government Treasury, etc.

GOVERNMENT OF WEST BENGAL
DEPARTMENT OF FORESTS
WRITERS' BUILDINGS
KOLKATA - 700 001

NOTIFICATION

No. 338Z-For, Kolkata, the 27th August, 2009 -- WHEREAS the State Government is not satisfied with the functioning of the Honorary Committee of Management ("hereinafter referred to as the said Managing Committee") of the Zoological Garden, Alipore, Kolkata : i.e - constituted, by notification No.4668-For/I-M-27/2002, dated the 22nd November, 2005, (hereinafter referred to as the "said notification ") in pursuance of rule as read with rule 3, of the Alipore Zoological Garden (Management) Rules, 1957;

AND WHEREAS it has been considered expedient to form the Zoo Authority of West Bengal (hereinafter referred to as the "said Authority") for the management of, inter alia, the Zoological Garden, Alipore, Kolkata;

AND WHEREAS it has further been considered expedient to --

(i) rescind the said notification and do away with the said Managing Committee, and

(ii) vest, till the formation of the said Authority, the management of the Zoological Garden, Alipore, Kolkata in the State Government,

with immediate effect;

NOW, THEREFORE, the Governor is pleased hereby to --

(i) rescind the said notification and do away with the said Managing Committee, and

(ii) vest, till the formation of the said Authority, the management of the Zoological Garden, Alipore, Kolkata in the State Government,

with immediate effect;

By Order of the Governor,

P. D. BANDYOPADHYAY
Joint Secretary in the Government of West Bengal
Department of Forests

Published by the Controller of Printing and Stationery, West Bengal and printed at Saraswaty Press Ltd.

Annexure VII (b): Notification regarding transfer of Zoological Parks of the State under the Management Control of the West Bengal Zoo Authority

ANNEXURE - VIII c

Government of West Bengal
Department of Forest
FOR Branch
Writers' Buildings, Kolkata – 1

No. 747-For Dated Kolkata the 3rd April, 2012

NOTIFICATION

The Governor is pleased to order that the following 11 (eleven) Zoological Parks are herby brought under the management control of the West Bengal Zoo Authority and the concerned Divisional Forest Officers as mentioned below against the Divisions are hereby designated as "Ex-officio Director" of the concerned zoos and they are hereby authorized to manage the concerned zoos and manage the funds of West Bengal Zoo Authority through separate bank accounts to be opened in the name of West Bengal Zoo Authority with immediate effect and until further orders.

The Governor is also pleased to order that the said "Ex-officio Director" will submit the report relating to the zoo matters directly to the West Bengal Zoo Authority with an intimation to the Department of Forests.

Sl. No.	Name of the Zoos	Forest Division
1.	Adina Deer Park	Malda
2.	Gar Chumuk Deer Park	Howrah Social Forestry
3.	Jhargram Deer Park and Mini Zoo	Jhargram
4.	Kumari Khansabuti Deer Park	Bankura (South)
5.	South Khairbari Rescue Centre	Wildlife III
6.	Kunjanagar Eco-Park	Wildlife III
7.	Animal Rescue Center at Surulia	Purulia
8.	Ramnabagan Mini Zoo	Burdwan
9.	Rasikbeel Deer Park and Mini Zoo	Coochbehar
10.	Bochamari Gharial Rescue Centre	Coochbehar
11.	Jharkhali Satellite Zoo	24 Parganas (South)

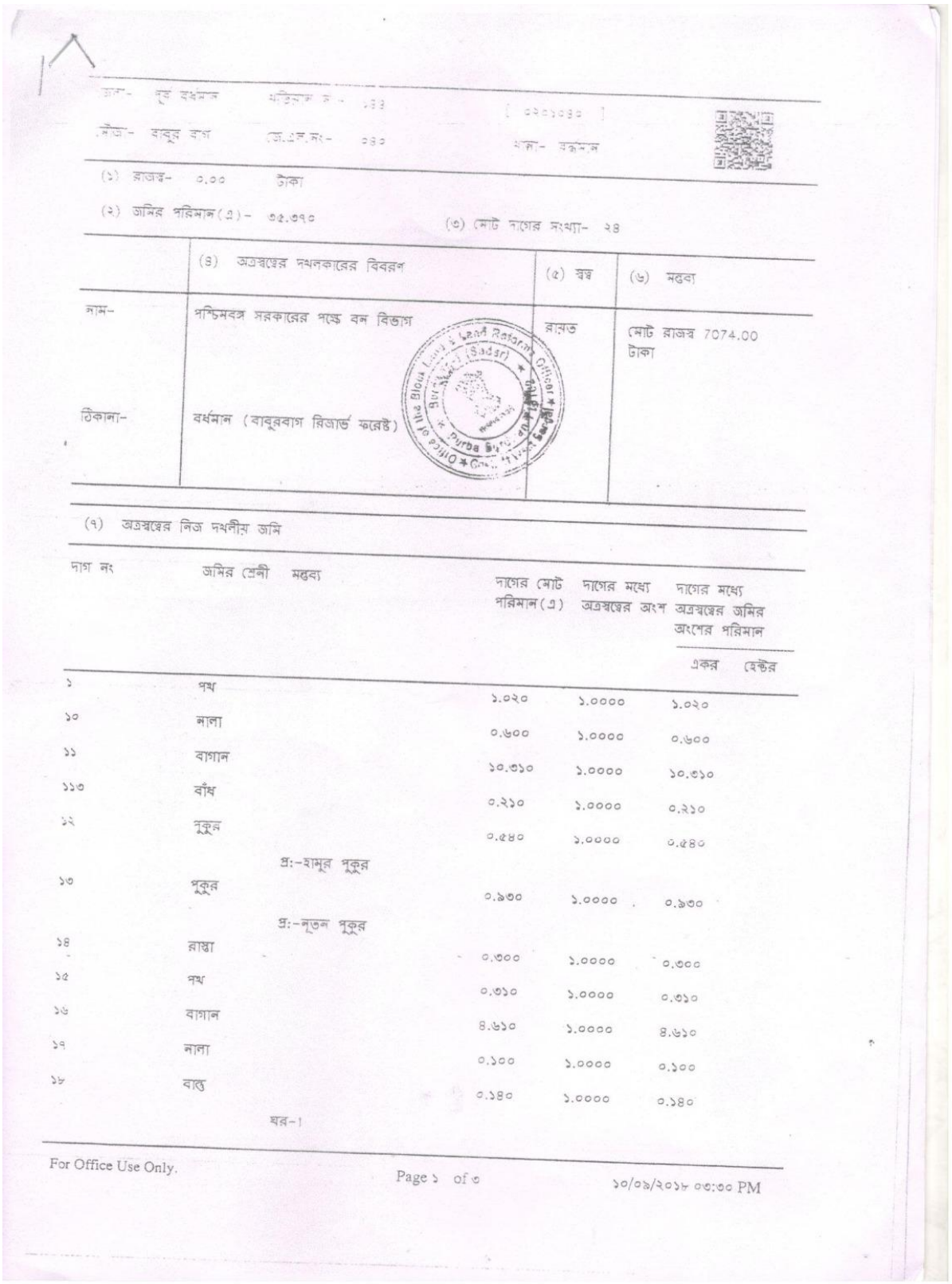
By order of the Governor
sd/—
(P.D. Bandyopadhayay)
Additional Secretary to the
Govt. of West Bengal

No. 747/1-For Dated Kolkata the 3rd April, 2012

Copy forwarded for information to the Pr. A.G. (A&E), West Bengal

sd/—
Additional Secretary to the
Govt. of West Bengal

Annexure VIII: Legal Status of Land



জেলা- বুর্দ্ধমান খতিয়ান নং - ১৪৪ [০২০১০৪০]

মৌজা- বাবুর বাগ জে.এল.নং- ০৪০ থানা- বর্দ্ধমান

(১) রাজস্ব- ০.০০ টাকা

(২) জমির পরিমান(এ)- ৩৫.৩৭০ (৩) মোট দাগের সংখ্যা- ২৪

	(৪) অত্রস্বত্বের দখলকারের বিবরণ	(৫) স্বত্ব	(৬) মন্তব্য
নাম-	পশ্চিমবঙ্গ সরকারের পক্ষে বন বিভাগ	রায়ত	মোট রাজস্ব 7074.00 টাকা
ঠিকানা-	বর্ধমান (বাবুরবাগ রিজার্ভ ফরেষ্ট)		

(৭) অত্রস্বত্বের নিজ দখলীয় জমি

দাগ নং	জমির শ্রেনী	মন্তব্য	দাগের মোট পরিমান(এ)	দাগের মধ্যে অত্রস্বত্বের অংশ	দাগের মধ্যে অত্রস্বত্বের জমির অংশের পরিমান	
					একর	হেক্টর
১	পথ		১.০২০	১.০০০০	১.০২০	
১০	নালা		০.৬০০	১.০০০০	০.৬০০	
১১	বাগান		১০.৩১০	১.০০০০	১০.৩১০	
১১৩	বাঁধ		০.২১০	১.০০০০	০.২১০	
১২	পুকুর		০.৫৪০	১.০০০০	০.৫৪০	
		প্র:-হামুর পুকুর				
১৩	পুকুর		০.৯৩০	১.০০০০	০.৯৩০	
		প্র:-নূতন পুকুর				
১৪	রাস্তা		০.৩০০	১.০০০০	০.৩০০	
১৫	পথ		০.৩১০	১.০০০০	০.৩১০	
১৬	বাগান		৪.৬১০	১.০০০০	৪.৬১০	
১৭	নালা		০.১০০	১.০০০০	০.১০০	
১৮	বাস্তু		০.১৪০	১.০০০০	০.১৪০	
		ঘর-১				

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এল- খুব বর্ধমান খতিয়ান নং- ১৪৪ [০২০১০৪০]

মৌজা- বাবুর বাগ জে.এল.নং- ০৪০ থানা- বর্ধমান

(১) রাজস্ব- ০.০০ টাকা

(২) জমির পরিমান(এ)- ৩৫.৩৭০ (৩) মোট দাগের সংখ্যা- ২৪

	(৪) অত্রস্বত্বের দখলকারের বিবরণ	(৫) স্বত্ব	(৬) মন্তব্য
নাম-	পশ্চিমবঙ্গ সরকারের পক্ষে বন বিভাগ	রায়ত	মোট রাজস্ব 7074.00 টাকা
ঠিকানা-	বর্ধমান (বাবুরবাগ রিজার্ভ ফরেষ্ট)		

দাগ নং	জমির শ্রেনী মন্তব্য	দাগের মোট পরিমান(এ)	দাগের মধ্যে অত্রস্বত্বের অংশ	দাগের মধ্যে অত্রস্বত্বের জমির অংশের পরিমান একর হেক্টর
১৯	বাগান	২.০৬০	১.০০০০	২.০৬০
২	বাস্তু	০.০৪০	১.০০০০	০.০৪০
	ঘর-1			
২০	নালা	০.২০০	১.০০০০	০.২০০
২১	বাগান	১.২৩০	১.০০০০	১.২৩০
২২	বাস্তু	০.০৪০	১.০০০০	০.০৪০
	ঘর-1			
২৪	বাস্তু	০.৪০০	১.০০০০	০.৪০০
	ঘর-18 দালান-6			
৩	ডাঙ্গা	৪.২২০	১.০০০০	৪.২২০
৫	পথ	০.১৬০	১.০০০০	০.১৬০
৬	বাগান	২.৯৩০	১.০০০০	২.৯৩০
৭	পথ	০.১৬০	১.০০০০	০.১৬০
৮	পথ	১.২৯০	১.০০০০	১.২৯০
৯	বাগান	৩.৫০০	১.০০০০	৩.৫০০

জে.এল.নং- ১৪৪ [০২০১০৩০]

মৌজা- বাবুর বাগ জে.এল.নং- ০৩০ থানা- বর্ধমান

(১) রাজস্ব- ০.০০ টাকা

(২) জমির পরিমান(এ)- ৩৫.৩৭০ (৩) মোট দাগের সংখ্যা- ২৪

	(৪) অত্রস্বত্বের দখলকারের বিবরণ	(৫) স্বত্ব	(৬) মন্তব্য
নাম-	পশ্চিমবঙ্গ সরকারের পক্ষে বন বিভাগ	রায়ত	মোট রাজস্ব 7074.00 টাকা
ঠিকানা-	বর্ধমান (বাবুরবাগ রিজার্ভ ফরেষ্ট)		

দাগ নং	জমির শ্রেনী	মন্তব্য	দাগের মোট পরিমান(এ)	দাগের মধ্যে অত্রস্বত্বের অংশ	দাগের মধ্যে অত্রস্বত্বের জমির অংশের পরিমান একর হেক্টর
৯৩	ডাঙ্গা		০.০৭০	১.০০০০	০.০৭০

মোট দাগের সংখ্যা- চব্বিশ মাত্র

10/09/12

Revenue Officer
Office of the Block Land & Land Reforms Office
Burdwan-1 (Sadar), Purba Burdwan, W.B

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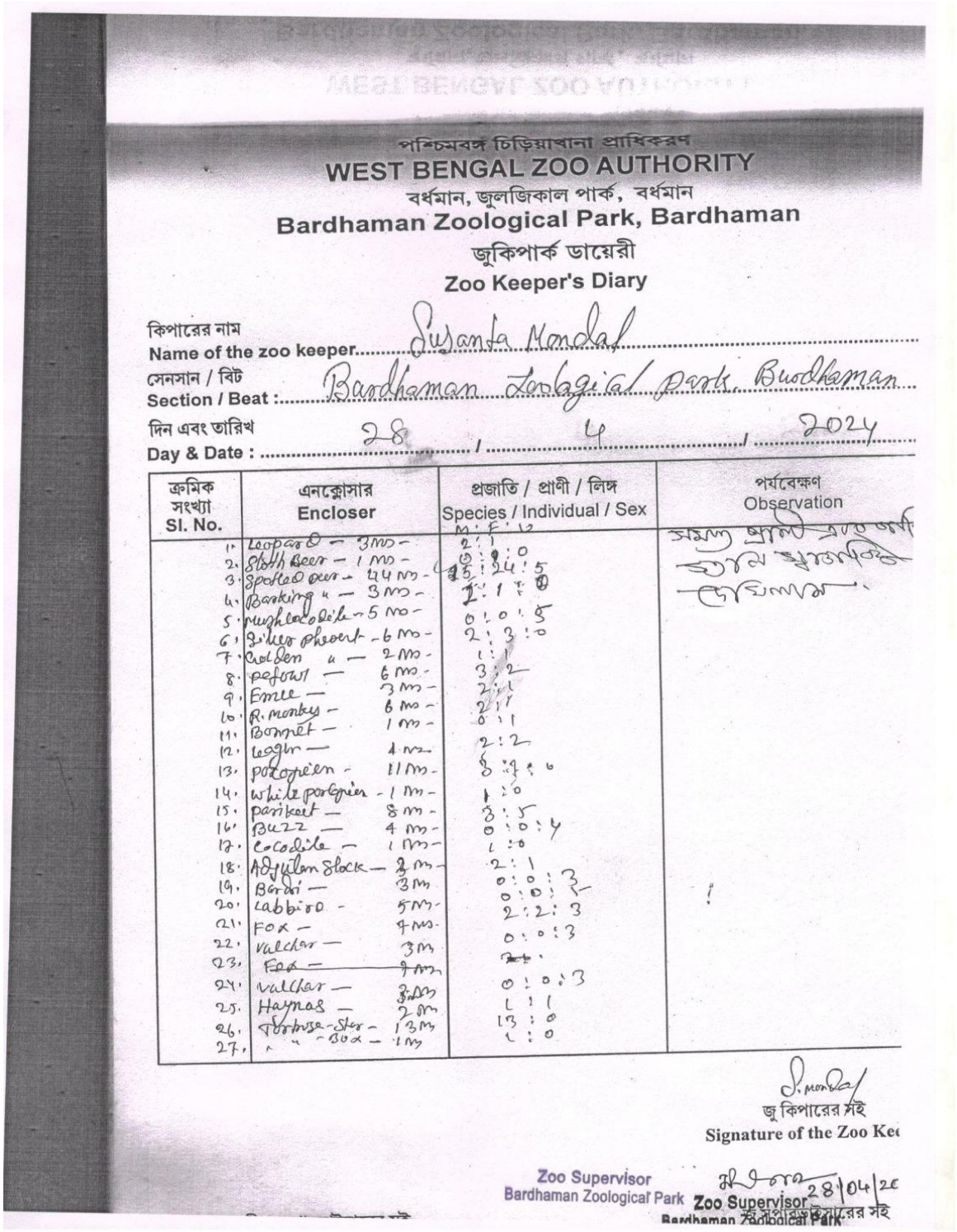
Annexure IX: Format of Record Keeping

Annexure IX (a): Keeper's Diary



পশ্চিমবঙ্গ চিড়িয়াখানা প্রাধিকরণ
WEST BENGAL ZOO AUTHORITY
বর্ধমান, জুলজিকাল পার্ক, বর্ধমান
Bardhaman Zoological Park, Bardhaman
জুকিপার্ক ডায়েরী
Zoo Keeper's Diary

কিপারের নাম
Name of the zoo keeper..... Sujanta Mondal
সেনসান / বিট
Section / Beat :..... Bardhaman Zoological park, Burdhaman
দিন এবং তারিখ
Day & Date : ..... 28 / 4 / 2024

ক্রমিক সংখ্যা Sl. No.	এনক্লোসার Encloser	প্রজাতি / প্রাণী / লিঙ্গ Species / Individual / Sex M : F : U	পর্যবেক্ষণ Observation
1.	Leopard — 3Ms —	2 : 1	
2.	Sloth Beer — 1 Ms —	0 : 0 : 0	
3.	Spotted deer — 44 Ms —	15 : 24 : 5	
4.	Barking " — 3 Ms —	1 : 1 : 0	
5.	Hog deer — 5 Ms —	0 : 0 : 5	
6.	Silver Pheasent — 6 Ms —	2 : 3 : 0	
7.	Golden " — 2 Ms —	1 : 1	
8.	Peafowl — 6 Ms —	3 : 2	
9.	Emue — 3 Ms —	2 : 1	
10.	R. Monkey — 6 Ms —	2 : 1	
11.	Bonnet — 1 Ms —	0 : 1	
12.	Leopard — 1 Ms —	2 : 2	
13.	Porcupine — 11 Ms —	8 : 7 : 6	
14.	White porcupine — 1 Ms —	1 : 0	
15.	Parakeet — 8 Ms —	3 : 5	
16.	Buzz — 4 Ms —	0 : 0 : 4	
17.	Crocodile — 1 Ms —	1 : 0	
18.	Adjutam Stock — 2 Ms —	2 : 1	
19.	Bardi — 3 Ms	0 : 0 : 3	
20.	Rabbit — 5 Ms —	2 : 2 : 3	
21.	Fox — 4 Ms —	0 : 0 : 3	
22.	Vulchar — 3 Ms		
23.	Fox — 4 Ms	0 : 0 : 3	
24.	Vulchar — 3 Ms	1 : 1	
25.	Haynas — 2 Ms	13 : 0	
26.	Porcupine-Star — 13 Ms	1 : 0	
27.	" -Bear — 1 Ms		

S. Mondal
জু কিপারের সই
Signature of the Zoo Ke

Zoo Supervisor
Bardhaman Zoological Park
28/04/2024
Zoo Supervisor
Bardhaman Zoological Park
জু সুপারভাইজারের সই

Annexure IX (b): Daily Report

WEST BENGAL ZOO AUTHORITY

Bardhaman Zoological Park, Bardhaman

Daily Report

28/6/24

Sl. No	Section/Beat and Enclosure	Species/individual M	P	U	Observations	Action taken/required
1.	Leopard ---- 3	2	1	-		
2.	Sloth Bear ---- 2	-	1	-		
3.	Spotted Deer - 44	15	24	5		
4.	Mugger Crocodile - 5	2	3	-		
5.	Barking Deer - 3	1	2	-		
6.	Silver Pheasant - 5	2	3	-		
7.	Golden Pheasant - 2	1	1	-		
8.	Peafowl ---- 6	3	3	-		
9.	Emu ---- 3	1	1	1		
10.	Rhesus Monkey - 6	2	3	1		
11.	Bonnet ---- 4	-	1	-		
12.	Langur ---- 4	2	2	-		
13.	Porcupine (Crested) 10	2	-	7		
14.	Jackal ---- 4	2	1	1		
15.	Vulture ---- 3	-	2	-		
16.	Soft water tortoise 1	1	-	3		
17.	Indian Pond Heron - 8	-	-	-		
18.	Buzzard ---- 4	3	5	-		
	Lesser Adjutant Stork 3	-	-	4		
	Indian Star Tortoise 13	13	-	3		
	Bor Tortoise ---- 3	1	-	-		
	Hyena ---- 2	1	1	-		

28.06.2024

Zoo Supervisor

Bardhaman Zoological Park

Annexure IX(c): Post Mortem Report

WEST BENGAL ZOO AUTHORITY

Bardhaman Zoological Park, Bardhaman

POST-MORTEM REPORT

No. 6/23/BZP Date:

Kind of animal	Scientific name	Sex	Personal name Animal ID/National Studbook no. (if any)	age	size	weight
Pup of Jackle		(M)		64 Days	L-1'10" H-8"	720gm

Time, date and place of death : 29/4/24 at about 2 AM in zoo enclosure

Time and date of Post-Mortem Examination : 10 AM on 29/4/24

Short history of illness, if any : Anorexia

A. General description : NAD

B. Organ-wise description of lesions :

1. Head and neck
   (a) Skull and brain NAD (b) Cervical vertebrae NAD
2. Thorax
   (a) Lungs Congestion (b) Heart Pale (c) Ribs NAD
3. Abdomen
   (a) Liver NAD (b) Stomach NAD (c) Intestines NAD
   (d) Kidney NAD (e) spleen NAD
4. Pelvic girdle
   (a) Uterus and Ovaries (b) Bladder (c) Genital passage
5. Limbs
   (a) Fore limbs NAD (b) Hind limbs NAD
6. Any other special features :
   Biological tests done (if any)
   i) Blood ✗ ii) Urine ✗ iii) Discharges iv) Biopsy
7. Opinion (cause of death) : Anorexia, debility and death
8. Instruction for disposal : due to Cardio respiratory failure

Place : Bdn zoological park

Date : 29/4/24

Signature ....

Name Dr. ... Kumar ...

Designation Veterinary Officer Bardhaman Zological Park

Memo No. 11 Dt. 29.4.24 submitted to the D.F.O Bdn and ex officio director B.Z.P for information & n/a Pl.

Veterinary Officer Bardhaman Zological Park

Annexure IX (d): Animal History Card

West Bengal Zoo Authority

Bardhaman Zoological Park, Purba Bardhaman

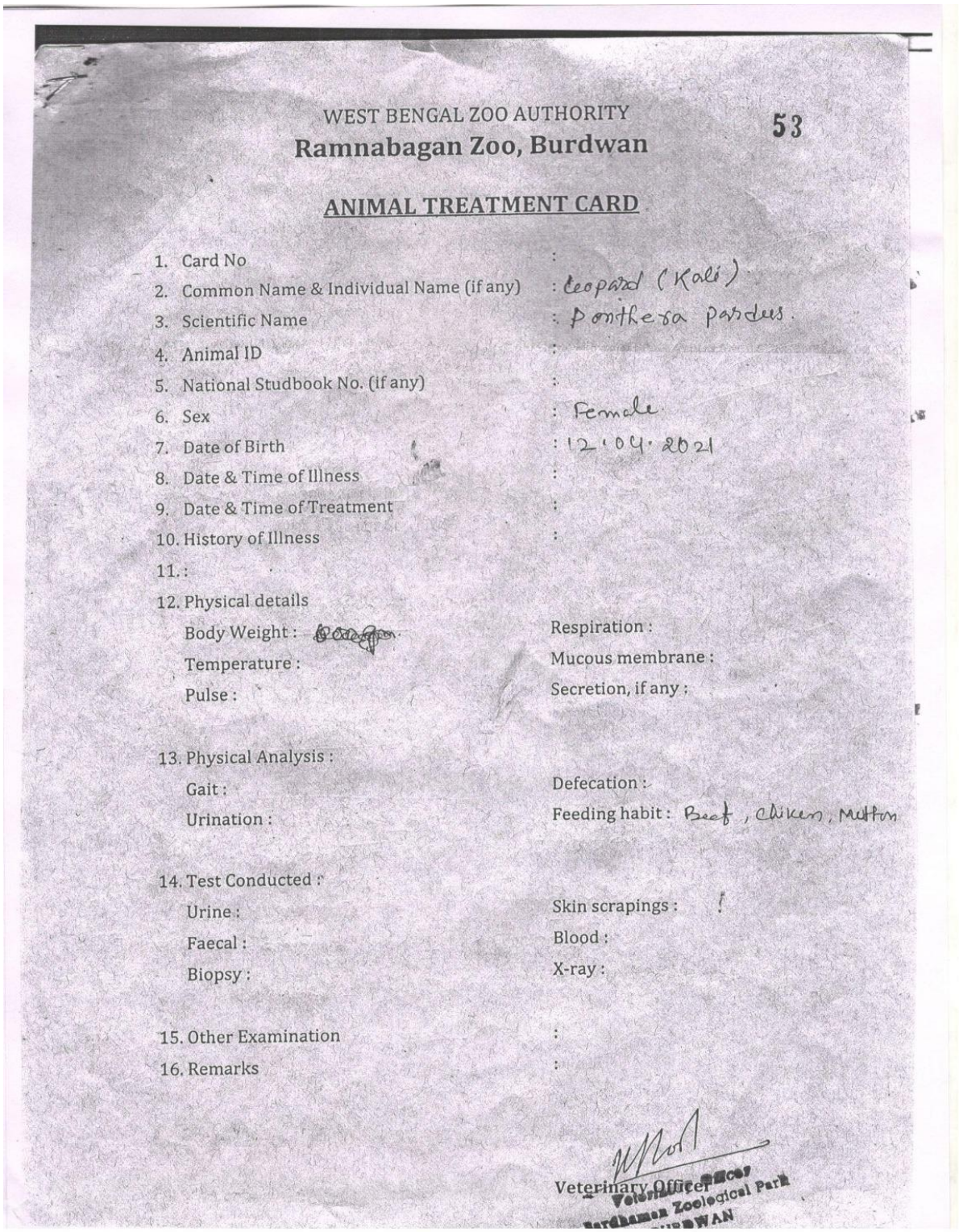
Animal History Card

Vernacular (Local) Name & Common Name : Leopard	**Scientific Name of the Species :** Panthera pardus.
House Name and ID Number of the Animal : Leo - 4	**Sex:** Male
Distinguishing Mark: NIL	**Type of marking: transponder/Ear/Tag/Ring/Others :** NIL
National Studbook Number of the Animal : NIL	**International Studbook Number of the Animal :** NIL
Sire : (Name & National Studbook Number) : NIL	**Dam : (Name & National Studbook Number)** NIL
Date of Birth (dd : mm : yyyy) : 11.08.2022	**When and from where acquired :** By birth at Bardhaman zoological Park.
Physical health check-up details : Regular check up with periodic dewarming and vaccination being done. Last dewarming done on 15.03.2024. Last vaccinated with ARV on 27.10.23.	**Genetic health check up details :**
Date of death or other mode of disposal (dd : mm : yyyy) : Not applicable	**Remarks :**

10/5/24

Veterinary Officer
Bardhaman Zological Park

Annexure IX(e): Animal Treatment Card



WEST BENGAL ZOO AUTHORITY

Ramnabagan Zoo, Burdwan

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ANIMAL TREATMENT CARD

1. Card No :
2. Common Name & Individual Name (if any) : Leopard (Kali)
3. Scientific Name : Panthera pardus
4. Animal ID :
5. National Studbook No. (if any) :
6. Sex : Female
7. Date of Birth : 12.04.2021
8. Date & Time of Illness :
9. Date & Time of Treatment :
10. History of Illness :
11. :
12. Physical details
    - Body Weight : [illegible]
    - Temperature :
    - Pulse :
    - Respiration :
    - Mucous membrane :
    - Secretion, if any :
13. Physical Analysis :
    - Gait :
    - Urination :
    - Defecation :
    - Feeding habit : Beef, chiken, Mutton
14. Test Conducted :
    - Urine :
    - Faecal :
    - Biopsy :
    - Skin scrapings :
    - Blood :
    - X-ray :
15. Other Examination :
16. Remarks :

Veterinary Officer

Veterinary Officer
Burdwan Zoological Park
BURDWAN

Date	Details of the observations & treatmet given	Signature of Veterinary Officer
14/08/23	Deworming : Done with Fentas 1.5gm x 1/3	Veterinary Officer Bardhaman Zoological Park BURDWAN
16/8/23	All over body spray by Skinheal & Candid-B 1% powder	Veterinary Officer Bardhaman Zoological Park BURDWAN
27/10/23	Vaccination Done with ARV	Veterinary Officer Bardhaman Zoological Park BURDWAN
14/11/23	Deworming Done with Eazypet 5tab	Veterinary Officer Bardhaman Zoological Park BURDWAN
20/02/24	Deworming Deworming done with Fentas 1.5gm x 1/3 tab	Veterinary Officer Bardhaman Zoological Park BURDWAN
11/04/24	Belamyl - 2ml & Conciplex-2ml	Veterinary Officer Bardhaman Zoological Park BURDWAN
13/04/24	Belamyl - 2ml & Conciplex - 2ml	Veterinary Officer Bardhaman Zoological Park BURDWAN
15/04/24	Belamyl - 2ml & Conciplex - 2ml	Veterinary Officer Bardhaman Zoological Park BURDWAN
17/04/24	Belamyl - 2ml & Conciplex - 2ml	Veterinary Officer Bardhaman Zoological Park BURDWAN
19/04/24	Belamyl - 2ml & Conciplex - 2ml	Veterinary Officer Bardhaman Zoological Park BURDWAN

Veterinary Officer
Bardhaman Zoological Park
BURDWAN

Annexure X: Compliance Report of Bardhaman Zoological Park

Compliance Report of implementation of the observation/recommendation in connection with renewal of recognition of Bardhaman Zoological Park, Burdwan, West Bengal beyond 19th August, 2021 vide CZA No. 22-67/2004-CZA(473)(NE), Computer No. 147074 dated 06.06.2023.

SL. No.	Norm No.	Particulars of suggestions/ Recommendation	Time period to comply	Compliance Report
1.	**General requirements**			
1.	10.1(7)	Dustbin should be placed appropriately at suitable regular interval in the Deer Park. Displayed at regular interval of 30 to 40 meters.	Immediately	Already installed at different places of the zoo. Numbers will be further increased. (Photograph enclosed in separate sheet)
11.	**Educational and outreach activities**			
2.	10.11(1)	The Zoo is located in a big city therefore to attract children and students various programmes should be organised to create awareness regarding wildlife, forests and environment.	Immediately	Various kinds of programmes & competitions related to Zoo, Environment & Forest are being organized among the school students on different days of celebration like World Environment Day, Wild Life Week, Ban Mahotsab, Children's' Day, World Sparrow Day, Meri LiFE etc. (Photographs of some programmes enclosed in separate sheet)
12.	**Visitors facilities**			
3.	10.12(1)	1. Safe Drinking facility should be available at multiple places. 2. Benches should also be installed at regular interval throughout the zoo. 3. Canteen facility should also be created to facilitate the visitors. 4. At least 3 to 4 visitors shade should be erected.	Within three months	1. One R.O. Water purifier for drinking water already installed for visitors. (Photograph enclosed in separate sheet) 2. Sitting arrangement already installed at different places of zoo for visitors. Numbers will be further increased. (Photograph enclosed in separate sheet) 3. 1 No. Canteen already running. Construction for 1No. Food Court has been completed. Tender for running the Food Court will be called shortly. (Photograph enclosed in separate sheet) 4. Visitors Rest Shed already installed at different places of zoo. (Photograph enclosed in separate sheet)
Other observations				
4.		This zoo has all favourable conditions to be upgraded in large zoo, authorities should pay their attention considering the population and size of the city.	Prior approval shall be sought from the CZA	Proposal will be streamlined in due course of time.

Ex-officio Director, Bardhaman Zoological Park &
Divisional Forest Officer, Burdwan Division