Master Plan
Harinalaya

Duration

2023 – 24 to 2043 – 44

Year of Submission

2023-24

Harinalaya

Prepared by

Sri Ramprasad Badana, IFS

Ex-officio Director, Harinalaya

&

Deputy Conservator of Forests

Urban Recreation and Forestry Division

Directorate of Forests,

West Bengal

CERTIFICATE

This is to certify that the Master Plan 2023-24 to 2043-44 for scientific and long-term captive management of wildlife in Harinalaya has been prepared in consultation with technical advice from the West Bengal Zoo Authority and Central Zoo Authority in compliance with guidelines issued by the Central Zoo Authority.

Prepared by	Counter signed by	Counter signed by
Sri Ramprasad Badana, IFS Ex-officio Director Harinalaya & Deputy Conservator of Forests Urban Recreation and Forestry Division Directorate of Forests, West Bengal	Sri Saurabh Chaudhuri, IFS Addl PCCF and Member Secretary West Bengal Zoo Authority Directorate of Forests, West Bengal	Sri Debal Roy, IFS PCCF (Wildlife) and Chief Wildlife Warden Directorate of Forests, West Bengal

Revised Master Plan is approved subject to the condition that the responsibility of mobilizing the financial resources for implementation of the Master Plan will be the sole responsibility of Harinalaya Zoo, New Town, West Bengal.

Member Secretary
Central Zoo Authority

ACKNOWLEDGEMENT

My thanks are due to Sri Hari Krishna Dwivedi, IAS, Chief Secretary, Government of West Bengal and Chairman, West Bengal Zoo Authority and to Sri Vivek 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, Sri Rabindranath Saha, IFS, Conservator of Forests, Parks and Garden Circle, Directorate of Forest, West Bengal for their valuable suggestions and guidance in preparation of this document.

This master plan is a combined effort of all the officials of Harinalaya and WBZA. I would like to put on record the untiring efforts and contribution of Ms. Ankita Bhaduri, WBFS, Ex-Officio Assistant Director, Sri Vivek Ojha, Range Officer, Unit In-Charge, and Ms. Ishita Chongder, Zoo Biologist in preparation of the Master (Layout) Plan and revisions of the Master Plan.

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Sri Ramprasad Badana, IFS
Ex-officio Director, Harinalaya
&
Deputy Conservator of Forests
Urban Recreation and Forestry Division
Directorate of Forests, West Bengal

PREFACE

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. The animal enclosures are designed as naturalistic environments while the visitor is moved across the garden in an immersive environment thus creating an emotional connect.

This becomes a way for sensitizing the visitors to the animals. The zoo aims to raise the benchmark in the enrichment provided to its residents. Despite being under developmental and commercial threat, the civic authorities are looking at ways to augment the present premises of the zoo, to expand its physical limits.

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 an enriching visit. Besides having taxonomy and Bio-geography as its theme, the public open areas will adhere to strong aesthetic standards.

Overall, the Zoo looks forward to become a centre for cognizance on biodiversity and ecosystem conservation by acquainting the visitors with the animal world in an entertaining manner, thereby carrying forward the intention of awareness and sensitization to ecology.

Sri Saurabh Chaudhuri, IFS
Addl PCCF and 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 wellbeing. 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.

Harinalaya is a key feature in the overall development of the Rajarhat-Newtown a sustainable city. Being one of the fastest growing cities of India, the city has focused on providing adequate infrastructure in terms of services. The zoological garden adds value to the new imagination of Rajarhat-Newtown as a global city. It looks at a long-term strategy of creating more open and public spaces for the citizens while inspiring empathy to animals and awareness of the importance of conservation. Combining recreation with education, it creates a meaningful infrastructure that encourages people's participation.

The new vision for Harinalaya 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 Zoo would be a must-see landmark for all animal lovers and international visitors to this great city.

Sri Ramprasad Badana, IFS
Ex-officio Director, Harinalaya
&
Deputy Conservator of Forests
Urban Recreation and Forestry Division
Directorate of Forests, West Bengal

Date: 31·01·2024

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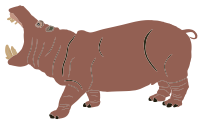

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PART

INTRODUCTION

CHAPTER – 1

1.1 HISTORY OF THE ZOO

Harinalaya is situated in West Bengal's Newtown-Kolkata Metropolis. It will soon be a popular tourist location in the city. With 50 numbers (17:31:2:50) of Spotted Deer, Harinalaya was originally classified as a Deer Park on a 12.5-acre site next to an eco-park in Kolkata. They were taken from Taratala Nature Park and released between February 10 and 22, 2016. Later, on February 19, 2016, Harinalaya received six numbers of the Barking Deer (3:3:0:6).

The Harinalaya was opened on August 1st, 2017, and is run by the Deputy Conservator of Forests, Urban and Recreation Forestry Division, with headquarters in Eden Garden, Kolkata. As of April 21, 2017, it is a part of the West Bengal Zoo Authority (WBZA).

1.2 VISION OF THE ZOO

This zoo envisions providing a means for raising community awareness of ex-situ conservation and expertise on the proper maintenance and ex-situ conservation of the globally and regionally threatened fauna and flora. The zoo will serve as an institute to research animal behaviour, oversee conservation efforts, and create species-specific conservation and management plans. The zoo will work for conservation breeding of endemic species and maintain insurance population as an institution for species recovery of endemic species.

1.3 MISSION OF THE ZOO

Implement the best practices on conservation, conservation breeding, education, research and visitor experiences by connecting people to biodiversity conservation, and to serve as a conservation breeding and nature conservation centre for endemic, and endangered faunal and floral species and to convey the message of conservation education through demonstrative, replicable and learning experiences without compromising the expected standards of display of wild fauna and flora under the existing policies and rules.

In order to realise the objectives of nature conservation and wildlife as a whole, our vision is to connect visitors and wild captive animals through the greatest educational and inspirational experiences, excellent animal welfare and care, and promoting public understanding and support for wild animals and conservation.

1.4 STRATEGIES

a) Fostering sound techniques of husbandry that ensure the physical and psychological well-being of the animals in our care through professional animal and veterinary care and a comprehensive animal management plan.

b) Education, through staff involvement and training, conducting in-reach and outreach programmes, conferences and workshops for volunteers and others, and exhibition of natural animal exhibits, directional, informational and interpretive signage.

c) Animal exhibits, landscaping, graphics, and Zoo programs are to be represented in such a manner so as to give the visitor a sense of awareness and concern for wild animals and their habitat.

d) Allocating resources to conservation breeding initiatives that will help conserve specific animal species.

e) By leveraging people, universities, and other zoological organisations, 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 optimal use of the natural and park-like surroundings.

1.5 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.

1.6 TOPOGRAPHY

This zoo is located at 22°35'55"N and 88°28'03"E. The zoo area is typically flat to moderately sloped because it is located on the Hooghly River's alluvial deposits and flood basins. The zoo is situated 6.4 metres above mean sea level.

1.7 GEOLOGY

Harinalaya is located in the renowned deltaic Bengal basin 20 miles from the east bank of the River Hooghly and nearly 110 kilometres from the Bay of Bengal. Three structural elements make up the Bengal basin: a shelf or platform in the west, a central shelf or slope break, and a deep basinal section in the east and southeast.

The western portion of the hinge zone, which is about 25 km (16 miles) wide and extends to a depth of around 45,000 m (148,000 feet), is where New Town is situated. There are several faults in the shelf and hinge zones, some of which are active.

The total thickness of sediment below the New Town is nearly 7,500 m (24,600 ft) above the crystalline basement; of these the top 350-450 m (1,1501,480 ft) is quaternary, followed by 4,500-5,500 m (14,760-18,040 ft) of tertiary sediments, 500-700 m (1,640-2,300 ft) trap wash of cretaceous trap and 600-800 m (1,970-2,620 ft) Permian – Carboniferous Gondwana rocks.

The quaternary sediments consist of clay, silt, and several grades of sand and gravel. These sediments are sandwiched between two clay beds: the lower one at a depth of 250-650 m (820-2,130 ft); the upper one 10-40m (30-130 ft) in thickness.

1.8 ROCK & SOIL

The Rock of this area lie buried under a thick basalt trap and tertiary sedimentary formation. The soil of this area commonly known as loamy alluvial soils which is very fertile and availability of water is additional advantage. Due to clay soil, water stagnation is a major problem. Both organic matter and available nitrogen content in soil is low.

1.9 FLORA AND FAUNA IN ZOO PREMISES

There are about 57 flora species including different trees, associated with different herbs and shrubs in the zoo premises. The seasonal bird diversity varies from 40 to 50 in the zoo premises and about 25 species of butterflies enriched the biodiversity of the zoo.

Free Living Flora of Harinalaya

1	Eucalyptus	:	*Eucalyptus sp.*
2	Earleaf Acacia	:	*Acacia auriculiformes*
3	Siris	:	*Albizia lebbeck*
4	Mango Tree	:	*Mangifera indica*

5	Jamun	:	*Syzygium cumini*
6	Neem	:	*Azadirachta indica*
7	Tamarind	:	*Tamarindus indica*
8	Jackfruit	:	*Artocarpus heterophyllus*
9	Black Palm	:	*Astrocaryum standleyanum*
10	Mehagini	:	*Swietenia mahagoni*
11	Guava	:	*Psidium guajava*
12	Sandal Wood	:	*Psidium guajava*
13	Areca Palm	:	*Chrysalidocarpus lutescens*
14	Java Apple	:	*Syzygium samarangense*
15	Coconut	:	*Cocos nucifera*
16	Peacock Flower	:	*Caesalpinia pulcherrima*
17	Betel Nut Tree	:	*Areca catechu*
18	Indian Bael	:	*Aegle marmelos*
19	Gum Arabic Tree	:	*Vachellia nilotica*
20	Subabul	:	*Leucaena leucocephala*
21	Arjun Tree	:	*Terminalia arjuna*
22	Indian Gooseberry	:	*Phyllanthus emblica*
23	Fig	:	*Ficus carica*
24	Banyan	:	*Ficus benghalensis*
25	Sacred Fig	:	*Ficus religiosa*
26	Indian Fir Tree	:	*Polyalthia longifolia*
27	Blackboard Tree	:	*Alstonia scholaris*
28	Camel Hoof Tree	:	*Bauhinia variegata*
29	Date Palm	:	*Phoenix dactylifera*
30	Golden shower tree	:	*Cassia fistula*
31	Pink Poui	:	*Tabebuia rosea*
32	Banana	:	*Musa sp.*
33	Indian jujube	:	*Ziziphus mauritiana*
34	Papaya	:	*Carica papaya*
35	Sapodilla	:	*Manilkara zapota*
36	Falsa	:	*Grewia asiatica*
37	Bamboo	:	*Bambusa sp.*
38	Indian almond	:	*Terminalia catappa*
39	Basil	:	*Ocimum tenuiflorum*

40	Hibiscus	:	*Hibiscus rosa-sinensis*
41	Asafoetida	:	*Ferula asafoetida*
42	Brahmi	:	*Bacopa monnieri*
43	Lemongrass	:	*Cymbopogon citratus*
44	Liquorice	:	*Glycyrrhiza glabra*
45	Aloe vera	:	*Aloe vera*
46	Garlic	:	*Allium sativum*
47	Ashwagandha	:	*Withania somnifera*
48	Indian pennywort	:	*Centella asiatica*
49	Onion	:	*Allium cepa*
50	Green chiretta	:	*Andrographis paniculata*
51	Ginger	:	*Zingiber officinale*
52	Shatavari	:	*Asparagus racemosus*
53	Indian snakeroot	:	*Rauvolfia serpentina*
54	Long pepper	:	*Piper longum*
55	Mint	:	*Mentha spicata*
56	Turmeric	:	*Curcuma longa*
57	Bitter gourd	:	*Momordica charantia*

Free Living Fauna of Harinalaya

Mammals			
1.	Small Indian Civet	:	*Viverricula indica*
2.	Asian Palm Civet	:	*Paradoxurus hermaphroditus*
3.	Common Mongoose	:	*Urva edwardsii*
4.	Five-striped Palm Squirrel	:	*Funambulus pennantii*
5.	Lesser Bandicoot Rat	:	*Bandicota bengalensis*
Reptiles			
1.	Spectacled Cobra	:	*Naja naja*
2.	Monocled Cobra	:	*Naja kaouthia*
3.	Banded Krait	:	*Bungarus fasciatus*
4.	Russell's Viper	:	*Daboia russelii*
5.	Checkered Keelback	:	*Fowlea piscator*

Birds			
1.	Black-crowned Night Heron	:	*Nycticorax nycticorax*
2.	Indian Pond Heron	:	*Ardeola grayii*
3.	Cattle Egret	:	*Bubulcus ibis*
4.	Little Egret	:	*Egretta garzetta*
5.	Little Cormorant	:	*Microcarbo niger*
6.	Black Kite	:	*Milvus migrans*
7.	Shikra	:	*Accipiter badius*
8.	White-breasted Waterhen	:	*Amaurornis phoenicurus*
9.	Common Pigeon	:	*Columba livia*
10.	Yellow-footed green pigeon	:	*Treron phoenicoptera*
11.	Eurasian Collared Dove	:	*Streptopelia decaocto*
12.	Spotted Dove	:	*Spilopelia chinensis*
13.	Rose-ringed Parakeet	:	*Psittacula krameri*
14.	Alexandrine Parakeet	:	*Psittacula eupatria*
15.	Common Hawk Cuckoo	:	*Hierococcyx varius*
16.	Asian Koel	:	*Eudynamys scolopaceus*
17.	Greater Coucal	:	*Centropus sinensis*
18.	Asian Palm Swift	:	*Cypsiurus balasiensis*
19.	Common Hoopoe	:	*Upupa epops*
20.	White-throated Kingfisher	:	*Halcyon smyrnensis*
21.	Common Kingfisher	:	*Alcedo atthis*
22.	Green Bee-eater	:	*Merops orientalis*
23.	Lineated Barbet	:	*Psilopogon lineatus*
24.	Blue-throated Barbet	:	*Psilopogon asiaticus*
25.	Coppersmith Barbet	:	*Psilopogon haemacephalus*
26.	Black-rumped Flameback	:	*Dinopium benghalense*
27.	Common Iora	:	*Aegithina tiphia*
28.	Brown Shrike	:	*Lanius cristatus*
29.	Black Drongo	:	*Dicrurus macrocercus*
30.	Black-hooded Oriole	:	*Oriolus xanthornus*
31.	Black-naped Oriole	:	*Oriolus chinensis*
32.	Rufous Treepie	:	*Dendrocitt avagabunda*
33.	House Crow	:	*Corvus splendens*
34.	Red-whiskered Bulbul	:	*Pycnonotu sjocosus*

35.	Red-vented Bulbul	:	*Pycnonotus cafer*
36.	Common Tailorbird	:	*Orthotomus sutorius*
37.	Jungle Babbler	:	*Argya striata*
38.	Jungle Myna	:	*Acridothere sfuscus*
39.	Common Myna	:	*Acridotheres tristis*
40.	Asian Pied Starling	:	*Gracupica contra*
41.	Chestnut-tailed Starling	:	*Sturnia malabarica*
42.	Oriental Magpie Robin	:	*Copsychu ssaularis*
43.	Purple-rumped Sunbird	:	*Leptocoma zeylonica*
44.	Purple Sunbird	:	*Cinnyris asiaticus*
45.	House Sparrow	:	*Passer domesticus*
46.	Red Avadavat	:	*Amandava amandava*
47.	Scaly-breasted Munia	:	*Lonchura punctulata*
48.	White Wagtail	:	*Motacilla alba*
49.	Western yellow wagtail	:	*Motacilla flava*
50.	Barn Owl	:	*Tyto alba*
Butterflies			
Family: Papilionidae			
1.	Common Jay	:	*Graphium doson*
2.	Tailed Jay	:	*Graphium agamemnon*
3.	Lime Butterfly	:	*Papilio demoleus*
4.	Common Mormon	:	*Papilio polytes*
5.	Common Rose	:	*Pachliopta aristolochiae*
Family: Pieridae			
6.	Mottled Emigrant	:	*Catopsilia pyranthe*
7.	Common Emigrant	:	*Catopsilia pomona*
8.	Common Jezebel	:	*Delias eucharis*
9.	Psyche	:	*Leptosia nina*
10.	Indian Cabbage White	:	*Pieris canidia*
11.	Common Wanderer	:	*Pareronia valeria*
12.	Common Grass Yellow	:	*Eurema hecabe*
Family: Lycaenidae			
13.	Striped Pierrot	:	*Tarucus nara*
14.	Tiny Grass Blue	:	*Zizula hylax*

Family: Nymphalidae			
15.	Common Bushbrown	:	*Mycalesis perseus*
16.	Common Five-ring	:	*Ypthima baldus*
17.	Common Four-ring	:	*Ypthima huebneri*
18.	Tawny Coster	:	*Acraea violae*
19.	Danaid Eggfly	:	*Hypolimnas misippus*
20.	Blue Tiger	:	*Tirumala limniace*
21.	Striped Tiger	:	*Danaus genutia*
22.	Plain Tiger	:	*Danaus chrysippus*
23.	Common Indian Crow	:	*Euploea core*
24.	Common Evening Brown	:	*Melanitis leda*

1.10 CLIMATE

The climatic condition which prevails in this part of West Bengal is moderate. In summer season which starts in March and ends with the onset of rainy season in June, maximum temperature goes upto 40^{0}C with an average of 36^{0}C. Winter season sets in December and ends in the month of February. The minimum temperature during winter season goes down to 10^{0}C with an average of 13^{0}C.

1.11 RAINFALL

Monsoon starts around 2nd week of June and ends in October. The yearly rainfall in Kolkata is 1641.4mm. Highest recorded rainfall in a day was 369.6 mm.

1.12 SEASON

Summer (From March to May)

Summers are extremely hot and humid in the area. March is the onset of summer season and it lasts till the end of May. The minimum temperature during summers is over 30^{0}C and the maximum temperature crosses 42^{0}C.

Monsoon (From June to September)

Monsoon time is generally between the months of June and September. During the monsoon season experiences heavy showers and temporary water logging. The weather remains humid. The city receives a heavy rainfall in July and September when the South west monsoon arrives.

Winter (From November to February)

In the months of November to February the tourists and locals of can take pleasure in a pleasant and cool weather. The minimum temperature during the winter time drops down to 10^{0}C and the maximum temperature are about 15^{0}C. This time the zoo is overcrowded and experienced maximum workload in visitors' management.

1.13 APPROACH

Harinalaya, Kolkata is located at a distance of about 20 Km from the Howrah Railway Station and approximately 6 Km. from the Netaji Subhas Chandra Bose International Airport. The zoo is about 15 Km from the Sealdah Railway Station and 20 km from Bidhannagar Railway Station. Nearest Bus stand is 1km from Zoo. The Zoo is well connected with the city and is approachable from every corner of Kolkata and suburbs.

1.14 DEMOGRAPHY OF THE SURROUNDING AREA

Kolkata district occupies an area of 206 sq km. The current population of in the city in 2020 is approximately 1.49 crores. The overall literacy rate of Kolkata is 87.14%.

1.15 LEGAL STATUS OF THE LAND

Piece and parcel of land measuring 15.7 Acre (6.36 Ha) to be same or little more or less in plot no 06-0787 in ACTION Area-IIE within Eco tourism Park area of New Town, Kolkata, Police Station-Newtown and District-North 24 Pgs.

Presently it in the Panchayat area falling within mouza Sulangari, Ghuni and Reckjoani, JL No-22, 23, & 13 respectively under Jyangra- Hatiara -II Gram Panchayat, Jl No -14 under Bidhan Nagar Municipal Corporation. It is bounded by street No-787 in the North, Part of Ecopark in the South, Road for gate no-5 of Ecopark in the East and existing canal in the West. **(Annexure VIII)**

1.16 SOURCES OF POLLUTION

As the Zoo is situated within Newtown-Kolkata metropolis, the chances of air and noise pollution in the adjoining areas of the Zoo cannot be ruled out. However, nearby there is no industrial area near the zoo and thereby the chance of direct pollution within the Zoo premises is minimized. There is also sufficient green zone inside the zoo premises and we have also identified a buffer zone outside zoo boundary walls, which will be developed by green vegetative barrier.

APPRAISAL OF PRESENT ARRANGEMENT & CONSTRAINTS

CHAPTER – 2

Harinalaya enjoys the benefits of a central urban location of the most developing area in Kolkata, that is New Town and thus attracts a wide variety of visitors. It has tradition and innovation merged with the new concepts of Zoo management. In tune with policies and rules of zoo management, strategies have been adopted to ensure animal welfare and visitor education coupled with entertainment.

On account of accumulative effort over a period, the zoo has now well-established administrative structure and management that caters to the needs of animals housed and meet the expectation of visitor.

2.1 APPRAISAL OF PRESENT ARRANGEMENT AND CONSTRAINTS

2.1.1 Animal Section

Existing Inventory of Animals in captivity: Presently, Harinalaya has been upgraded to Mini Zoo category from Deer Park. Detailed list of animals is mentioned below:

INVENTORY

Inventory Report for the Year : 2022-2023

Endangered Species*

 # - Modified Closing Balance

S.No.	Animal Name	Scientific Name	Opening Stock (01-Apr-2022)				Births			Acquisitions			Disposals			Deaths			Closing Stock (31-Mar-2023)			
			M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T
Reptilia																						
1.	Marsh Crocodile	*Crocodylus palustris*	3	2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	5
2.	Saltwater Crocodile	*Crocodylus porosus*	1	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4
Total Reptilia	**2**		**4**	**5**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**5**	**0**	**9**
Total			**4**	**5**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**5**	**0**	**9**

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

Curator (Animals)

Director

PART - B
Harinalaya at Eco Park (Nature Park At Taratola Road), Kolkata, West Bengal

Proforma for Annual Inventory Report
Inventory Report for the Year : 2022-2023

Other than Endangered Species*

 # - Modified Closing Balance

S.No.	Animal Name	Scientific Name	Opening Stock (01-Apr-2022)				Births			Acquisitions			Disposals			Deaths			Closing Stock (31-Mar-2023)			
			M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T
Aves																						
1.	Chinese Goose	***Anser cygnoides domesticus***	0	0	5	**5**	0	0	4	0	0	1	0	0	7	0	0	0	0	0	3	3
2.	Orange-winged Amazon, Orange-winged Parrot	*Amazona amazonica*	0	0	0	**0**	0	0	0	18	12	0	0	0	0	1	0	0	17	12	0	29
3.	Magpie Goose	*Anseranas semipalmata*	0	0	1	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
4.	# Blue-and-gold Macaw, Blue-and-yellow Macaw	*Ara ararauna*	0	0	10	**10**	0	0	0	4	6	0	0	0	0	0	0	0	9	11	0	20

S.No.	Animal Name	Scientific Name	Opening Stock (01-Apr-2022)				Births			Acquisitions			Disposals			Deaths			Closing Stock (31-Mar-2023)			
			M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T
5.	Green-winged Macaw, Red-and-green Macaw	*Ara chloropterus*	0	0	0	**0**	0	0	0	3	1	1	0	0	0	0	0	0	3	1	1	5
6.	Scarlet Macaw	*Ara macao*	0	0	0	**0**	0	0	0	4	0	0	0	0	0	0	0	0	4	0	0	4
7.	Barnacle Goose	*Branta leucopsis*	0	0	3	**3**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
8.	Umbrella Cockatoo, White Cockatoo	*Cacatua alba*	0	0	0	**0**	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4	4
9.	Greater Sulphur-crested Cockatoo, Sulphur-crested Cockatoo	*Cacatua galerita*	0	0	6	**6**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6
10.	Lesser Sulphur-crested Cockatoo, Yellow-crested Cockatoo	*Cacatua sulphurea*	0	0	6	**6**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6
11.	Red-tailed black cockatoo, Red-tailed Black-Cockatoo	*Calyptorhynchus banksii*	0	0	0	**0**	0	0	0	1	2	0	0	0	0	0	0	0	1	2	0	3

S.No.	Animal Name	Scientific Name	Opening Stock (01-Apr-2022)				Births			Acquisitions			Disposals			Deaths			Closing Stock (31-Mar-2023)			
			M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T
12.	Dwarf Cassowary	*Casuarius bennetti*	0	0	0	**0**	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	2
13.	Southern Cassowary	*Casuarius casuarius*	0	0	0	**0**	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	2
14.	Golden Pheasant	*Chrysolophus pictus*	0	0	0	**0**	0	0	0	4	5	0	0	0	0	0	0	0	4	5	0	9
15.	Abdim's Stork	*Ciconia abdimii*	0	0	2	**2**	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
16.	Black Swan	*Cygnus atratus*	0	0	2	**2**	0	0	0	0	0	2	0	0	0	0	0	0	0	0	4	4
17.	Mute Swan	*Cygnus olor*	0	0	0	**0**	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	2
18.	Eclectus Parrot	*Eclectus roratus*	0	0	0	**0**	0	0	0	2	4	0	0	0	0	0	1	0	2	3	0	5
19.	Harlequin Duck	*Histrionicus histrionicus*	0	0	0	**0**	0	0	0	0	0	10	0	0	0	0	0	0	0	0	10	10
20.	Black-capped Lory, Western Black-capped Lory	*Lorius lory*	0	0	0	**0**	0	0	0	0	0	24	0	0	0	0	0	2	0	0	22	22
21.	Orinoco Goose	*Oressochen jubatus*	0	0	0	**0**	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	2
22.	Alexandrine Parakeet	*Psittacula eupatria*	0	0	0	**0**	0	0	0	3	5	0	0	0	0	0	0	0	3	5	0	8
23.	Rose-ringed Parakeet	*Psittacula krameri*	0	0	0	**0**	0	0	0	0	4	0	0	0	0	0	0	0	0	4	0	4
24.	Grey Parrot, Jacquot	*Psittacus erithacus*	0	0	0	**0**	0	0	0	6	6	0	0	0	0	0	0	0	6	6	0	12
25.	Paradise Shelduck	*Tadorna variegata*	0	0	0	**0**	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1

S.No.	Animal Name	Scientific Name	Opening Stock (01-Apr-2022)				Births			Acquisitions			Disposals			Deaths			Closing Stock (31-Mar-2023)			
			M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T
Total Aves	**25**		**0**	**0**	**35**	**35**	**0**	**0**	**4**	**48**	**47**	**46**	**0**	**0**	**7**	**1**	**1**	**3**	**52**	**51**	**65**	**168**
Mammalia																						
1.	Chital/ Spotted Deer	*Axis axis*	9	7	6	**22**	0	0	3	0	0	0	0	0	1	1	0	0	8	7	8	23
2.	Black-capped Capuchin, Tufted Capuchin	*Cebus apella*	0	0	0	**0**	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	2
3.	Grant's Zebra	*Equus quagga boehmi*	0	0	0	**0**	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	2
4.	Northern Giraffe	*Giraffa camelopardalis*	0	0	0	**0**	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	2
5.	Common hippopotamus, Hippopotamus, Large Hippo	*Hippopotamus amphibius*	0	0	0	**0**	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1
6.	Golden-headed Lion Tamarin	*Leontopithecus chrysomelas*	0	0	0	**0**	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	2
7.	Indian Muntjac	*Muntiacus muntjak*	1	7	0	**8**	0	0	0	0	0	0	0	0	0	0	0	0	1	7	0	8
8.	Sugar Glider	*Petaurus breviceps*	0	0	0	**0**	0	0	0	0	0	10	0	0	0	0	0	0	0	0	10	10

Staff engaged: Keeper: 2, Animal Attendant: 4

Constraints

Required more trained personnel: As the zoo is under developing stage, required adequate training facility and trained personnel in the zoo.

Mammal Section

Native Species

Mixed Deer Enclosure: (Barking Deer; Spotted Deer): Currently an area of 3500 Sq.M. is being used for housing Barking Deer and Spotted Deer. The entire area has been barricaded with chain link fencing abiding by CZA guidelines. The vegetation in enclosure is favourable to the herbivores round the year. The edible grass species such as *Saccharam*, *Cymbopogon*, *Panicum*, *Themeda* and *Imperata* are commonly seen as grass patches and constitute as the main fodder. There are multiple water pools in the paddock area which serve as the source of water for the inmate animals during all the seasons.

Herbivore area shall be shifted to the newly allocated land as shown in the Master (Layout) Plan.

Non-native Species

Common Hippopotamus (*Hippopotamus amphibious*) Enclosure I1: Hippopotamus enclosure has been constructed covering an area of 1766 Sq.M. including a kraal of 220 Sq.M. and a night house of 82 Sq.M. 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. Existing stock of the Hippopotamus is 1:0. It is proposed to add two (2) females in future to make the stock 1:2:0:3.

Area proposed for enclosure	Enrichment
1766 Sq.M. Paddock 220 Sq.M. Kraal 82 Sq.M. Night House	• 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. • Large water bodies for accommodating a family group. It is 2 metre deep that allows complete submersion. It has shallow edges for ease of access for the animals and to allow them to rest in the shallow water. • The enclosure has plenty of grazing opportunities, logs and rocks, different substrates and mud wallows that stimulate playful behaviour and social interaction as well as it is important for the mental health. • The paddock is large enough that allows them to create "middens" (specific areas where they will defecate on land), which is important for communication.

Grant's Zebra (*Equus quagga*) Enclosure E2: Zebra enclosure has been constructed over an area of 1940 Sq.M. including a 130 Sq.M. sized kraal and a night house of 80 Sq.M. size. The area has an open space, escape zone, kraal, and night shelter with isolation facilities for better captive care of the animal. Existing stock of the Zebra is 1:1. It is proposed to add two (2) females and two (2) males in future to make the stock 3:3:0:6.

Area for enclosure	Enrichment proposed		
	Category	Enrichment type	Species -typical behaviour Targeted
1940 Sq.M. Paddock 130 Sq.M. Kraal 80 Sq.M. Night House	Feeding & manipulable enrichment	Arboreal foraging box (Cane baskets hung from trees, filled with green fodder, fruits)	Increases foraging Time
		Browse balls (things such as horse balls, browse placed around the exhibit, such as green fodder, fruit & vegetable scatters)	Increases activity, conditioning enrichment behaviour & foraging time
		Grass bales/Hessian bags	Increases foraging time
		Plantation of green fodder in enclosure	Promotes feeding capability by foraging

Area for enclosure	Enrichment proposed		
	Category	Enrichment type	Species -typical behaviour Targeted
	Environment enrichment	Log with bark	Increases play behaviour
		Scratch post/Coir ropes on logs	Elicit behaviour such as scratching on the logs
		Temporary shed	Increase space use
		Leaf- Branch piles/ bales of hay	Keeps the animal active & busy
		Visual barrier	Increase equitable usage of enclosure space provided. Create window from where animals could be viewed
	Sensory enrichment	Condensed scent device (concentrated scent of green foliage, fodder & fruits)	Elicit exploratory behaviour
		Scratcher post	Keeps the animal active & exhibit tactile behaviour

Northern Giraffe (*Giraffa camelopardalis*) Enclosure E3: Giraffe enclosure has been constructed covering an area of 2124 Sq.M. including a kraal of 136 Sq.M. and night house of 92 Sq.M. have also been constructed. The area has an open space, escape zone, kraal, and night shelter with isolation facilities for better captive care of the animal. Existing stock of the Giraffe is 1:1. It is proposed to add two (2) females and two (2) males in future to make the stock 3:3:0:6.

Area proposed for enclosure	Enrichment		
	Category	Enrichment type	Species -typical behaviour targeted
2124 Sq.M. Paddock 136 Sq.M. Kraal 92 Sq.M. Night House	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 behaviour and foraging time
		Grass bales/Hessian bags	Increases foraging time
	Environment enrichment	Log with bark	Increases play behaviour
		Coir ropes on logs	Elicit behaviour 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, longer feeding duration, foraging time
	Sensory enrichment	Condensed scent device (concentrated scent of green foliages, fodder & fruits)	Elicit exploratory behaviour
		Scratcher post	Keeps the animal active & exhibit tactile behaviour

Bird Section

Aviaries

Presently there are Eleven aviaries covering an area of 1235 Sq.M. with provision of diffused sunlight. The existing aviaries have water pools, perches and nest at various locations. The floor is landscaped, along with an inlet and outlet to let water flow into the pool. The aviaries are covered all around with link mesh and are rodent-proofed. The pool of water bird aviary is stocked with live fishes as prey item for the birds. All the aviaries are provided with perches, hanging perching enrichments, feeding trays, nest boxes as well as fruiting trees enrichments. The existing bird aviaries are as follows:

i.	Greater Sulphur Crested Cockatoo	80 Sq.M.
ii.	Umbrella Cockatoo	80 Sq.M.
iii.	Red-tailed Black Cockatoo	80 Sq.M.
iv.	Blue & Yellow Macaw	80 Sq.M.
v.	Scarlet Macaw	80 Sq.M.
vi	Red & Green Macaw	80 Sq.M.
vii	Orange winged Amazon	80 Sq.M.
viii	Grey Parrot	80 Sq.M.
ix	Eclectus Parrot	80 Sq.M.
x	Black-capped Lory	80 Sq.M.
xi	Mixed Water Birds Aviary	435 Sq.M.

Flying bird Aviary:

Greater Sulphur-Crested Cockatoo (*Cacatua galerita*) Enclosure D5: An area of 80 Sq.M. has been developed for each enclosure for Greater Sulphur-Crested Cockatoo. The enclosure has been constructed with stainless steel chain link.

Umbrella Cockatoo *(Cacatua alba)* Enclosure D6: An area of 80 Sq.M. has been developed for each enclosure for Umbrella Cockatoo. The enclosure has been constructed with stainless steel chain link.

Red-tail Black Cockatoo *(Calyptorhynchus banksii)* Enclosure D7: An area of 80 Sq.M. has been developed for each enclosure for Red-tail Black Cockatoo Cockatoo. The enclosure has been constructed with stainless steel chain link.

Blue and Yellow Macaw (*Ara ararauna*) Enclosure D8: An area of 80 Sq.M. has been developed for each enclosure for Blue and Gold Macaw. The enclosure has been constructed with stainless steel chain link with front viewing facility of toughened glass.

Scarlet Macaw (*Ara macao)* Enclosure D9: An area of 80 Sq.M. has been developed for housing the Scarlet Macaw. The enclosure has been constructed with stainless steel chain link with front viewing facility.

Red and Green Macaw (*Ara chloropterus*) Enclosure D10: An area of 80 Sq.M. has been developed for each enclosure for Blue and Gold Macaw. The enclosure has been constructed with stainless steel chain link with front viewing facility of toughened glass.

Orange winged Amazon *(Amazona amazonica)* Enclosure D11: An area of 80 Sq.M. has been developed for each enclosure for Amazon Parrot. The enclosure has been constructed with stainless steel chain link.

Grey Parrot (*Psittacus erithacus*) Enclosure D12: An area of 80 Sq.M. has been developed for each enclosure for Grey Parrot. The enclosure has been constructed with stainless steel chain link.

Eclectus Parrot (*Eclectus roratus*) Enclosure D13: Eclectus Parrots are also housed in this Aviary Section. An area of 80 Sq.M. has been identified for the enclosure of the species.

Black-capped Lory (*Lorius lory*) Enclosure D14: An enclosure of 80 Sq.M. has been built to house Black-capped Lory in the Aviary Section.

Mixed Water bird Aviary Enclosure D4: An area of 435 Sq.M. has been developed as mixed water bird aviary. Presently this aviary is housing Black Swan (*Cygnus atratus*), and Mute Swan (*Cygnus olor*). The area has been developed with water body, island, green covers, trees, parching spots, nesting facilities for better housing and captive breeding.

Reptile Section

Reptile Pond

The aquatic enclosures for crocodiles and other aquatic animals were also set up in the earlier days as per the previous Master plan for a naturalistic view for visitors. There are two ponds prepared at the south-western side of the

zoo for display of Marsh Crocodile (760 Sq.M.) and Salt water Crocodile (630 Sq.M.).

Saltwater Crocodile (*Crocodylus porosus*) Enclosure C1: An area of 630 Sq.M. has been developed as open air enclosure with 46 Sq.M. kraal area. Existing stock of the Salt Water Crocodile is 1:3. According to the prescribed stocking density, It is proposed to dispose two (2) females in future to make the stock 1:1:0:2.

Marsh Crocodile (*Crocodylus palustris*) Enclosure C2: An area of 760 Sq.M. has been developed as open air enclosure for the Marsh Crocodile/Mugger. Kraal has been built up over an area of 26 Sq.M. The enclosure has water body, feeding zone, basking zone, green zone and site for nesting of mugger. In future, it is proposed to keep one (1) more male and four (4) more females.

Enclosure area	Enrichment
Land allocation: Saltwater Crocodile- 630 Sq.M. Marsh Crocodile – 760 Sq.M.	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. 2. Sand beds with palicades will be provided. 3. Flow of water will be maintained to check over heating in summer.

2.1.2 Veterinary Section

Staff engaged: Veterinary Officer (Consultant) - 1, Veterinary Assistant- 1

Existing facility: There is a treatment room with a cabin for Veterinary officer exist in the Harinalaya. Since the Zoo is going through a developmental phase, consultant Veterinary Officer has been recruited. Existing animal enclosures have separate quarantine facilities for animals.

Constraints: Improvement of veterinary facilities are required like development of hand rearing section for raising the orphaned & rescued neo natal animals, indoor patient ward, sophisticated equipment, medical research and documentation.

2.1.3 Store and Feed supply Section

Staff engaged: 0

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

Present arrangement: One Commissary (Kitchen) cum store room exists adjacent to the administrative block of the Zoo. It is located over an area is 73 Sq.M. And another Store is built up over an area of 68 Sq.M.

There is neat finished elevated concrete slab in the store room for preparation of food in order to avoid contamination from the floor. After receiving required food items from the store, respective keepers of the Zoo process the same on the said elevated slab for offering the same to the inmates of the Zoo. Outside agencies supply the food for the animals from time to time. The quality and specificity of the food is checked by the Director of the Zoo and the Range Officer in charge during their field visits and by the Zoo Supervisor and the Veterinary Assistant on daily basis.

Feed for Deer, living in social groups, is subdivided and placed at as many locations as necessary, to safeguard against weak and young animals remaining undernourished. They are fed twice a day in clean concrete feeding troughs. Green fodder is procured from outside agencies to provide natural fodder to Spotted Deer. Supplements in the form of salt licks and other supplements as prescribed by the Veterinarian are also added to their diet.

Other animals and birds of the Zoo are fed daily as per prescription of the Veterinary Doctor according to their natural feeding time. There is provision of adequate and clean drinking water supply to all the existing animal enclosures. All animals are provided with supplementation as prescribed by the Veterinarian. Deep fridge to store perishable food items is present in the Park.

Constraints: In the unlikely event of non-supply of food items during natural disasters or general strike in West Bengal, alternative source is not yet identified.

2.1.4 Sanitation Section

Staff engaged: Sanitation Attendant- 1

Present arrangement: Sanitation of the animal enclosures, cages, aviaries and treatment room is maintained by the Keepers and attendants concerned, under the supervision of the Zoo Supervisor. Sanitation attendant have been engaged on contract basis and on daily wages basis from time to time to ensure hygiene of the enclosures and the surroundings of the Zoo premises. The following activities are carried out to ensure sanitation of the animal enclosures and the surroundings of the Zoo premises:

Washing of the floor of the feeding cubicles/night shelters of the housed animal enclosures with disinfectants: done on a daily basis.

Cleaning water troughs, food troughs/trays of all the existing animal enclosures: done on a daily basis.

Lime water wash of drinking water troughs: done once in a week.

Disposal of faecal matter and garbage from the enclosures (except the Spotted Deer enclosure): done on a daily basis.

Thorough cleaning of unwanted vegetation and weeds of the entire Zoo premises: once in a month.

Permanent drains are constructed for disposal of liquid waste as well as efficient discharge of inundated water during monsoons.

Constraints: More sanitation attendants required to be engaged in the Zoo.

2.1.5 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 WBZA provide necessary assistance to plan the designing of enclosures, preparation of estimates and supervision during execution.

2.1.6 Security Section

Staff engaged: Gate Keeper: - 1 Security & Night Guard: - 10

Security is one of the most important aspects of Zoo management. Security can be viewed from three perspectives, i.e. visitors, staffs, and security of animals.

Present arrangement: The Zoo has a perimeter boundary wall of 2 m height from the ground level with RBT concertina fencing on top, to stop the entry of infiltrators and stray animals. The security section of the Zoo is looked after by security guards and gate keepers equipped with wireless communication devices under the supervision of the Zoo supervisor. Round the clock watch and ward of the Zoo area and preventive measures against feeding and teasing of the captive animals by the visitors, is being done by the above staff on rotational shifting basis. Video – Surveillance system (CCTV Cameras) has been installed at important locations to improve the effectiveness of security system. Mock drill has been started for security personnel of the Zoo. There are also security room and night guard's room exist at the entrance & the exit gates of the Zoo.

Constraints: Regular updating of equipment for the security personnel is essential. More security personnel need to be engaged to strengthen the day-night security. And as the zoo gets bigger and more animals are being housed so, more security personnel will be needed to serve the purpose. Accommodations/barracks for staffs engaged in this section are not enough.

2.1.7 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. Water is required for the following purposes:

- For animals-for drinking, for enclosure pools &cleaning of enclosures etc.
- For staff and visitors-for drinking and use in toilets.

- For landscape irrigation.
- Water jets for emergency purposes including animal restraint and fire control.
- For operation and management of various services.

Present arrangement: There are two overhead tanks beside Admin Block each of 5,000 Litres storage capacity, two overhead tanks above public toilet each of 2,000 Litres storage capacity and two overhead tanks beside Cafeteria each of 2,000 Litres storage capacity already exist. Other Source of Water Supply at Harinalaya:

- NKDA Water Supply
- Well connection with 5 HM Pump
- Water is lifted to the said reservoir and through a network of underground pipelines; running water is supplied to the kitchen cum store, animal treatment room and existing animal enclosures. The pump is operated by electric power and by diesel generator during power failure.

Constraints:

- At present, there is only three drinking water points for visitors in the Zoo. More number of drinking water facilities for the visitors needs to be installed on priority basis.
- Underground reservoir to be constructed to store rain water. More Deep tube well and overhead reservoir to be needed in future with the expansion of animal enclosures and Zoo activities.

2.1.8 Disposal of Solid waste and Liquid Waste-sewerage

Present arrangement: Vermicomposting has been started with the solid waste generated from the kitchen and animal enclosure of the Zoo.

Constraints: No specific management plan has been developed for liquid waste.

2.1.9 Visitors Amenities

Present arrangement: Presently all basic visitor facilities like animal and directional signage, sitting arrangement, toilets and a cafeteria are present in the zoo premises.

Based on CZA guidelines, the following amenities for visitors have been developed.

- The Zoo has a separate entry and exit gate and a ticket counter. The entry and the exit area have some open space adjacent to the gates, which would serve as a temporary waiting area in case of large gatherings or for persons of a group who may have returned early or who decide to curtail the visit.
- There is a well-planned visitor circulation in place. The visitors' pathway of the Zoo is of pavers block.
- Appropriate location and layout map at the entrance, distinct signages for directing visitors in the trail and showing the way to various enclosures are in place.
- Two toilets/urinal for male and female visitors has been constructed recently and has been suitably screened from the adjacent animal exhibits.
- Two Visitors rest shed with sitting arrangement and three drinking water facilities have been installed.
- Child Care Unit is also recently constructed by the Zoo management.
- Appropriate signages including directional signages, with relevant information on the biology, behaviour, distribution, diet, longevity, and the conservation status of the species in the wild at every display enclosure, are in place.
- Safety measures such as Effective stand-off barriers have been provided around enclosures, in a manner that facilitates the visitors in getting unobstructed view of the animals, without reaching in the vicinity or proximity of the animals and getting the opportunity to physically touch or provoke the animals. Space between the stand-off barriers and enclosure barriers have been planted with evergreen hedges to safeguard against the visitors crossing the stand-off barriers.
- Warning signboards has been provided to discourage the visitors from feeding or teasing the captive animals.
- Cafeteria is located west side of the Zoo.
- Wheelchairs for old and 'divyang' visitors are available on demand at the entrance, free of charge.
- First aid facilities are available in case of any emergencies.
- **Parking area:** The parking zone for the visitors is available at the entrance gate outside the Zoo premises.

Constraints: More facilities for physically challenged people need to be established. The zoo also requires availability of more potable drinking water points, toilets for the visitors.

An emergency gate and further connection is required.

Nature Interpretation centre: The Zoo does not have an interpretation centre, which is an important tool for delivering the message of conservation awareness to the visiting public.

Proper and prominent direction boards need to be developed and put up at all the turnings to guide the visitors and a flow of visitors in one direction. The facilities for physically challenged people need to establish. There is also lack of information booklets and materials on Animals of Zoo and on conservation aspects. The zoo also requires availability of potable drinking water, more toilets for the visitors. There is also a lack of proper PA system.

2.1.10 Lawns and Gardens-Landscape Section

Staff engaged: 0

Present arrangement: Vegetative barriers in the form of shrubs and topiary have been planted on both sides of the visitors' pathway. Enrichment plantation of suitable species has been done inside animal enclosures. An attempt has been made to create nature immersing enclosures in future, by planting trees and shrub species of adequate extent and such shape that the enclosure is not visible to the visitors from any place other than the animal viewing areas. The hard exteriors of these enclosures have been effectively camouflaged through planting of shrubs, hedges and boulders. Medicinal Plant Garden has been created recently to feed animal fresh herbal and organic products. To enhance the aesthetic appeal of the Zoo, green Lawns have been created in the vacant areas around the Pheasantry and surrounding the administrative block.

Constraints: The prime constraint faced during maintenance of the lawns & gardens is lack of proper drainage during monsoons. Inundation of the area during monsoons leads to mortality of the plants. No Gardening and Landscaping staff is available.

2.1.11 Engineering Section

Staff engaged: 1

Existing facility: All developmental work of Harinalaya is going under supervision of Engineering Section of West Bengal Zoo Authority. One Sub-Assistant Engineer of West Bengal Zoo Authority is presently looking after the civil related works.

Constraints: Up gradation of Cable system, Water supply system, Rain water harvesting, Space constrains etc. required. As this Zoo is in developing stage, a dedicated on-site Sub-Assistant Engineer will be engaged.

2.1.12 Power Supply Section

Staff engaged: 0

Constraints: The power supply is conventional in the zoo from West Bengal State Electricity Board. During natural calamities, the power supply may get hampered for several hours to several days.

Proposal: It is required to develop a solar power system to support minimum power supply for CCTV, energized fence, office etc. Adaptation of solar PV system shall cater to the power demand and reduce future electricity bill.

2.1.13 Research and Education Section

Staff engaged: Zoo Biologist (Consultant)-1, Research Assistant: - 1

Research can be defined as the process of discovering new knowledge as well as advancement of any existing theories for developing new concepts. Zoo is one of the most potential places to implement scientific research on captive wildlife. Research questions, which could be difficult to formulate in the wild, can be resolved within the zoo. Zoo provides framework for ex-situ conservation of different fauna through conservation, education, research, and recreation. Behavioural patterns, cognitive abilities, psychological concepts, response to stressors, and welfare of captive animals can be studied through different research works.

Constraints: Presently the works are being handled by Zoo Biologist of West Bengal Zoo Authority and there is one Research Assistant currently to identify issues of study and to conduct systematic, scientific study related to such issues. The Zoo shall establish network with University and other institutions to carryout collaborative Research works on the important issues, on a regular basis.

This Mini Zoo is in developing mode at present. In due course of time, a permanent Zoo Biologist will be engaged.

2.1.14 Transport Section

Staff engaged: Driver: 1

Constraints: The zoo does not have any vehicle, trap cages to transport rescued animals. There is also a demand of vehicle for transporting essential materials. Battery operated cars for senior citizens and specially challenged visitors are also needed.

Proposal: Procurement of transport vehicle, small intra zoo battery operated vehicle for animal transport, battery operated vehicles for senior citizen and specially abled people.

2.2 ANIMAL COLLECTION PLAN (EXISTING)

Animals in the collection plan have been selected keeping in mind conservational aspects, biodiversity and climate-adaptation capabilities of the species.

Sl No.	Species	Present Stock				Proposed collection				Animals to be acquired/ disposed			
		M	F	U	T	M	F	U	T	M	F	U	T
NATIVE MAMMALS													
1.	Bengal Tiger *(Panthera tigris)*	0	0	0	0	2	2	0	4	2	2	0	4
2.	Spotted Deer (*Axis axis*)	8	7	8	23	2	3	0	5	-6	-4	-8	-18
3.	Barking Deer (*Muntiacus muntjak*)	1	7	0	8	2	3	0	5	1	-4	0	-3
4.	Blackbuck (*Antilope cervicapra*)	0	0	0	0	2	2	0	4	2	2	0	4
5.	Four-horned Antelope (*Tetracerus quadricornis*)	0	0	0	0	2	2	0	4	2	2	0	4
6.	Mouse Deer (*Tragulus kanchil*)	0	0	0	0	2	3	0	5	2	3	0	5
7.	Western Hoolock Gibbon (*Hoolock hoolock*)	0	0	0	0	2	2	0	4	2	2	0	4
NON-NATIVE MAMMALS													
8.	African Lion *(Panthera leo)*	0	0	0	0	2	2	0	4	2	2	0	4
9.	Grant's Zebra *(Equus quagga)*	1	1	0	2	3	3	0	6	2	2	0	4
10.	Northern Giraffe *(Giraffa camelopardalis)*	1	1	0	2	3	3	0	6	2	2	0	4
11.	Common Hippopotamus *(Hippopotamus amphibius)*	1	0	0	1	1	2	0	3	0	2	0	2
12.	Common Marmoset (*Callithrix jacchus*)	0	0	0	0	3	3	0	6	3	3	0	6
13.	Tufted Capuchin (*Cebus apella*)	1	1	0	2	3	3	0	6	2	2	0	4
14.	White-lipped Tamarin (*Saguinus labiatus*)	1	1	0	2	3	3	0	6	2	2	0	4
15.	Golden-headed lion Tamarin (*Leontopithecus chrysomelas*)	1	1	0	2	3	3	0	6	2	2	0	4

Sl No.	Species	Present Stock				Proposed collection				Animals to be acquired/ disposed			
		M	F	U	T	M	F	U	T	M	F	U	T
16.	Red-tailed Monkey (*Cercopithecus ascanius*)	0	0	0	0	3	3	0	6	3	3	0	6
17.	Orangutan (*Pongo sp.)*	0	0	0	0	2	2	0	4	2	2	0	4
18.	Eastern Grey Kangaroo (*Macropus giganteus*)	0	0	0	0	2	2	0	4	2	2	0	4
19	Koala (*Phascolarctos cinereus*)	0	0	0	0	2	2	0	4	2	2	0	4
NATIVE REPTILES													
20	Marsh Crocodile (*Crocodylus palustris*)	3	2	0	5	4	6	0	10	1	4	0	5
21	Saltwater Crocodile (*Crocodylus porosus*)	1	3	0	4	1	1	0	2	0	-2	0	-2
22	Reticulated Python (*Malayopython reticulatus*)	0	0	0	0	2	2	0	4	2	2	0	4
23.	Burmese Python (*Python bivittatus*)	0	0	0	0	2	2	0	4	2	2	0	4
24.	Indian Rock Python (*Python morulus*)	0	0	0	0	3	3	0	6	3	3	0	6
25.	Banded Krait (*Bungarus fasciatus*)	0	0	0	0	2	2	0	4	2	2	0	4
26.	Russell's Viper (*Daboia russelii*)	0	0	0	0	2	2	0	4	2	2	0	4
27.	Bamboo Pit Viper (*Trimeresurus stejnegeri*)	0	0	0	0	2	2	0	4	2	2	0	4
28.	Ornate Flying Snake/Kalnagini (*Chrysopelea ornate*)	0	0	0	0	2	2	0	4	2	2	0	4
29.	Spectacled Cobra (*Naja naja*)	0	0	0	0	2	2	0	4	2	2	0	4
30.	Monocled Cobra (*Naja kaouthia*)	0	0	0	0	2	2	0	4	2	2	0	4
31.	Indian Wolf Snake (*Lycodon aulicus*)	0	0	0	0	2	2	0	4	2	2	0	4
32.	Asian Water Monitor (*Varanus salvator*)	0	0	0	0	2	2	0	4	2	2	0	4
33.	Yellow Monitor (*Varanus flavescens*)	0	0	0	0	4	8	0	12	4	8	0	12
34.	Desert Monitor (*Varanus griseus*)	0	0	0	0	2	2	0	4	2	2	0	4
35	Indian Flapshell Turtle (*Lissemys punctata*)	0	0	0	0	5	5	0	10	5	5	0	10
36	Indian Softshell Turtle/Ganges Softshell Turtle (*Nilssonia gangetica*)	0	0	0	0	5	5	0	10	5	5	0	10

Sl No.	Species	Present Stock				Proposed collection				Animals to be acquired/ disposed			
		M	F	U	T	M	F	U	T	M	F	U	T
37.	Peacock Softshell Turtle (*Nilssonia hurum*)	0	0	0	0	5	5	0	10	5	5	0	10
38.	Indian Tent Turtle (*Pangshura tentoria*)	0	0	0	0	5	5	0	10	5	5	0	10
39.	Indian Roof Turtle (*Pangshura tecta*)	0	0	0	0	5	5	0	10	5	5	0	10
40.	Indian Eyed Turtle (*Morenia petersi*)	0	0	0	0	5	5	0	10	5	5	0	10
41.	Black Pond Turtle/Spotted Pond Turtle (*Geoclemys hamiltonii*)	0	0	0	0	5	5	0	10	5	5	0	10
42.	Indian Black turtle (*Melanochelys trijuga*)	0	0	0	0	5	5	0	10	5	5	0	10
43	Indian narrow-headed softshell turtle (*Chitra indica*)	0	0	0	0	2	2	0	4	2	2	0	4
44	Indian Star Tortoise (*Geochelone elegans*)	0	0	0	0	5	5	0	10	5	5	0	10
45	Travancore Tortoise (*Indotestudo travancorica*)	0	0	0	0	5	5	0	10	5	5	0	10
46	Elongated/Yellow Tortoise (*Indotestudo elongate*)	0	0	0	0	5	5	0	10	5	5	0	10
47	Asian Forest Tortoise (*Manouria emys*)	0	0	0	0	5	5	0	10	5	5	0	10
48	Indian chameleon *(Chamaeleo zeylanicus)*	0	0	0	0	5	5	0	10	5	5	0	10
49	Tokay gecko *(Gekko gecko)*	0	0	0	0	5	5	0	10	5	5	0	10
NON-NATIVE REPTILES													
50	Green Iguana *(Iguana iguana)*	0	0	0	0	2	3	0	5	2	3	0	5
51	Yellow Anaconda (*Eunectes notaeus*)	0	0	0	0	2	2	0	4	2	2	0	4
52	Green Anaconda (*Eunectes murinus*)	0	0	0	0	2	2	0	4	2	2	0	4
NATIVE BIRDS													
53	Indian Peafowl/White Peafowl (*Pavo cristatus*)	0	0	0	0	1	3	0	4	1	3	0	4
54	Red Jungle Fowl (*Gallus gallus*)	0	0	0	0	1	3	0	4	1	3	0	4
55	Grey Jungle Fowl (*Gallus sonneratii*)	0	0	0	0	1	3	0	4	1	3	0	4

Sl No.	Species	Present Stock				Proposed collection				Animals to be acquired/ disposed			
		M	F	U	T	M	F	U	T	M	F	U	T
56	Kalij Pheasant (*Lophura leucomelanos*)	0	0	0	0	1	3	0	4	1	3	0	4
57	Alexandrine Parakeet (*Psittacula eupatria*)	0	3	0	3	2	2	0	4	2	-1	0	1
58	Rose-ringed Parakeet (*Psittacula krameri*)	0	4	0	4	2	2	0	4	2	-2	0	0
59	Blossom-headed Parakeet (*Psittacula roseata*)	0	0	0	0	2	2	0	4	2	2	0	4
60	Plum-headed Parakeet (*Psittacula cyanocephala*)	0	0	0	0	2	2	0	4	2	2	0	4
61	Red breasted parakeet (*Psittacula alexandri*)	0	0	0	0	2	2	0	4	2	2	0	4
62	House Sparrow (*Passer domesticus*)	0	0	0	0	2	2	0	4	2	2	0	4
63	Asian Pied Starling (*Gracupica contra*)	0	0	0	0	2	2	0	4	2	2	0	4
64	Brahminy Starling (*Sturnia pagobarum*)	0	0	0	0	2	2	0	4	2	2	0	4
65	Hill Myna (*Gracula religiosa*)	0	0	0	0	2	2	0	4	2	2	0	4
66	Common Myna (*Acridotheres tristis*)	0	0	0	0	2	2	0	4	2	2	0	4
67	Jungle Myna (*Acridotheres fuscus*)	0	0	0	0	2	2	0	4	2	2	0	4
68	Indian Pied Myna (*Gracupica contra*)	0	0	0	0	2	2	0	4	2	2	0	4
69	Scaly-breasted Munia (*Lonchura punctulata*)	0	0	0	0	2	2	0	4	2	2	0	4
70	Tri-colour Munia Munia (*Lonchura Malacca*)	0	0	0	0	2	2	0	4	2	2	0	4
71	White-rumped Munia (*Lonchura striata*)	0	0	0	0	2	2	0	4	2	2	0	4
72	Red Avadavat (*Amandava amandava*)	0	0	0	0	2	2	0	4	2	2	0	4
73	Black-headed Munia/Chestnut Munia (*Lonchura articapilla*)	0	0	0	0	2	2	0	4	2	2	0	4
74	Red-whiskered Bulbul (*Pycnonotus jocosus*)	0	0	0	0	2	2	0	4	2	2	0	4
75	Red-vented Bulbul (*Pycnonotus cafer*)	0	0	0	0	2	2	0	4	2	2	0	4

Sl No.	Species	Present Stock				Proposed collection				Animals to be acquired/ disposed			
		M	F	U	T	M	F	U	T	M	F	U	T
76	Tailor Bird (*Orthotomus sp.*)	0	0	0	0	2	2	0	4	2	2	0	4
77.	Purple Sunbird (*Cinnyris asiaticus*)	0	0	0	0	2	2	0	4	2	2	0	4
78.	Purple-rumped Sunbird (*leptocoma zeylonica*)	0	0	0	0	2	2	0	4	2	2	0	4
79.	Common Babbler (*Purdoides caudate*)	0	0	0	0	2	2	0	4	2	2	0	4
80.	Common Kingfisher (*Alcedo atthis*)	0	0	0	0	2	2	0	4	2	2	0	4
81.	White-throated Kingfisher (*Halcyon smyrnensis*)	0	0	0	0	2	2	0	4	2	2	0	4
82.	Pied Kingfisher (*Ceryle rudis*)	0	0	0	0	2	2	0	4	2	2	0	4
83.	Stork-billed Kingfisher (*Pelargopsis capensis)*	0	0	0	0	2	2	0	4	2	2	0	4
84.	Ruddy Kingfisher (*Halcyon coromanda*)	0	0	0	0	2	2	0	4	2	2	0	4
85.	Black Drongo (*Dicrurus macrocercus*)	0	0	0	0	2	2	0	4	2	2	0	4
86.	Greater Racket-tailed Drongo (*Dicrurus paradiseus*)	0	0	0	0	2	2	0	4	2	2	0	4
87.	Blue-throated Barbet (*Megalaima asiatica*)	0	0	0	0	2	2	0	4	2	2	0	4
88.	Lineated Barbet (*Megalaima lineata*)	0	0	0	0	2	2	0	4	2	2	0	4
89.	Coppersmith barbet (*Megalaima haemacephala*)	0	0	0	0	2	2	0	4	2	2	0	4
90.	Asian Koel (*Eudynamys scolopaceus*)	0	0	0	0	2	2	0	4	2	2	0	4
91.	Greater Coucal (*Centropus sinensis*)	0	0	0	0	2	2	0	4	2	2	0	4
92.	Oriental Magpie robin (*Copsychus saularis)*	0	0	0	0	2	2	0	4	2	2	0	4
93.	Baya Weaver (*Ploceus philippinus*)	0	0	0	0	2	2	0	4	2	2	0	4
94.	Black-rumped Flameback (*Dinopium benghalense*)	0	0	0	0	2	2	0	4	2	2	0	4
95.	Indian roller (*Coracias benghalensis*)	0	0	0	0	2	2	0	4	2	2	0	4
96.	Paddy field Pipit (*Anthus rufulus*)	0	0	0	0	2	2	0	4	2	2	0	4
97.	Black headed oriole (*Oriolus xanthormus*)	0	0	0	0	2	2	0	4	2	2	0	4

Sl No.	Species	Present Stock				Proposed collection				Animals to be acquired/ disposed			
		M	F	U	T	M	F	U	T	M	F	U	T
98.	Asian Green Bee eater (*Meropos orientalis*)	0	0	0	0	2	2	0	4	2	2	0	4
99.	Chestnut-headed Bee eater (*Merops leschenaulti*)	0	0	0	0	2	2	0	4	2	2	0	4
100.	Indian Paradise Flycatcher (*Terpsiphone paradisi*)	0	0	0	0	2	2	0	4	2	2	0	4
101.	Red-wattled Lapwing (*Vanellus indicus*)	0	0	0	0	2	2	0	4	2	2	0	4
102.	Yellow-wattled Lapwing (*Vanellus malabaricus*)	0	0	0	0	2	2	0	4	2	2	0	4
103.	Pond Heron (*Ardeola sp.*)	0	0	0	0	2	2	0	4	2	2	0	4
104.	Purple Heron (*Ardea purpurea*)	0	0	0	0	2	2	0	4	2	2	0	4
105.	Cattle Egret (*Bubulcus ibis*)	0	0	0	0	2	2	0	4	2	2	0	4
106.	Little Egret (*Egretta garzetta*)	0	0	0	0	2	2	0	4	2	2	0	4
107.	Intermediate Egret (*Ardea intermedia*)	0	0	0	0	2	2	0	4	2	2	0	4
108.	Spoonbill (*Platalea leucorodia*)	0	0	0	0	2	2	0	4	2	2	0	4
109.	Little Cormorant (*Mycrocarbo niger*)	0	0	0	0	2	2	0	4	2	2	0	4
110.	Oriental Darter (*Anhinga melanogaster)*	0	0	0	0	2	2	0	4	2	2	0	4
111.	Common Moorhen (*Gallinula chloropus*)	0	0	0	0	2	2	0	4	2	2	0	4
112.	Painted Stork (*Mycteria leucocephala*)	0	0	0	0	3	7	0	10	3	7	0	10
113.	Lesser Adjutant Stork (*Leptoptilos javanicus*)	0	0	0	0	4	8	0	12	4	8	0	12
114.	White-breasted Waterhen (*Amaurornis phoenicurus*)	0	0	0	0	2	2	0	4	2	2	0	4
115.	Black Headed Ibis *(Threskiornis melanocephalus)*	0	0	0	0	4	8	0	12	4	8	0	12
NON-NATIVE BIRDS													
116.	Golden Pheasant (*Chrysolophus pictus*)	4	5	0	9	1	3	0	4	-3	-2	0	-5
117.	Lady Amherst's Pheasant (*Chrysolophus amherstiae*)	0	0	0	0	1	3	0	4	1	3	0	4
118.	Greater Sulphur Crested Cockatoo (*Cacatua galerita*)	0	0	6	6	4	4	0	8	0	2	0	2

Sl No.	Species	Present Stock				Proposed collection				Animals to be acquired/ disposed			
		M	F	U	T	M	F	U	T	M	F	U	T
119.	Umbrella Cockatoo (*Cacatua alba*)	0	0	4	4	4	4	0	8	0	4	0	4
120.	Red-tailed Black Cockatoo (*Calyptorhynchus banksii*)	1	2	0	3	4	4	0	8	3	2	0	5
121.	Blue & Yellow Macaw (*Ara ararauna*)	9	11	0	20	5	5	0	10	-4	-6	0	-10
122.	Scarlet Macaw (*Ara macao*)	4	0	0	4	5	5	0	10	1	5	0	6
123.	Red & Green Macaw (*Ara chloropterus*)	3	1	1	5	5	5	0	10	2	4	-1	5
124.	Orange winged Amazon (*Amazona amazonica)*	17	12	0	29	5	5	0	10	-12	-7	0	-19
125.	Grey Parrot (*Psittacus erithacus*)	6	6	0	12	5	5	0	10	-1	-1	0	-2
126.	Eclectus Parrot (*Eclectus roratus*)	2	3	0	5	5	5	0	10	3	2	0	5
127	Black-capped Lory (*Lorius lory*)	0	0	22	22	5	5	0	10	5	5	-22	-12
128.	Toco Toucan (*Ramphastos toco*)	0	0	0	0	2	2	0	4	2	2	0	4
129	Black Swan (*Cygnus atratus*)	0	0	4	4	3	3	0	6	3	3	-4	2
130.	Mute Swan (*Cygnus olor*)	1	1	0	2	4	4	0	8	3	3	0	6
	NATIVE FISHES												
131.	Sting Ray (*Telatrygon zugei)*	0	0	0	0	2	3	0	5	2	3	0	5
132.	Yoyo Loach (*Botia almorhae*)	0	0	0	0	2	3	0	5	2	3	0	5
133.	Kuhl's Maskray (*Neotrygon kuhlii*)	0	0	0	0	2	3	0	5	2	3	0	5
134.	Odessa Barb (*Pethia padamya*)	0	0	0	0	2	3	0	5	2	3	0	5
135.	Arulius Barb (*Dawkinsia arulius*)	0	0	0	0	2	3	0	5	2	3	0	5
136.	Denison Barb (*Sahyadria denisonmi*)	0	0	0	0	2	3	0	5	2	3	0	5
137.	Golden Dwarf Barb (*Pethia gelius*)	0	0	0	0	2	3	0	5	2	3	0	5
138.	Honey Gourami (*Trichogaster chuna*)	0	0	0	0	2	3	0	5	2	3	0	5
139.	Dwarf Gourami (*Colisa lalia)*	0	0	0	0	2	3	0	5	2	3	0	5
140.	Frail Gourami (*Ctenops nobilis*)	0	0	0	0	2	3	0	5	2	3	0	5
141.	Blue Badis (*Badis badis)*	0	0	0	0	2	3	0	5	2	3	0	5
142.	Zebra Fish (*Danio rerio)*	0	0	0	0	2	3	0	5	2	3	0	5
143.	Assam danio (*Devario assamensis*)	0	0	0	0	2	3	0	5	2	3	0	5
144.	Leopard Danio (*Danio rerio)*	0	0	0	0	2	3	0	5	2	3	0	5

Sl No.	Species	Present Stock				Proposed collection				Animals to be acquired/ disposed			
		M	F	U	T	M	F	U	T	M	F	U	T
145.	Malabar Danio (*Devario malabaricus)*	0	0	0	0	2	3	0	5	2	3	0	5
146.	Bengal Loach (*Botia Dario*)	0	0	0	0	2	3	0	5	2	3	0	5
147.	Horseface loach (*Acantopsis dialuzona*)	0	0	0	0	2	3	0	5	2	3	0	5
148.	Zebra Loach (*Botia striata*)	0	0	0	0	2	3	0	5	2	3	0	5
149.	Blue Spotted Hill Trout (*Barilius bakeri)*	0	0	0	0	2	3	0	5	2	3	0	5
150.	Dwarf pufferfish (*Carinotetraodon travancoricus*)	0	0	0	0	2	3	0	5	2	3	0	5

2.3 ZOO ADMINISTRATION SECTION

General Zoo Administration

The Harinalaya was established on 1st August 2017 and managed by Deputy Conservator of Forests, Urban and Recreation Forestry Division with Head Quarter at Eden Garden, Kolkata and came under West Bengal Zoo Authority (WBZA) from 21.04.2017.

The Deputy Conservator of Forests, Urban Recreation and Forestry Division is functioning as Ex-officio Director of Harinalaya. He is assisted by Ex-Officio Assistant Director (ACF Rank) and the Range Officer, Jaharkunja Range is functioning as Ex-Officio Unit-In- Charge.

The other staffs working in the zoo is One Consultant Zoo Biologist, one Research Assistant, one Consultant Veterinary Officer, one Veterinary Assistant, One Consultant Sub-Assistant Engineer, two numbers of Zoo Keeper and Animal Attendant. Apart from that the zoo has sweepers, ticketing clerk, office attendant, gate keeper.

There are Four Offices in the Administrative Zone, including:

Director's Office: 1

Assistant Director's Office: 1

Range Officer/Unit In-Charge's Office: 1

Administrative Office: 1

There is one zoo administrative office for Zoo Supervisor, Clerical and other contractual staffs.

2.4 RESEARCH

Research within zoological institutions (zoos and aquariums) has a long history that has helped to increase basic scientific knowledge and to facilitate the ability of institutions to make informed animal management decisions.

Basic and applied research programmes shall be taken up on animal care, ageing, assisted reproduction, behaviour, bioinformatics, bio-materials 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, studbooks, human behaviour, and visitor studies.

2.5 CONSERVATION BREEDING

Conservation Breeding Programme aims to conserve the genetic diversity of the species and to reintroduce the species by ensuring the population viability in its natural wild habitat. The zoo individual are used as insurance for the use in future with aim only to complement and supplement the in-situ population or should be only used for restocking/ reintroduced if the species got extinct from wild. Zoos should maintain these populations in such a way that the

individual should be used for display and have a surplus stock that can be used to bolster the in–situ population or for reintroduction to in case of extinction. Such population is also used as education tools for the public to spread the awareness for the conservation of these endangered species.

Sequence of steps to be adopted for the conservation breeding as per CZA guide lines:

1. Identification of founders.
2. Marking of founders (transponders, ear tags or rings).
3. Preparation of animal history sheets and animal observation sheets of the identified founders.
4. Compilation of Studbook by the National Studbook Keeper.
5. Liaison with the International Studbook Keeper of the species (if any).
6. Possibility of acquiring the founders from foreign zoos (if required) and details of the zoos from where founders can be acquired.
7. Physical health check-up of the founders using the veterinary hospital in the Zoo as well as National Referral Centre (Indian Veterinary Research Institute, Bareilly).
8. Genetic health check-up of the founders using blood samples or body parts with help from LaCONES, Hyderabad.

West Bengal Zoo Authority has taken up the initiative for different conservation breeding program in the Governing Body Meeting and sanctioned the CBPs for Painted Stork (*Mycteria leucocephala*), Lesser Adjutant Stork (*Leptoptilos javanicus*), Black-headed ibis (*Threskiornis melanocephalus*) and Yellow Monitor Lizard (*Varanus flavescens*) at Harinalaya.

2.6 EDUCATION AND AWARENESS

As Zoos are visited by a large number of visitors, Zoos are a potent tool for educating people about the close linkage between protection of natural areas and maintaining the life supporting processes of nature.

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

- Appropriately designed signages highlighting the biological & ecological information of the species on display, their conservation status & population in wild etc.
- Awareness & informative Signages displaying the role & significance of Forests & Wildlife conservation, conservation of wetland ecosystems, role played by Zoos in conservation of Wildlife, penal provisions regarding Hunting, wildlife trafficking, myths related to Wildlife products etc., issues that need the attention of everyone if we are to solve them.
- An Education Calendar for the year has been identified. Theme-based awareness programmes such as online quiz competitions, seminars, expert talks etc. are organized on some significant days like Wildlife week, Van mahotsava, Environment Day, National Reptiles Day etc.
- Guided tours of nearby school students are organized from time to time by the Zoo Biologist also in charge of the education section.
- Awareness generation activities to address issues such as retaliatory killing of Fishing Cats, Snakes etc. and seasonal hunting festivals in rural areas, are organized from time to time and has been found to be effective on many occasions.


PART
B

FUTURE OBJECTIVE INCLUDING MISSION STATEMENT/THEME

CHAPTER – 3

3.1 FUTURE OBJECTIVES

A. Conservation Breeding: To breed and rear the endangered species of the fauna of India and the world with the object of saving them from extinction by restocking other Zoos and eventually to enrich the depleted fauna in wild.

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

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.

3.2 Vision

This Zoo envisions creating a mechanism for enhancing expertise on excellent upkeep and ex-situ conservation of the globally threatened fauna and flora and also regional biodiversity and community sensitization on ex-situ conservation. The zoo will be a place to study the animal behaviour, conservation management and develop species specific conservation and management strategies. The zoo will work for conservation breeding of endemic species and maintain insurance population as an institution for species recovery of endemic species.

3.3 MISSION STATEMENT

Implement the best practices on conservation, conservation breeding, education, research and visitor experiences by connecting people to biodiversity conservation, and to serve as a conservation breeding and nature conservation centre for endemic, and endangered faunal and floral species and to convey the message of conservation education through demonstrative, replicable and learning experiences without compromising the expected standards of display of wild animals and flora under the existing policies and rules. To connect visitors and animals through exemplary animal welfare and care, best educational and inspirational experiences, fostering public appreciation and support for wild animals and conservation to achieve goals of nature conservation and wildlife as a whole.

3.4 THEME

The Harinalaya adopts "ecosystem display theme" comprising ecological aspects of exotic and endemic species, bio-geographical distribution of wild animal species of global and national importance with special emphasis on conservation status of the species. Apart from that, an idea of broad taxonomical display of wild animal species of national importance will be incorporated.

3.5 STRATEGIES

a) Fostering sound techniques of husbandry that ensure the physical and psychological well-being of the animals in our care through professional animal and veterinary care and a comprehensive animal management plan.

b) Education, through staff involvement and training, conducting in-reach and outreach programmes, conferences and workshops for volunteers and others, and exhibition of natural animal exhibits, directional, informational and interpretive signage.

c) Animal exhibits, plantings, graphics, and Zoo programs are to be represented in such a manner so as to give the visitor a sense of awareness and concern for wild animals and their habitat.

d) Applying resources to Conservation Breeding programmes that will assist in the conservation of selected species.

e) Supporting and participating in scientific research that contributes towards the knowledge, understanding and conservation of endangered animals by utilizing staff, universities, and other zoological institutions.

f) Providing satisfying experience, through modern exhibit design, well-run visitor services (i.e., toilet facilities, souvenir shop, resting places, cloak rooms, umbrella, wheel chairs, parking, etc.) and to maximize the natural and park like setting by formal and scientific landscaping.

g) Mobilizing financial support for supplementing the management of the Zoo:

Harinalaya would endeavour to be self-sustaining and financially stable through innovative marketing strategies and increasing visitors'foot fall. Strengthening of the Infrastructure facilities & public amenities (eg. well maintained exhibits & visitor paths, toilets, visitor sheds and drinking water facilities etc.) would play a big role in promoting the image of the Zoo in public.

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

- Appropriate advertising in the Zoo by organizations.
- Outsourcing or establishing food courts/cafeteria & souvenir shop in the Zoo.
- Photography, videography & transport rides.
- Adoption of exhibits-providing feed for animals and maintenance of enclosures and health care etc.
- Website of the Zoo: To furnish desired information to the visitors and other agencies, the Zoo has developed a website with up-to-date information including the grievances redress mechanism. This website can also have gate way of banking institution to receive funds online from individuals and organizations.
- Friends of Zoo- Potential Donors: The Zoo management would identify potential donor organizations or individuals by inviting them to events and functions of the Zoo. Organizations that have evinced keen interest in donating funds for social and public causes can be introduced to the Zoo so that they can develop empathy for the Zoo animals.
- Networking with other sectors: There are amusement parks, museums and outdoor adventure activities which attract visitors and Zoos which hold endangered and charismatic species struggle to increase visitation. The Zoo management would network with tour operators, transporters, hotels, cinema halls & malls as their clients can be made aware about the experience Zoo offers.

FUTURE ACTION PLAN

CHAPTER – 4

The future action plan is aimed to provide direction for development of the zoo in coming 20 years i.e., 2023-24 to 2043-44. 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 PROPOSED 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 endangered species, particularly the ones endemic to the region.
2. Communicating a loud and clear conservation message to the visitors about endangered species of globe and strategy to conserve them through thematic display of wild animals.
3. Display of Charismatic wild animals that are sought after by the visitors and have the potential to become star attraction and lead to a boost in the number of visitors to the zoo.
4. Attaining a self-sustaining genetic population of all species displayed.
5. Rescuing the orphaned, sick, and injured animals brought to the zoo.

Selection of species for the first three objectives has been made keeping due regard to the upkeep and breeding 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.

Proposed Animal Collection Plan: The Animal Collection Plan (existing) under Chapter II, Section 2 is proposed as the 'Proposed Animal Collection plan' for the time tenure of twenty years.

Native and Non-Native Species Ratio: 80:20

Category of Animals	Native	Non native
Mammals	7	12
Reptiles	30	3
Birds	63	15
Fish	20	0
Total	**120**	**30**
Percentage	**80%**	**20%**

4.2 MASTER LAYOUT PLAN WITH DESCRIPTION

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 has been increased from 48698 Sq.M. areas to 63596 Sq.M. Additional Land of an area of 14898 Sq.M. has been allotted to the Zoo by WBHIDCO, Govt. of West Bengal. The Animal enclosure area proposed is 20075 Sq.M. which is approx. 31.57 % of the zoo and the green zone is 30133 Sq.M. which is 47.38 %. [Annexure- I (a)].

Area Statement of Harinalaya

I. **Total Area of the Zoo:** 63596.00 Sq.M.

II. **Total Area for the Animal Enclosures:** 20075.00 Sq.M. (31.57%)

III. **Night Shelter &Kraal:** 1778.00 Sq.M. (2.8%)

IV. **Total Area for the Zoo Utility & Infrastructure:** 2834.00 Sq.M. (4.46%)

V. **Pathway:** 8681.00 Sq.M. (13.65%)

VI. **Green Area:** 30228.00 Sq.M. (47.53%)

Enclosure No.	Species Name	Scientific Name	Area (Sq.M.)		
			Paddock	Kraal	Night House
A	**CARNIVORES**				
A1	Bengal Tiger	*Panthera tigris*	1600	120	80
A2	African Lion	*Panthera leo*	1620	110	80
B	**PRIMATES**				
B1	Common Marmoset	*Callithrix jacchus*		50	
B2	Golden-headed Lion Tamarin	*Leontopithecus chrysomelas*		50	
B3	White-lipped Tamarin	*Saguinus labiatus*		50	
B4	Tufted Capuchin Monkey	*Cebus apella*		50	
B5	Red-tailed Monkey	*Cercopithecus ascanius*	500	80	40
B6	Orangutan	*Pongo spp*		1000	
B7	Western Hoolock Gibbon	*Hoolock hoolock*	700	50	84
C	**REPTILES**				
C1	Saltwater Crocodile	*Crocodylus porosus*	630	46	
C2	Marsh Crocodile	*Crocodylus palustris*	780	26	
C3	Reticulated Python	*Malayopython reticulatus*		80	
C4	Burmese Python	*Python bivittatus*		80	
C5	Indian Rock Python	*Python morulus*		80	
C6	Banded Krait	*Bungarus fasciatus*		40	
C7	Russell's Viper	*Daboia russelii*		40	
C8	Bamboo Pit Viper	*Trimeresurus stejnegeri*		40	
C9	Ornate Flying Snake/Kalnagini	*Chrysopelea ornate*		40	
C10	Spectacled Cobra	*Naja naja*		40	
C11	Monocled Cobra	*Naja kaouthia*		40	
C12	Indian Wolf Snake	*Lycodon aulicus*		40	
C13	Asian Water Monitor	*Varanus salvator*		80	
C14	Yellow Monitor	*Varanus flavescens*		80	
C15	Desert Monitor	*Varanus griseus*		80	

Enclosure No.	Species Name	Scientific Name	Area (Sq.M.)		
			Paddock	Kraal	Night House
C16	Indian Chameleon	*Chamaeleo zeylanicus*		40	
C17	Tokay Gecko	*Gekko gecko*		40	
C18	**Turtle Pond**			110	
	Indian Flapshell Turtle	*Lissemys punctata*			
	Indian Softshell Turtle/Ganges Softshell Turtle	*Nilssonia gangetica*			
	Peacock Softshell Turtle	*Nilssonia hurum*			
	Indian Tent Turtle	*Pangshura tentoria*			
	Indian Roof Turtle	*Pangshura tecta*			
	Indian Eyed Turtle	*Morenia petersi*			
	Black Pond Turtle/Spotted Pond Turtle	*Geoclemys hamiltonii*			
	Indian Black Turtle	*Melanochelys trijuga*			
	Indian narrow-headed softshell Turtle	*Chitra indica*			
C19	**Tortoise House**			120	
	Indian Star Tortoise	*Geochelone elegans*			
	Travancore Tortoise	*Indotestudo travancorica*			
	Elongated/Yellow Tortoise	*Indotestudo elongate*			
	Asian Forest Tortoise	*Manouria emys*			
C20	Green Iguana	*Iguana iguana*		100	
C21	Yellow Anaconda	*Eunectes notaeus*		80	
C22	Green Anaconda	*Eunectes murinus*		80	
D	**BIRDS**				
D1	Pheasantry				
I	Indian Peafowl / White Peafowl	*Pavo cristatus*		160	
II	Red Jungle Fowl	*Gallus gallus*		80	
III	Grey Jungle Fowl	*Gallus sonneratii*		80	
IV	Kalij Pheasant	*Lophura leucomelanos*		80	
V	Golden Pheasant	*Chrysolophus pictus*		80	
VI	Lady Amherst's Pheasant	*Chrysolophus amherstiae*		80	

Enclosure No.	Species Name	Scientific Name	Area (Sq.M.)		
			Paddock	Kraal	Night House
D2	**Mixed Flying Birds Aviary-I**				
	Alexandrine Parakeet	*Psittacula eupatria*			
	Rose-ringed Parakeet	*Psittacula krameri*			
	Blossom-headed Parakeet	*Psittacula roseata*			
	Plum-headed Parakeet	*Psittacula cyanocephala*			
	Red breasted Parakeet	*Psittacula alexandri*			
	House Sparrow	*Passer domesticus*			
	Asian Pied Starling	*Gracupica contra*			
	Brahminy Starling	*Sturnia pagobarum*			
	Hill Myna	*Gracula religiosa*		310	
	Common Myna	*Acridotheres tristis*			
	Jungle Myna	*Acridotheres fuscus*			
	Indian Pied Myna	*Gracupica contra*			
	Scaly-breasted Munia	*Lonchura punctulata*			
	Tri-colour Munia Munia	*Lonchura Malacca*			
	White-rumped Munia	*Lonchura striata*			
	Black-headed/ Chestnut Munia	*Lonchura articapilla*			
	Red-whiskered Bulbul	*Pycnonotus jocosus*			
	Red-vented Bulbul	*Pycnonotus cafer*			
D3	**Mixed Flying Birds Aviary-II**				
	Tailor Bird	*Orthotomus sp.*			
	Purple Sunbird	*Cinnyris asiaticus*			
	Purple-rumped Sunbird	*Leptocoma zeylonica*			
	Common Babbler	*Purdoides caudate*			
	Common Kingfisher	*Alcedo atthis*			
	White-throated Kingfisher	*Halcyon smyrnensis*		500	
	Pied Kingfisher	*Ceryle rudis*			
	Stork-billed Kingfisher	*Pelargopsis capensis*			
	Ruddy Kingfisher	*Halcyon coromanda*			
	Black Drongo	*Dicrurus macrocercus*			
	Greater Racket-tailed Drongo	*Dicrurus paradiseus*			
	Blue-throated Barbet	*Megalaima asiatica*			

Enclosure No.	Species Name	Scientific Name	Area (Sq.M.)		
			Paddock	Kraal	Night House
	Lineated Barbet	*Megalaima lineata*			
	Coppersmith Barbet	*Megalaima haemacephala*			
	Asian Koel	*Eudynamys scolopaceus*			
	Greater Coucal	*Centropus sinensis*			
	Oriental Magpie Robin	*Copsychus saularis*			
	Baya Weaver	*Ploceus philippinus*			
	Black-rumped Flameback	*Dinopium benghalense*			
	Indian Roller	*Coracias benghalensis*			
	Red Avadavat	*Amandava amandava*			
	Paddy field Pipit	*Anthus rufulus*			
	Black headed Oriole	*Oriolus xanthormus*			
	Asian Green Bee eater	*Meropos orientalis*			
	Chestnut-headed Bee eater	*Merops leschenaulti*			
	Indian Paradise Flycatcher	*Terpsiphone paradisi*			
	Red-wattled Lapwing	*Vanellus indicus*			
	Yellow-wattled Lapwing	*Vanellus malabaricus*			
D4	Mixed Water Birds Aviary				
	Pond Heron	*Ardeola sp.*			
	Purple Heron	*Ardea purpurea*			
	Cattle Egret	*Bubulcus ibis*			
	Little Egret	*Egretta garzetta*			
	Intermediate Egret	*Ardea intermedia*			
	Spoonbill	*Platalea leucorodia*			
	Little Cormorant	*Mycrocarbo niger*			
	Oriental Darter	*Anhinga melanogaster*			
	Common Moorhen	*Gallinula chloropus*			
	Painted Stork	*Mycteria leucocephala*			
	Lesser Adjutant Stork	*Leptoptilos javanicus*			
	White-breasted Waterhen	*Amaurornis phoenicurus*			
	Black Headed Ibis	*Threskiornis melanocephalus*			
	Black Swan	*Cygnus atratus*			
	Mute Swan	*Cygnus olor*			

Enclosure No.	Species Name	Scientific Name	Area (Sq.M.)		
			Paddock	Kraal	Night House
D5	Greater Sulphur Crested Cockatoo	*Cacatua galerita*		80	
D6	Umbrella Cockatoo	*Cacatua alba*		80	
D7	Red-tailed Black Cockatoo	*Calyptorhynchus banksii*		80	
D8	Blue & Yellow Macaw	*Ara ararauna*		80	
D9	Scarlet Macaw	*Ara macao*		80	
D10	Red & Green Macaw	*Ara chloropterus*		80	
D11	Orange winged Amazon	*Amazona amazonica*		80	
D12	Grey Parrot	*Psittacus erithacus*		80	
D13	Eclectus Parrot	*Eclectus roratus*		80	
D14	Black-capped Lory	*Lorius lory*		80	
D15	Toco Toucan	*Ramphastos toco*		80	
E	**HERBIVORES**				
E1	Mixed Deer		2300	80	85
	Spotted Deer	*Axis axis*			
	Barking Deer	*Muntiacus muntjak*			
	Four-horned Antelope	*Tetracerus quadricornis*			
	Blackbuck	*Antilope cervicapra*			
E2	Grant's Zebra	*Equus quagga*	1940	130	80
E3	Northern Giraffe	*Giraffa camelopardalis*	2124	136	92
E4	Mouse Deer	*Tragulus kanchil*	110	30	27
F	**MARSUPIALS**				
F1	Koala	*Phascolarctos cinereus*	150		
F2	Eastern Grey Kangaroo	*Macropus giganteus*	500	60	40
G	**OMNIVORES**				
G1	Common Hippopotamus	*Hippopotamus amphibius*	1766	220	82
H	**FISHES (AQUARIUM)**				
H1	**Aquarium**		160		
	Sting Ray	*Telatrygon zugei*			
	Yoyo Loach	*Botia almorhae*			
	Kuhl's Maskray	*Neotrygon kuhlii*			
	Odessa Barb	*Pethia padamya*			
	Arulius Barb	*Dawkinsia arulius*			

Enclosure No.	Species Name	Scientific Name	Area (Sq.M.)		
			Paddock	Kraal	Night House
	Denison Barb	*Sahyadria denisonmi*			
	Golden Dwarf Barb	*Pethia gelius*			
	Honey Gourami	*Trichogaster chuna*			
	Dwarf Gourami	*Colisa lalia*			
	Frail Gourami	*Ctenops nobilis*			
	Blue Badis	*Badis badis*			
	Zebra Fish	*Danio rerio*			
	Assam Danio	*Devario assamensis*			
	Leopard Danio	*Danio rerio*			
	Malabar Danio	*Devario malabaricus*			
	Bengal Loach	*Botia dario*			
	Horseface loach	*Acantopsis dialuzona*			
	Zebra Loach	*Botia striata*			
	Blue Spotted Hill Trout	*Barilius bakeri*			
	Dwarf Pufferfish	*Carinotetraodon travancoricus*			
I	**OTHER FACILITIES**				
I1	Rescue cum Quarantine Center		735		
I2	CBC Yellow Monitor Lizard		100		
I3	CBC Painted Stork		245		
I4	CBC Lesser Adjutant Stork & Black headed Ibis		245		
I5	Hospital and Recovery		196		
I6	Vermicompost		186		
I7	Postmortem Room		50		
I8	Incinerator Room		60		
I9	Water Treatment Plant		42		
I10	Admin Block		345		
I11	Cafeteria		154		
I12	Souvenir Shop		10		
I13	Keepers' Area & Kitchen		239		
I14	Store & Visitors Toilet		136		
I15	Overhead Tanks		41		
I16	Nature Interpretation Centre (NIC)		50		

Carnivore Section

Bengal Tiger (*Panthera tigris*): Enclosure A1: An area of 1800 Sq.M. has been identified for the Tiger enclosure. The paddock including 1600 Sq.M. area, kraal including 120 Sq.M. area and night house with isolation facilities having 80 Sq.M. area have been planned to develop for the better upkeepment of the animal.

Area proposed for enclosure	Enrichment
1800 Sq.M.	Enrichment gives our animals the opportunity to engage mentally and physically, in a healthy and safe manner that encourages them to be the big cats that they were born to be, albeit in a captive situation. All tiger enclosures will be fitted with pools, allowing them to cool off or play when desired. Non-food or toy enrichments will be placed into enclosures, to encourage manipulation and playing while providing them with new and exciting smells and activities. The boomer balls and hessian rolls infused with their preferred spices or scents are good examples. Animal caretakers also will place scent trails within the enclosures. Hanging meat dispensers increases activity & foraging time. Logs and platforms will increase activity and playing behaviour. Food enrichment: • Yogurt containers can be used to make blood- cicles for the cats to lick in the heat. • Cantaloupe, coconut, apples in water bucket. • All Spice or just about any other cooking spice will "spice" up an old toy or cause the cat to rub all over a log of specific spot. • Pinecones, dipped in blood with meat chips smashed in are great amusement. • Pumpkins full of crickets. The crickets will hang out in the pumpkin for food and the tigers will have fun chasing them if they don't.

African Lion (*Panthera leo*): Enclosure A2: An area of 1810 Sq.M. has been identified for the African Lion enclosure. The paddock including 1620 Sq.M. area, kraal including 110 Sq.M. area and night house with isolation facilities having 80 Sq.M. area have been planned to develop for the better upkeepment of the animal.

Area proposed for enclosure	Enrichment
1810 Sq.M.	Enrichment will be accomplished by presenting novel food items (or presenting food in different ways), as well as novel objects and smells. The presentation of new items and scents will help relieve boredom and improve the overall welfare of the animals. All materials need to be biodegradable, digestible, and non-toxic and should not pose any threat to the animal. The large enclosures incorporate the natural landscape, providing their residents with opportunities to climb, roam, run and explore the different scents and textures that they may have encountered in the wild. Platforms and creation of temporary den inside the enclosure can be used as an alternate place to perch and feed. Logs inside the enclosure can increases their playing activity.

Primate Section

Common Marmoset (*Callithrix jacchus*): Enclosure B1: An area of 50 Sq.M. has been identified as Common Marmoset enclosure. The area will have an open space with trees and night shelter with isolation facilities for better captive care of the animal.

Golden-headed Lion Tamarin (*Leontopithecus chrysomelas*): Enclosure B2: An area of 50 Sq.M. has been identified as Golden-headed Lion Tamarin enclosure. This area will have an open space with ropes & branches and night shelter with isolation facilities for better captive care of the animal.

White-lipped Tamarin (*Saguinus labiatus*): Enclosure B3: An area of 50 Sq.M. has been identified as White-lipped Tamarin enclosure. The area will have an open space with ropes & branches and night shelter with isolation facilities for better captive care of the animal.

Tufted Capuchin Monkey (*Cebus apella*): Enclosure B4: An area of 50 Sq.M. has been identified as Tufted Capuchin Monkey enclosure. The area will have an open space with trees & branches and night shelter with isolation facilities for better captive care of the animal.

Red-tailed Monkey (*Cercopithecus ascanius*): Enclosure B5: An area of 620 Sq.M. has been identified as Red-tailed Monkey enclosure with paddock area 500 Sq.M., Kraal area 80 Sq.M. and Night house of 40 Sq.M. The area will have an open space with ropes & branches and night shelter with isolation facilities for better captive care of the animal.

Orangutan *(Pongo sp.)*: Enclosure B6: This great ape will be housed in an enclosure built up over an area of 1000 Sq.M. The area will have an open space enriched with various materials supporting their climbing and suspending nature. Besides, wooden logs, ladders, hammocks and platforms made with logs will be kept inside the paddock area. Night shelter with isolation facilities will be provided for their betterment.

Western Hoolock Gibbon (*Hoolock hoolock*): Enclosure B7: An area of 834 Sq.M. has been identified as Hoolock Gibbon enclosure having 700 Sq.M. paddock area, 50 Sq.M. Kraal area and 84 Sq.M. Night Shelter Area. The area will have an open space with ropes & branches and night shelter with isolation facilities for better captive care of the animal.

Area proposed for enclosure	Primates Enrichment	Species -typical behaviour targeted
	Feeding & manipulable enrichment	
50 Sq.M. outdoor enclosure (Common Marmoset, White-lipped Tamarin, Golden-headed Lion Tamarin, Tufted Capuchin Monkey) 620 Sq.M. enclosure (Red-tailed Monkey) 1000 Sq.M. enclosure (Orangutan) 834 Sq.M. enclosure (Western Hoolock Gibbon)	Arboreal foraging box (Cane baskets hung from trees, filled with green fodder, fruits)	Increases foraging time
	Browse balls (things such as horse balls, browse placed around the exhibit, such as green fodder, fruit and vegetable scatters)	Increases activity, conditioning enrichment behaviour and foraging time
	Aerial hanging ladder & ropes	Increases activity & elicit playful behaviour.
	Plantation of green fodder in enclosure for leaf eating monkeys	Promotes feeding capability by foraging
	Hanging feed dispenser	Increases activity, exploratory behaviour and foraging time
	Environment enrichment	
	Log with bark	augment play behaviour
	Wooden swings	Elicit behaviour such as scratching on the logs
	Temporary shed	Increases space use

Reptile Section

Snake House: Enclosure C3 to C12: Snakes shall be housed in a close, climate-controlled facility with each species being given area as per CZA requirement. Inside paddock enrichments shall be done as per the species' natural habitat. Water bodies will be created within the paddock area. There will be bush cover, vegetation, perches and hollow logs. Necessary control of humidity and temperature shall be provided. There will be an access to viewing of animals through toughened glass. The following species will be housed in this zone:

Reticulated Python (*Malayopython reticulatus*), Burmese Python (*Python bivittatus*), Indian Rock Python (*Python morulus*), Banded Krait (*Bungarus fasciatus),* Russell's Viper (*Daboia russelii),* Bamboo Pit Viper (*Trimeresurus stejnegeri),* Ornate Flying Snake (*Chrysopelea ornate*), Spectacled Cobra (*Naja naja*), Monocled Cobra (*Naja kaouthia*), Indian Wolf Snake (*Lycodon aulicus).*

Area proposed for enclosure	Remarks
Total Land allocation: 520 Sq.M.	The enclosures will be constructed to have adequate access to sunlight. Small waterbodies will be constructed. There will be ground cover as well as vegetation, perches and logs. For Pythons there will be rocky den-like structures. Misting will also be done in summer months and temperature will be controlled during the winter months.

Asian Water Monitor (*Varanus salvator*): Enclosure C13: An area of 80 Sq.M. will be developed as enclosure for the Water Monitor Lizard. The enclosure will have water body, feeding zone, basking zone, green zone and site for nesting of Water Monitor Lizard. It is proposed to house 2:2 individuals in the enclosure.

Bengal Monitor (*Varanus bengalensis*): Enclosure C22: An area of 80 Sq.M. has been identified to develop an enclosure for the Bengal Monitor Lizard. The enclosure will have water body, feeding zone, basking zone, green zone and site for nesting of Bengal Monitor Lizard. It is proposed to house 2:2 individuals in the enclosure.

Yellow Monitor (*Varanus flavescens*): Enclosure C14: An area of 80 Sq.M. will be developed as enclosure for the Yellow Monitor Lizard. The enclosure will have water body, feeding zone, basking zone, green zone and site for nesting of Yellow Monitor Lizard. It is proposed to house 4:8 individuals in the enclosure.

Desert Monitor (*Varanus griseus*): Enclosure C15: It is proposed to house Desert Monitor in 2:2 ratio at an enclosure of 80 Sq.M. area. The enclosure will be designed in such a way, so that it will have habitat alike sandy desert along with patches of grasslands. A small water body will be constructed and hollow logs will be provided.

Indian Chameleon (*Chamaeleo zeylanicus*): Enclosure C16: It is proposed to house 5:5 Indian Chameleon at an enclosure of 40 Sq.M area. The enclosure will be designed in such a way, that it will have the provision of enough sunlight and green vegetation cover.

Tokay Gecko *(Gekko gecko)*: Enclosure C17: An area of 40 Sq.M. will be developed as enclosure for the Tokay Gecko, that will be housing 5:5 individuals. The enclosure will have enough sunlight and green vegetation cover.

Turtle Pond: Enclosure C18: Different species of turtles will be kept in an enclosure of 110 Sq.M. A large water body will be developed within enclosure covering almost 60% area with inlet and outlet to maintain the water level, and small islands. The rest of the area will have sand and soft soil with mounds. Sand beds will be provided for egg laying and protection measures will be taken during the egg laying season. Besides, wooden planks will be placed in between the junction of land and waterbody. Several trees will be planted in the enclosure for providing enough shade. The species proposed for housing in this enclosure are as follows:

Indian Flapshell Turtle (*Lissemys punctata*), Indian Softshell Turtle/Ganges Softshell Turtle (*Nilssonia gangetica*), Peacock Softshell Turtle (*Nilssonia hurum*), Indian Tent Turtle (*Pangshura tentoria*), Indian Roof Turtle (*Pangshura tecta*),Indian Eyed Turtle (*Morenia petersi*), Black Pond Turtle/ Spotted Pond Turtle (*Geoclemys hamiltonii*), Indian Black turtle (*Melanochelys trijuga*), Indian narrow-headed softshell turtle (*Chitra indica*).

Tortoise House: Enclosure C19: An area of 120 Sq.M. has been identified for housing Tortoise. Species specific enrichment will be done, the ground will help them retain their natural behaviour like digging. In the paddock area, proper shade will be provided, small igloo shaped shelter will be constructed. The enclosure will be ensuring entrance of enough sunlight. A small water puddle will be built where they can soak themselves in water. As a part of dietary enrichment, a varied and colourful diet will be provided as well as different treats will be given time to time. Four Tortoise species are proposed to be housed in this enclosure namely, Indian Star Tortoise (*Geochelone elegans*), Travancore Tortoise (*Indotestudo travancorica*), Elongated/Yellow Tortoise (*Indotestudo elongate*) and Asian Forest Tortoise (*Manouria emys*).

Green Iguana (*Iguana iguana*): Enclosure C20: An area of 100 Sq.M. will be developed as enclosure for the Iguanas. The enclosure will have feeding zone, basking zone, green zone and site for their nesting. It is proposed to house 2:3 individuals in the enclosure.

Yellow Anaconda (*Eunectes notaeus*): Enclosure C21: It is proposed to house 2:2 Yellow Anaconda at an enclosure of 80 Sq.M. area. The enclosure will be designed in such a way, so that it will have appropriate habitat alike rocky area along with patches of grasslands. A small water body will be constructed and hollow logs and perches will be provided.

Green Anaconda (*Eunectes murinus*): Enclosure C22: It is proposed to house 2:2 Green Anaconda at an enclosure of 80 Sq.M area. The enclosure will be designed in such a way, that it will have rocky habitat along with grasslands patches. A small water body will be constructed and hollow logs and perches will be provided.

Aviary Section

Pheasantry: Enclosure D1

Total six enclosures will be constructed in this area of zoo. Six enclosures each having area of 80 Sq.M., will be housing species including Red Jungle Fowl, Grey Jungle Fowl, Kalij Pheasant, Golden Pheasant, and Lady Amherst Pheasant. For keeping Indian Peafowl/White Peafowl the enclosure area will be 160 Sq.M.

Area proposed for enclosure (Sq.M.)	Remarks
Indian Peafowl/ Indian Peafowl (White): 160 Sq.M. Red Jungle Fowl: 80 Sq.M. Grey Jungle Fowl: 80 Sq.M. Kalij Pheasant: 80 Sq.M. Golden Pheasant: 80 Sq.M. Lady Amherst's Pheasant: 80 Sq.M.	The minimum prescribed size of CZA for the outdoor enclosures will be followed as indicated in the table. Some area will be kept as a buffer and for future development. Each Aviary / Pheasantry will be a covered with wire mesh of size of 2 cm x 2 cm. The viewing will be through toughened glass of size of 3 mtr x 2 mtr. Enrichment: **1.** Perches of bamboo of varying diameter (2"-3") will be provided. **2.** Small size tree / bushes will be planted. **3.** Earthen pots or nest boxes will be kept. **4.** Nesting material will be provided. **5.** Each enclosure will be provided water body as prescribed by CZA. **Habitat Enrichment:** Tree branches can be used for perching. These ranged in height from six to eight feet, and also provided multiple levels of perching areas. These will be served as roosting grounds during the night inside the enclosure. Bamboo mats can be tied to the mesh partitions between enclosures to a height of four feet. These mats can be served as visual barriers among adjacently housed pheasants. Bamboo grasses can be planted inside the enclosure and along the side walls of the enclosure, intended to provide privacy and at the same time offer areas of concealment for the pheasants.

Area proposed for enclosure (Sq.M.)	Remarks
	Wooden platforms: Wooden platforms should be placed inside the enclosure at a height of about two feet from the ground. The platforms should be covered from the top and on the two sides and need to be positioned at the farther end of the enclosure, away from the viewing areas. These will be served as nesting sites and also to provide privacy to the pheasants. The platforms should be covered with straw, not hay (mould can grow on hay easily), which will serve as nesting material. Multiple platforms should be provided at various heights so that the birds get an opportunity to choose their preferred nesting site. **Dust bath:** Pheasants need dry sandy areas to dust bathe; an activity for feather maintenance that soaks up excess moisture and removes parasites that infest the feathers. Therefore a suitable dust bathing area needs to be provided. If the aviary floor is not covered with sharp sand, it is probably best to provide a sandy, dusty area in a spot which gets plenty of sun. It is best to ensure that the dusting area drains well and dries out quickly after rain. **Feeding enrichment:** Before establishing dietary enrichment for pheasants, our key goals were to improve bird activity, stimulate the use of greater cage space, and adjust their diet and feeding schedules to reflect natural conditions. The enclosure floor should be littered with leaf litter and food grains will be scattered about.

Flying Bird Aviary

Mixed Flying Bird Aviary I & II: Enclosure D2 &D3: It is proposed to develop two mixed flying bird aviary over the area of 310 Sq.M. and 500 Sq.M., solely for housing different flying bird of Indian origin within the additional land.

Mixed Flying Bird Aviary I will be housing the following species: Alexandrine Parakeet (*Psittacula eupatria*), Rose-ringed Parakeet (*Psittacula krameri*), Blossom-headed Parakeet (*Psittacula roseata*), Plum-headed Parakeet (*Psittacula cyanocephala*), Red brested Parakeet (*Psittacula alexandri*), House Sparrow (*Passer domesticus*), Asian Pied Starling (*Gracupica contra*), Brahminy Starling (*Sturnia pagobarum*), Hill Myna (*Gracula religiosa*), Common Myna (*Acridotheres tristis*), Jungle Myna (*Acridotheres fuscus*), Indian Pied Myna (*Gracupica contra*), Scaly-breasted Munia (*Lonchura punctulata*), Tri-colour Munia (*Lonchura Malacca*), White-rumped Munia (*Lonchura striata*), Black-headed/ Chestnut Munia (*Lonchura articapilla*), Red-whiskered Bulbul (*Pycnonotus jocosus*), Red-vented Bulbul (*Pycnonotus cafer*).

Mixed Flying Bird Aviary II will be housing the following species: Tailor Bird (*Orthotomus sp.*), Purple Sunbird (*Cinnyris asiaticus*), Purple-rumped Sunbird (*leptocoma zeylonica*), Common Babbler (*Purdoides caudate*), Common Kingfisher (*Alcedo atthis*), White-throated Kingfisher (*Halcyon smyrnensis*), Pied Kingfisher (*Ceryle rudis*), Stork-billed Kingfisher (*Pelargopsis capensis*), Ruddy Kingfisher (*Halcyon coromanda*), Black Drongo (*Dicrurus macrocercus*), Greater Racket-tailed Drongo (*Dicrurus paradiseus*), Blue-throated Barbet (*Megalaima asiatica*), Lineated Barbet (*Megalaima lineata*), Coppersmith barbet (*Megalaima haemacephala*), Asian Koel (*Eudynamys scolopaceus*), Greater Coucal (*Centropus sinensis*), Oriental Magpie Robin (*Copsychus saularis*), Baya Weaver (*Ploceus philippinus*), Black-rumped Flameback (*Dinopium benghalense*), Indian Roller (*Coracias benghalensis*), Red Avadavat (*Amandava amandava*), Paddy field Pipit (*Anthus rufulus*), Black headed oriole (*Oriolus xanthormus*), Asian Green Bee eater (*Meropos orientalis*), Chestnut-headed Bee eater (Merops leschenaulti), Indian Paradise Flycatcher (*Terpsiphone paradisi*), Red-wattled Lapwing (*Vanellus indicus*), Yellow-wattled Lapwing (*Vanellus malabaricus*).

Area proposed for enclosure (Sq.M.)	Enrichment Plan
310 Sq.M. 500 Sq.M.	The minimum prescribed size of CZA for the outdoor enclosures of Aviary will be followed as indicated in the table. Flying Bird Aviary will be covered with wire mesh of size of 2 cm x2 cm. Enrichment: **1.** Perches of bamboo of varying dia meter (2"-3") will be provided. **2.** Small size tree / bushes will be planted. **3.** Earthen pots or nest boxes will be kept. **4.** Nesting material will be provided. **5.** Each enclosure will be provided water body as prescribed by CZA. **Exhibit Enrichment:** Making perches of various heights, widths, lengths, shapes/textures/ materials and diameters for flighted birds is a smart way to start habitat enrichment. This can be done with potted plants and trees. Add safe components of their natural environment (sticks for perching, leaves). Change up their environment (move items in their cage a few times per week, add a new item). They can also be used to protect against the sun, bad weather. For dust bathing birds, a range of substrates such as sand, peat moss, or soil can be provided. Water is another key factor to consider. Birds that bathe in water can be accommodated with pools or small pans. Sprinklers can also be used in the display on a regular basis, or the birds can be misted by hand. Nest boxes, logs, mud flats, platforms, and burrows, as well as other nesting sites and features that can be included into the display, can encourage natural nest building and excavating behaviour. Building a nest or excavating a nest log takes time and experience, which might be crucial to successful reproduction. Before the breeding season begins, supply slightly damp wood shavings or mulch to allow the birds to practise their natural activity of preparing the log for nesting. **Dietary Enrichment:** It's simple to incorporate a bird's diet into its daily enrichment. For inspiration, one might just observe the bird's natural feeding tactics and behaviours. Birds will be able to demonstrate natural foraging behaviours if live prey such as insects, fish, lizards, and squid are provided. PVC slow-release feeders are an inexpensive and simple way to provide crickets and mealworms in an exhibit on a regular basis. Food items should be presented in a unique and fascinating way to enhance foraging. 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. A new study reported that the birds, like parrots, parakeets, and cockatoos, need to be mentally stimulated or they are likely to suffer from significant psychological problems. To encourage them to display their curious behaviors, novel items may 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.

Mix Water bird Aviary: Enclosure D4: The existing Water bird Aviary situated over an area of 435 Sq.M., that is presently housing Black Swan and Mute Swan only, will also house several native species of Water birds in future. The area enriched with a large water body, island, green covers, trees, parching spots, nesting facilities will be housing Pond Heron (*Ardeola sp.*), Purple Heron (*Ardea purpurea*), Cattle Egret (*Bubulcus ibis*), Little Egret (*Egretta garzetta*), Intermediate Egret (*Ardea intermedia*), Spoonbill (*Platalea leucorodia*), Little Cormorant (*Mycrocarbo niger*), Oriental Darter (*Anhinga melanogaster*), Common Moorhen (*Gallinula chloropus*), Painted Stork (*Mycteria leucocephala*), Lesser Adjutant Stork (*Leptoptilos javanicus*), White-breasted Waterhen (*Amaurornis phoenicurus*), Black Headed Ibis (*Threskiornis melanocephalus*).

Area proposed for enclosure	Enrichment
Land allocation: Water birds aviary- 435 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.

Toco Toucan *(Ramphastos toco)* Enclosure: Enclosure D15: There is a proposal to set up an enclosure for Toco Toucan (*Ramphastos toco*), covering an area of 80 Sq.M. This enclosure will be constructed beside the existing water bird aviary. There will be an artificial shade, green cover, fruit trees and branches and perches in the enclosure. Nest boxes will be placed at appropriate places.

Herbivore Section

Mixed Deer- Spotted Deer (*Axis axis*), Barking Deer (*Muntiacus muntjac*), Four-horned Antelope (*Tetracerus quadricornis*), Blackbuck (*Antilope cervicapra*):

Enclosure E1: An area of 2465 Sq.M. has been identified as mixed deer enclosure to house the existing Spotted Deer and Barking Deer. Along with that, Four-horned Antelope and Blackbuck will also be housed in justified numbers. The total area will be divided into Paddock area (2300 Sq.M.), Kraal area (80 Sq.M.) and Night house (85 Sq.M.). The area will have open space, escape zone, mud pond, green zone, night shelter with isolation facilities.

Area proposed for enclosure (Sq.M.)	Enrichment Plan
2465 Sq.M.	**i.** Groove of bushes will be provided. **ii.** Adequate poles/log to rub horns/ antlers and scratching will be fixed. **iii.** Salt lick blocks will also be kept. **iv.** Food will be provided in 2-3 places. **v.** Mud wallows to be provided **vi.** Natural tree as shade and grassland for grazing. **vii.** Variety of feeding sites at varying heights. **viii.** Objects securely suspended from high locations. **ix.** Mixed species for social stimulation.

For better management of the captive animal, the existing stock of the Deer will be relocated to the newly built enclosure which will be made in the additional land given by WBHIDCO.

Mouse Deer (*Tragulus kanchil*): Enclosure E4: An area of 167 Sq.M. has been identified as Mouse Deer enclosure. The area has open space, proper hiding areas, escape zone, natural water source, green zone, kraal, night shelter with isolation facilities for better captive care of the captive animal.

Area proposed for enclosure	Remarks
Total Land allocation: 167 Sq. M. (Paddock Area- 110 Sq. M., Kraal 30 Sq. M., Night Shelter 27 Sq. M.)	Enrichment: **1.** Groove of bushes will be provided. **2.** Hanging tree branches to increase exploratory foraging will be provided. **3.** Wallowing area alongwith water troughs will be provided. **4.** Adequate poles / logs to rub horns / antlers and scratching will be fixed. **5.** Salt lick blocks will also be kept. Food will be provided at 2-3 places.

Marsupial Section

Koala (*Phascolarctos cinereus*):

Enclosure F1: An area of 150 Sq.M. has been identified as Koala enclosure. The area will have an open space with trees & branches and night shelter with isolation facilities for better captive care of the animal. The paddock area will be having enough Eucalyptus trees and Bamboo trees.

Eastern Grey Kangaroo (Macropus giganteus):

Enclosure F2: An area of 600 Sq.M. has been identified as Eastern Grey Kangaroo enclosure. The area will have a paddock area of 500 Sq.M., Kraal of 60 Sq.M. and Night Shelter of 40 Sq.M. The paddock area will be spacious with enough grass cover with the provision of a small water body and a few shade trees.

Aquarium H1

A fresh water aquarium shall be set up in an area of 160 Sq.M. Regularly breeding species are also to be kept in the aquaria. Colourful tropical fish, different ornamental fishes are also to be kept as exhibits. For enriching the aquaria, specific natural ecosystem and micro climate will be stimulated. Plants added to water in the aquaria would give off enough oxygen to support animals.

The aquarium will have several species, such as, Sting Ray (*Telatrygon zugei*), Yoyo Loach (*Botia almorhae*), Kuhl's Maskray (*Neotrygon kuhlii*), Odessa Barb (*Pethia padamya*), Arulius Barb (*Dawkinsia arulius*), Denison Barb (*Sahyadria denisonmi*), Golden Dwarf Barb (*Pethia gelius*), Honey Gourami (*Trichogaster chuna*), Dwarf Gourami (*Colisa lalia*), Frail Gourami (*Ctenops nobilis*), Blue Badis (*Badis badis*), Zebra Fish (*Danio rerio*), Assam Danio (*Devario assamensis*), Leopard Danio (*Danio rerio*), Malabar Danio (*Devario malabaricus*), Bengal Loach (*Botia Dario*), Horseface loach (*Acantopsis dialuzona*), Zebra Loach (*Botia striata*), Blue Spotted Hill Trout (*Barilius bakeri*), Dwarf pufferfish (*Carinotetraodon travancoricus*).

4.3 STAFF REQUIREMENT FOR ANIMAL SECTION

The animal enclosures of the Zoo may be divided into the following 4 beats for effective care and upkeep of the captive animals. The proposed staff requirement of each of these beats is tabulated below:

Sl. No.	Enclosures	Keepers & attendants	Supervisors
1	Herbivore enclosures	Zoo keepers 2 nos. Animal attendants 3 nos.	Zoo Supervisor: 1 no. Assistant Zoo Supervisor: 1 no. Zoo Biologist: 1 no.
2	Carnivore enclosures	Zoo keepers 2 nos. Animal attendants 3 nos.	
3	Reptile enclosures	Zoo keeper 1 no. Animal attendants 2 nos.	
4	Aviary enclosures	Zoo keeper 1 no. Animal attendants 2 nos.	

- Zoo keepers (2 nos.) & Animal attendants (2 nos.) are presently engaged on contractual basis, under the overall supervision of the Zoo Supervisor.
- Engagement of the balance manpower of the Animal section ie. Zoo keepers (4 nos.) may be outsourced on contract basis.
- 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 & EQUIPMENT REQUIREMENT FOR ANIMAL SECTION

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

- 4 wheeler vehicle: 1 no.
- 2 wheeler vehicle: 2 nos.
- Squeeze cages (mobile): 5 nos.
- Animal transportation cages: 10 nos.
- Pressure pumps: 3 nos.
- One 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: 2 Keeper, 4 Attendant (sanctioned post- 4)

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 of Harinalaya in collaboration with different zoo in state of West Bengal.

Staff Requirement: Engagement of 10 more Zoo keepers and 11 more Animal attendants.

4.5.2 Store and feed supply Section

Staff strength: 0

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.

The Existing Kitchen cum store of the zoo has to be demolished and a new store cum kitchen is proposed to be constructed adjacent to the Night shelter of the Giraffe Enclosure.

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

- Store keeper: 2
- Store Attendant cum Cook: 3

Engagement may be outsourced on contract basis.

4.5.3 Sanitation & Drainage section

Staff strength: 1

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 must develop proper drainage system with the construction of each enclosure.

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

Sanitation Attendants: 3

Engagement may be outsourced on contractual basis.

4.5.4 Construction & maintenance section

Staff strength: 1 Sub Assistant Engineer (Consultant)

The existing arrangement of construction and maintenance section run by inviting open quotations & tenders from eligible contractors for construction & maintenance of civil, electrical and mechanical nature and

Currently, the engineering works are supervised by WBZA engineering team. Since the zoo is in developing stage and a number of construction works are underway, dedicated on-site engineering support is immediately required.

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

- 1 Sub-assistant engineer

4.5.5 Security Section

Staff strength: 1 Gate Keeper, 10 Security & Night Guard

1. More Security Guard shall be required as the zoo expands and more animals are acquired.
2. More Video – Surveillance system (CCTV Cameras) to be installed at important locations to improve the effectiveness of security system.
3. Regular training to the security personnel to be more accountable.
4. Rotation of security personnel to prevent familiarity for providing better security.
5. Updating equipment.

Staff requirement:

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

- Security Guard: for both day and night, more 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.

Two overhead tanks beside Admin Block each of 5,000 Litres storage capacity, two overhead tanks above public toilet each of 2,000 Litres storage capacity and two overhead tanks beside Cafeteria each of 2,000 Litres storage capacity already exist. Other Source of Water Supply at Harinalaya:

- NKDA Water Supply
- Well connection with 5 HM Pump

Another two overhead tanks beside Waste Treatment Plant each of 5,000 lit storage capacities is proposed to be constructed in the additional land to meet up the requirement in future. Also, more drinking water points for visitors needs to be installed preferably attached with the visitor's sitting arrangement.

Underground reservoir to be constructed to store rain water with the capacity of 200000 litre, under the service path and visitor's path in between existing Mixed Deer Enclosure (Proposed area for future provision) and proposed tiger Enclosure.

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 Zoo premises.

4.5.8 Garden Section

Staff Strength: 0

1. Presently it is being well managed. However, we need to increase the vegetation cover keeping the species of animals in mind.
2. The entire garden area will be redesigned with landscaping, to give it a fresh and new look.
3. Undulating large lawns shall be created with good quality grass.
4. The Garden would be enriched with greenery to support free living biodiversity.
5. 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.

Staff requirement: 1; Engagement may be outsourced on contractual basis.

4.5.9 Research and Study

Staff strength: 1 Zoo Biologist (Consultant), 1 Research Assistant

A number of research projects will be conducted 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.

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

- A study on Glucocorticoid expression and its association with behavioural syndromes in non-human primates housed in Harinalaya.
- Bacterial screening of faecal samples collected from different captive wild animals housed in Harinalaya.
- Study of behaviour of Animals housed in Harinalaya

Staff requirement: 1 Zoo Biologist

4.5.10 Transport and Communication

Staff strength: 1 Driver

Constraints in Transport and Communication

1. The major and immediate requirement is an ambulance 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.
3. Battery operated cars are required for physically challenged and aged visitors.

Staff requirement: 2 more Drivers are required

4.5.11 Visitor Facilities

1. More modernized toilets being 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 required, 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. More Visitor Shelter would be constructed.
6. A Public Relation Officer would be appointed to cater the needs of the visitors, get feed -back, receive suggestions and complaints and provide information to the visitors.

4.5.12 Disposal of Solid and Liquid Waste

The disposal of solid waste is done in coordination with the local Municipality. Vermi-composting unit has been developed at the park.

A waste management unit required to be set up for daily organic waste management.

4.5.13 Future provision for development

4.5.13.1 Rescue Center

A Rescue center (I1) of area 735 Sq.M. is proposed to be developed in the additional land in which three sections (245 Sq.M. each) will be constructed. One for housing Turtles and Tortoises, one for housing the rescued snakes and the other will be solely for other seized birds.

The Rescue center will have the capacity to house pheasants 3:6, 50 Turtles, 25 Tortoise, 15 Python, 15 Venomous Snake and 15 non-venomous Snake.

4.5.13.2 Nature Interpretation Centre

A Nature Interpretation Centre (I16) has been planned to develop over an area of 50 Sq.M. in future for public awareness.

4.5.13.3 Staff Barrack

In addition to the proposed staff quarters, more staff quarters require to be constructed in the extended land area ofthe zoo which is outside the main zoo premises.

4.5.13.4 Auditorium

If a suitable area is available in future extension of the zoo area, it is planned to construct an auditorium for the awareness and education programme.

4.5.13.5 Restaurant

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

4.5.13.6 Waste treatment plant

A small unit of waste management has been planned to set up in extended partof zoo.

4.5.13.7 Incinerator

An incinerator room (I8) will be set up in the extended part over an area of 60 Sq.M for managing the proper disposal of animal body after necropsy.

4.5.13.8 Souvenir Shop

A souvenir shop (I12) has been planned to open in the central location of the zoo near cafeteria over an area of 10 Sq. M. and the unit will be a theme-based shop.

4.5.13.9 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.

4.5.13.10 Cloak room

A cloak room has been planned to develop near exit gate for the convenience ofthe visitors.

4.5.13.11 Library

A library is being developed with resource materials, publication which will be accessible for the research work on captive management of zoo animals.

4.6 CONSTITUTION OF HEALTH ADVISORY COMMITTEE

As per the directives of the Central Zoo Authority, one Health Advisory Committee has been constituted (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

Staff strength: 1 Veterinary Officer (Consultant), 1 Veterinary Assistant

At present, the Veterinary section of the Zoo comprises of an animal treatment room, a post mortem room, and one quarantine enclosure each for Herbivores & Birds respectively. It is hereby proposed to expand and upgrade the existing animal treatment room to a well-equipped Veterinary Hospital and a recovery unit over an area of 196 Sq.M. in consonance with Recognition of Zoo Rules, 2009 with (amendment) Rules, 2013.

The proposed Veterinary hospital will have the following facilities:

- A separate operation theatre for surgery and treatment.
- Medical equipment and storage facilities will be developed
- in the Hospital of the Zoo.
- 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.
- Post mortem room will be well ventilated having post mortem platform with proper lights.

- 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.
- **Quarantine/isolation wards for Herbivores:** One Quarantine facility for Herbivores would be constructed near the Animal treatment room. The facility will have a feeding chamber/night shelter with top covered.
- **Quarantine/isolation wards for Carnivores:** One quarantine facility for Carnivores having three cubicles with squeeze facility will be constructed near the animal treatment Room, as depicted in the layout plan.
- **Quarantine/isolation wards for Birds:** One separate quarantine facility for Birds has been developed near the Animal treatment room. Presently this facility has an area of 50 Sq.M. and is being used for housing seized/ rescued birds of various species.

- **Marking and tagging:**

Species	Marking Plan
Royal Bengal Tiger (*Panthera tigris tigris*)	Radio transponders/ microchips
African Lion (*Panthera leo*)	Radio transponders/ microchips
Spotted Deer/Chital (*Axis axis*)	Use of dye by cotton ball for temporary marking/ Ear tagging/ Ear Notching
Barking Deer (*Muntiacus muntjak*)	Use of dye by cotton ball for temporary marking/ Ear tagging/ Ear Notching
Four-horned Antelope (*Tetracerus quadricornis*)	Use of dye by cotton ball for temporary marking/ Ear tagging/ Ear Notching
Blackbuck (Antilope cervicapra)	Use of dye by cotton ball for temporary marking/ Ear tagging/ Ear Notching
Mouse Deer (*Moschiola indica*)	Use of dye by cotton ball for temporary marking/ Ear tagging/ Ear Notching
Zebra Grant (*Equus quagga boehmi*)	Ear tagging/ Ear Notching
Northern Giraffe (*Giraffa camelopardalis*)	Ear tagging/ Ear Notching
Common Hippopotamus (*Hippopotamus amphibius*)	Ear tagging/ Ear Notching
Common Marmoset (*Callithrix jacchus*)	Ear tagging/ Ear Notching
Tufted Capuchin Monkey (*Cebus apella.*)	Ear tagging/ Ear Notching
White-lipped Tamarin (*Saguinus labiatus*)	Ear tagging/ Ear Notching
Golden-headed lion Tamarin (*Leontopithecus chrysomelas*)	Ear tagging/ Ear Notching
Red-tailed Monkey (*Cercopithecus ascanius*)	Ear tagging/ Ear Notching
Orangutan (*Pongo sp.*)	Ear tagging/ Ear Notching
Western Hoolock Gibbon (*Hoolock hoolock*)	Ear tagging/ Ear Notching
Koala (*Phascolarctos cinereus*)	Ear tagging/ Ear Notching
Eastern Grey Kangaroo (*Macropus giganteus*)	Ear tagging/ Ear Notching
Marsh (Mugger) Crocodile (*Crocodylus palustris*)	Shell Punching, Tail-scute notch and web punch
Saltwater Crocodile (*Crocodylus porosus*)	Shell Punching, Tail-scute notch and web punch
Asian Water Monitor (*Varanus salvator*)	Coloured Nail cap/Polish for temporary. PIT for permanent
Yellow Monitor (*Varanus flavescens*)	Coloured Nail cap/Polish for temporary. PIT for permanent
Desert Monitor (*Varanus griseus*)	Coloured Nail cap/Polish for temporary. PIT for permanent
Indian Rock Python (*Python molurus*)	Subcaudal Scale clipping/ PIT

Species	Marking Plan
Reticulated Python (*Malayopython reticulatus*)	Subcaudal Scale clipping/ PIT
Burmese Python (*Python bivittatus*)	Subcaudal Scale clipping/ PIT
Yellow Anaconda (*Eunectes notaeus*)	Subcaudal Scale clipping/ PIT
Green Anaconda (*Eunectes murinus*)	Subcaudal Scale clipping/ PIT
Indian Soft shell Turtle, Ganges Soft shell Turtle (*Nilssonia gangetica*)	Toe clipping/ Shell notching
Indian Flap shell Turtle (*Lissemys punctata punctata*)	Toe clipping/ Shell notching
Peacock Softshell Turtle (*Nilssonia hurum*)	Toe clipping/ Shell notching
Indian Star Tortoise (*Geochelone elegans*)	Toe clipping/ Shell notching
Indian Tent Turtle (*Pangshura tecta*)	Toe clipping/ Shell notching
Lady Amherst's Pheasant (*Chrysolophus amherstidae*)	Ring on one of the legs
Golden Pheasant (*Chrysolophus pictus*)	Ring on one of the legs
Kalij Pheasant (*Lophura leucomelanos*)	Ring on one of the legs
Grey Jungle Fowl (*Gallus sonneratii*)	Ring on one of the legs
Red Jungle fowl (*Gallus gallus*)	Ring on one of the legs
Indian Peafowl/ White Indian Peafowl (Pavo cristatus)	Ring on one of the legs
Rose ringed Parakeet (*Psittacula krameri*)	Ring on one of the legs
Alexandrine Parakeet (*Psittacula eupatria*)	Ring on one of the legs
Blossom headed Parakeet (*Psittacula roseata*)	Ring on one of the legs
Blue & Yellow Macaw (*Ara ararauna*)	Ring on one of the legs
Scarlet Macaw (*Ara macao*)	Ring on one of the legs
Red & Green Macaw (*Ara chloropterus*)	Ring on one of the legs
Grey Parrot, Jacquot (*Psittacus erithacus*)	Ring on one of the legs
Greater Sulphur-crested Cockatoo, Sulphur-crested Cockatoo (*Cacatua galerita eleonora*)	Ring on one of the legs
Red-tailed Black Cockatoo (Calyptorhynchus banksii)	Ring on one of the legs
Cockatoo White (*Cacatua alba*)	Ring on one of the legs
Toco Toucan (Ramphastos toco)	Ring on one of the legs
Asian openbill (*Anastomus oscitans*)	Bill-tag
Lesser Adjutant Stork (*Leptoptilos javanicus*)	Bill-tag
Painted Stork (*Mycteria leucocephala*)	Bill-tag
Black headed Ibis/Oriental White Ibis (*Threskiornis melanocephalus*)	Bill-tag
Spoonbill (*Platalea leucorodia*)	Bill-tag

Staff requirement: The proposed staff requirement of this section is as follows:

- Veterinary officer: 2
- Veterinary assistant: 1

Engagement of Veterinary Officer would be on regular basis. One Veterinary Assistant has already been engaged during last financial year and there is requirement of one more.

The duties & responsibilities of the Veterinary section is presented in section 2.12.1

Post Mortem Room and Incinerator: A post-mortem room of approx. 50 Sq.M. with adequate lighting will be constructed with all necessary equipment and proper drainage system in a remote corner of the Zoo with and Incinerator room (60 Sq.M.) near the Post-mortem room.

The whole area of the Post-mortem room and the Incinerator is separated from the Zoo area.

4.8 ZOO EDUCATION

As per the National Zoo Policy 1998, one of the main objectives of Zoos is 'to inspire among zoo visitors' empathy for wild animals, an understanding and awareness about the need for conservation of natural resources and for maintaining the ecological balance.'

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.

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.

Conservation Education Guidelines of Harinalaya 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. Harinalaya 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.

- 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 Activity Extension Activities

The Harinalaya 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 placed 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 is 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.

- 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.
- Harinalaya is in constant help of universities, colleges and non-governmental organisation to educate the students about the benefits of supporting nature conservation programmes.
- Harinalaya support environment friendly practices by declaring the zoo as Single Use Plastic Free Zone.
- **Zoo Website:** Visitors could get detailed information on the zoo from the website. Harinalaya 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 Harinalaya offers basic facilities like toilet, drinking water, green spaces to rest, Child care Centre etc. Harinalaya also provided enough dustbins so as to keep the area clean and hygienic.
- **Souvenir shop:** Common merchandize which is available in Harinalaya shop includes T-shirts, brochures, badges, folders, caps, greeting cards, soft toys, stickers, key chains etc with Harinalaya 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 Harinalaya 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 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:** Harinalaya will 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.
- **Animal birthdays:** This concept of celebrating animal birthdays and thus popularizing the zoo is coming up in Harinalaya.
- **Guided tours:** Request-based guided tour will be available in Harinalaya Zoo. 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 Harinalaya 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:** Harinalaya 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, Harinalaya 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.

Species Identified for CBP (2023-24 to 2028-29): The following species have been selected for conservation breeding program in the 20th Governing Board meeting of West Bengal Zoo Authority held on 06.08.2021.

1. Painted Stork (*Mycteria leucocephala*)
2. Lesser Adjutant Stork(*Leptoptilos javanicus*)
3. Black headed ibis (*Threskiornis melanocephalus*)
4. Yellow Monitor Lizard (*Varanus flavescens*)

The complete proposal will be developed after acquisition of the animal for Harinalaya.

Conservation breeding Programme of the Painted Stork

(*Mycteria leucocephala*) in Harinalaya

Identification of species- Painted Stork (*Mycteria leucocephala*).

Kingdom: Animalia

Phylum: Chordata

Class: Aves

Order: Ciconiformes

Family: Ciconiidae

Genus: Mycteria

Species: *Mycteria leucocephala*

1. **Identification of founders: will be done as per CZA guidelines:** The Painted stork (*Mycteria leucocephala*) is a large wading bird in the family ciconidae and listed as Near Threatened. Their distinctive pink tertial feathers of the adults give them their name. They forage in flocks in shallow waters along rivers or lakes. They immerse their half open beaks in water and sweep them from side to side and snap up their prey of small fish that are sensed by touch. This large stork has a heavy yellow beak with a down-curved tip that gives it a resemblance to an ibis. The head of the adult is bare and orange or reddish in colour. The long tertials are tipped in bright pink and at rest they extend over the back and rump. There is a distinctive black breast band with white scaly markings. The band continues into the under-wing coverts and the white tips of the black coverts give it the appearance of white stripes running across the under-wing lining. The rest of the body is whitish in adults. The legs are yellowish to red. The short tail is black with a green gloss. For a stork, it is medium-sized, standing about 93–102 cm (36.5–40 in) tall, 150–160 cm (59–63 in) in wingspan and weighing 2–3.5 kg (4.4–7.7 lb). Males and females appear alike but the males of a pair are usually larger than the female.

   Distribution and Habitat: It is found in the wetlands of the plains of tropical Asia south of the Himalayas in the Indian Subcontinent and extending into Southeast Asia. They are found south of the Himalayan ranges and are bounded on the west by the Indus River system where they are rare and extend eastwards into Southeast Asia. They are absent from very dry or desert regions, dense forests and the higher hill regions. They prefer freshwater wetlands in all seasons, but also use irrigation canals and crop fields, particularly flooded rice fields during the monsoon. They are resident in most regions but make seasonal movements. Breeding is always on large trees, usually in areas where nesting trees are secured over long periods of time, including in wetland reserves, along community-managed village ponds and lakes, inside villages, protected tree patches in urban locations such as zoos, and on islands in urban wetlands.

   Behaviour: The Painted stork (*Mycteria leucocephala*) is a large wader in the stork family. They forage mainly in the day but may forage late or even at night under exceptional conditions. Flock sizes in agricultural landscapes are mostly small (<5 birds) but reach flocks of over 50 birds. In such landscapes, flock sizes do not vary much between seasons, but densities are much higher in winter after chicks of the year have fledged from nests.

   Food Habits: Painted storks feed in groups in shallow wetlands, crop fields and irrigation canals. They feed mainly on small fish which they sense by touch while slowly sweeping their half open bill from side to side while it held submerged. They walk slowly and also disturb the water with their feet to flush fish. They also take frogs and the occasional snake.

   Reproduction: Painted storks breed on trees either in mixed colonies along with other water birds, or by themselves. The breeding season begins in the winter months shortly after the monsoons. In northern India, the breeding season begins in mid-August while in southern India the nest initiation begins around October and continues till February and or even until April. The typical clutch varies from one to five eggs with early breeders having larger clutches. The incubation period is about a month while the fledging period is nearly two months.

   Threats: The main threats to Painted storks include habitat loss and agricultural pollution, disturbance from human activities, hunting of adult birds, and collection of eggs and newly hatched chicks.

   Conservation Status: The IUCN Red list considering the species as Near Threatened (IUCN 3.1). The Painted Stork has been categorised as Schedule IV as per Indian wildlife protection, Act 1972, and includes in Appendix I of CITES.

Ecosystem Roles: The conservation of painted Storks is important because they plays a vital role in an ecosystem. As the primary food source, fish populations are likely impacted by the storks. Painted stork chicks and eggs are also food source for predators. (Luthin, 1987)

Captive breeding Programme: The International Studbook of the World Association of Zoos and Aquariums listed the Painted Stork Population housed in zoos around the World.

Like every year this year also, the Zoological Garden, Alipore, Kolkata, India is successful in increasing the number of Painted Stork and the present status is 33.

West Bengal Zoo Authority is in a process to build a Conservation Breeding Centre at Zoological Garden, Alipore.

2. **Approximate number of animals of the species in the wild:** There are about 20 species of long-necked large birds constituting the family Ciconiidae (order Ciconiiformes), related to the Storks, herons, flamingos, and ibises.

   25,000-35,000 individuals found in wild.

3. **Number of animals of the species in captivity in Indian Zoos.**

Sl. No.	Name of the Zoo	No. of Animals
1.	Arignar Anna Zoological Park,Tamilnadu	153
2.	Assam State Zoo cum Botanical Garden	2
3.	Bannerghatta Biological Park	4
5.	Dr. K. Shivarma Karanth Pilikula Biological Park	23
6.	Indira Gandhi Zoolgical Park	13
7.	Kamla Nehru Zoological Garden, Gujarat	4
8.	Nandankanan Biological Park	20
9.	Mahendra Chaudhury Zoological Park	109
10.	National Zoological Park, Delhi	77
11.	Nawab wazid Ali Shah Zoological Garden, Uttar Pradesh	34
12.	Nehru Zoological Park	9
13.	Sakkarbaug Zoo	10
14.	Sanjay Gandhi Biological Park	5
15.	Sri Chamarajendra Zoological Garden	9
16.	Sri Venkateswara Zoological Park	30
17.	Thiruvananthapuram Zoo	16
18.	Alipore Zoological Garden, Kolkata	28
19.	Children's Park	4
20.	Dr. Shyamaprasad Mukherjee Zoological Garden	4
21.	Indroda Nature Park	9
22.	Kamla Nehru Prani Sangrahalaya Zoo	10
23.	Kanan Pandari Zoo	2
24.	Nahargarh Biological Park	3
25.	Veermata Jijabai Bhonsale Udyan and Zoo	14
26.	Aurangabad Municipal Zoo	4
27.	Kurumbapatti Zoological Park	3
28.	Manda Deer Park, Kashmir	5
29.	Rohtak Zoo	5
30.	Sardar Patel Zoological Park	3
31.	Sarnath Deer Park	5

4. **Identification of coordinating Zoos**
5. **Identification of participating Zoos**
6. **Existence of animal enclosures in coordinating, participating and other Zoos.**

   Participating Zoo- Harinalaya: Off-display CBC will be constructed in an area of 245 Sq.M. on the additional land given by WBHIDCO. (MLP)

7. **Existence/ creation of off-display enclosure for conservation breeding in coordinating Zoo**

   Zoological Garden, Alipore, Kolkata.

8. **Identification of founders**
9. **Marking of founders (transponders, ear tags or rings)**

   Will be done after selection of founders.

10. **Preparation of animal history sheets and animal observation sheets of the identified founders by the Zoos**

    Will be prepared

11. **Compilation of Studbook by the National Studbook Keeper.**

    Will be complied after selection of founder couple.

12. **Liaison with the International Studbook Keeper of the species (if any)**

    Will be followed if required

13. **Possibility of acquiring the founders from foreign Zoos (if required) and details of the Zoos from where founders can be acquired**

    Will be followed if required

14. **Physical health check-up of the founders using the veterinary hospital in the Zoo as well as National Referral Centre (Indian Veterinary Research Institute, Bareilly)**

    Central Zoo Authority prescribed guidelines will be followed for health check-up of the founders.

    Physical heath check-up of the existing population used to done by veterinary officer of Zoological Garden, Alipore.

15. **Genetic health check-up of the founders using blood samples or body partswith help from LaCONES, Hyderabad.**

    Central Zoo Authority prescribed guidelines will be followed for genetic health check-up of the founders

16. **Engagement of Technical Assistant in the coordinating Zoo**

    Will be done

17. **Preparation of Conservation Breeding Management Plan (CBMP) of the species**

    Objectives

    i. Development of an ex-situ conservation facility for Painted Stork at Zoological Garden, Alipore, Kolkata
    ii. Monitoring and screening of captive –bred Painted Stork.
    iii. Sex determination of captive bred painted stork.
    iv. Population assessment, conservation status survey, awareness, and engagement of stakeholders for conservation of painted stork.

Duration of the project: 5 Years

Conservation breeding Programme of the Lesser Adjutant Stork

(Leptoptilos javanicus) in Harinalaya.

Identification of species- Lesser Adjutant Stork (*Leptoptilos javanicus*)

Kingdom: Animalia

Phylum: Chordata

Class: Aves

Order: Ciconiiformes

Family: Ciconiidae

Genus: Leptoptilos

Species: *Leptoptilos javanicus*

1. **Identification of founders: will be done as per CZA guidelines:** The lesser adjutant (*Leptoptilos javanicus*) is a large wading bird in the stork family Ciconiidae. A large stork with an upright stance, a bare head and neck without a pendant pouch, it has a length of 87–93 cm weighs from 4 to 5.71 kg and stands about 110–120 cm tall.) With a paler base and appears slightly trimmer and less hunch-backed. The skullcap is paler and the upper plumage is uniformly dark, appearing almost all black. The nearly naked head and neck have a few scattered hair-like feathers. The upper shank or tibia is grey rather than pink, the tarsus measures 22.5–26.8 cm. The belly and under tail are white. Juveniles are a duller version of the adult but have more feathers on the nape. During the breeding season, the face is reddish and the neck is orange. The larger median wing coverts are tipped with copper spots and the inner secondary coverts and tertials have narrow white edging. Like others in the genus, they retract their necks in flight. In flight, the folded neck can appear like the pouch of the greater adjutant. Males and females appear similar in plumage but males tend to be larger and heavier billed.

   Distribution and Habitat: The lesser adjutant is often found in large rivers and lakes inside well wooded regions, in freshwater wetlands in agricultural areas, and coastal wetlands including mudflats and mangroves. It is found in India, Nepal, Sri Lanka, Bangladesh, Myanmar, Thailand, Vietnam, Malaysia, Laos, Singapore. The largest population is in Cambodia. In India they

are mainly distributed in the eastern states of Assam, West Bengal and Bihar. It may occur as a vagrant on the southern edge of Bhutan. They are extremely rare in southern India.

Behaviour: They are largely silent but have been noted to clatter their bill, hiss, and moan at the nest. During one of the threat displays called the "Arching display" that is given in the presence of intruders, adults extend their neck and sometimes give a hoarse wail.

Food Habits: The lesser adjutant stalks around wetlands feeding mainly on fish, frogs, reptiles, large invertebrates, rodents, small mammals and rarely carrion.

Reproduction: Courtship behaviour of the lesser adjutant is identical to other species of the genus Leptoptilos. During pair formation, female birds lift their heads in a scooping motion with bill-clattering (called the "Balancing Posture"). They are solitary except during the breeding season when they form loose colonies, never exceeding 20 nests in a single colony. The breeding season is February to May in southern India and November to January in north-eastern India, beginning as early as July. The nest is a large platform of sticks placed on a tall tree. The nest diameter is more than a metre and up to a metre deep. The clutch consists of two to four white eggs that are rapidly soiled during incubation. Incubation period is 28–30 days.

Threats: Major threats includes haphazard urbanization, tree felling, hunting, habitat fragmentation, loss of nesting habitat, conversion and degradation of wetlands and agricultural changes (Karki and Thapa, 2013, Inskipp et. Al. 2016).

Conservation Status: The IUCN Red List has listed it as vulnerable. However, it has been categorised as Schedule IV as per Indian wildlife protection, Act 1972, and includes in Appendix I of CITES.

Ecosystem Roles: It helps cleaning environment.

Captive breeding Programme: The International Studbook of the World Association of Zoos and Aquariums listed the Lesser Adjutant Stork Population housed in zoos around the World.

Present status of Lesser Adjutant Stork is 3 at Zoological Garden, Alipore, Kolkata, India.

West Bengal Zoo Authority is in a process to build a Conservation Breeding Centre at Zoological Garden, Alipore.

2. **Approximate number of animals of the species in the wild:** There are about 20 species of long-necked large birds constituting the family Ciconiidae (order Ciconiiformes), related to the Storks, herons, flamingos, and ibises.

   Less than 1000 in world population.

3. **Number of animals of the species in captivity in Indian Zoos as per CZA Inventory, 2019-2020**

Sl. No.	Name of the Zoo	No. of Animals
1.	Sanjoy Gandhi Biological Park, Patna	1
2.	Arinagar Anna Zoological Park, Tamilnadu	2
3.	North Bengal Wild Animals Park, Siliguri	2
4.	Surulia Mini Zoo, Purulia	2
5.	Assam State Zoo cum Botanical Garden, Assam	6
6.	Nandankanan Biological Park	2
7.	Sri Chamarajendra Zoological Garden, Mysuru	2
8.	Junglemahal Zoological Park, Jhargram	1
9.	Kanan Pandari Zoo, Bilaspur, Chattisgarh	2
10.	Sepahijala Zoological Park, Agartala, Tripura	2

4. **Identification of coordinating Zoos**
5. **Identification of participating Zoos**
6. **Existence of animal enclosures in coordinating, participating and other Zoos.**

   Harinalaya. Off-display CBC will be constructed in the additional land given by WBHIDCO. (MLP)

7. **Existence/ creation of off-display enclosure for conservation breeding in coordinating Zoo**

   Zoological Garden, Alipore, Kolkata.

8. **Identification of founders**
9. **Marking of founders (transponders, ear tags or rings)**

   Will be done after selection of founders.

10. **Preparation of animal history sheets and animal observation sheets of the identified founders by the Zoos**

    will be prepared

11. **Compilation of Studbook by the National Studbook Keeper.**

    Will be complied after selection of founder couple.

12. **Liaison with the International Studbook Keeper of the species (if any)**

    Will be followed if required

13. **Possibility of acquiring the founders from foreign Zoos (if required) and details of the Zoos from where founders can be acquired**

    Will be followed if required

14. **Physical health check-up of the founders using the veterinary hospital in the Zoo as well as National Referral Centre (Indian Veterinary Research Institute, Bareilly)**

    Central Zoo Authority prescribed guidelines will be followed for health check-up of the founders.Physical heath check-up of the existing population used to done by veterinary officer of Zoological Garden, Alipore.

15. **Genetic health check-up of the founders using blood samples or body parts with help from LaCONES, Hyderabad.**

    Central Zoo Authority prescribed guidelines will be followed for genetic health check-up of the founders

16. **Engagement of Technical Assistant in the coordinating Zoo**

    Will be done

17. **Preparation of Conservation Breeding Management Plan (CBMP) of the species**

    Objectives

    i. Developement of an ex-situ conservation facility for Lesser Adjutant Stork at Zoological Garden, Alipore, Kolkata

    ii. Monitoring and screening of captive –bred Lesser Adjutant Stork.

    iii. Sex determination of captive bred Lesser Adjutant stork.

    iv. Population assessment, conservation status survey, awareness and engagement of stakeholders for conservation of Lesser Adjutant stork.

Duration of the project: 3 yrs.

Conservation breeding Programme of the Black headed ibis

(*Threskiornis melanocephalus*) in Harinalaya.

Identification of species- Black headed ibis (*Threskiornis melanocephalus*)

Kingdom: Animalia

Phylum: Chordata

Class: Aves

Order: Pelecaniformes

Family: Threskiornithidae

Genus: Threskiornis

Species: *Threskiornis melanocephalus*

1. **Identification of founders:** will be done as per CZA guidelines

   The black-headed ibis (*Threskiornis melanocephalus*), also known as the Oriental white ibis, Indian white ibis, and black-necked ibis, is a species of wading bird of the ibis family Threskiornithidae. The black-headed ibis is one of several large water bird species in south and south-east Asia, with adults measuring 65–76 cm in length. The white plumage is starkly contrasted against a conspicuous naked black neck and head, and black down-curved beak. Tails of adults bear light grey ornamental feathers that turn jet black during the breeding season.

   Distribution and Habitat: Black-headed ibis are native to the following countries: Bangladesh, Cambodia, China, Hong Kong, India, Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Russian Federation, Sri Lanka, Thailand and Vietnam. They are migratory in Japan, Republic of Korea, Lao People's Democratic Republic and Mongolia. The species is a widespread breeding bird in India, Sri Lanka, Nepal and Myanmar. The black-headed ibis is very versatile being able to use a large variety of natural and man-made habitats. These include freshwater and salt-water marshes, lakes and ponds, as also rice fields, freshly ploughed crop fields, irrigation canals, riversides, reservoirs, urban lakes, open sewage gutters, grazing lots, and garbage dumping sites. Ibis alter use of varied preferred foraging habitats by season in agricultural landscapes such as in south-western Uttar Pradesh in India.

In summer, they largely use and prefer natural marshes and fallow fields, but in the monsoon, spread out more evenly to also use a variety of agricultural fields. In landscapes that have more forests and rocky hills as in southern Rajasthan, wetlands are the preferred habitats year-round. Open sewage lines are used more during the dry summers, and ibis increase the use of grazing lands during the monsoon.

Behaviour: The black-headed ibis is a social species, feeding and nesting in groups. It nests in heronry colonies near wetlands. It is usually a silent bird, but when males and females are courting they are known for their loud booming calls and low grunting. It builds a platform nest of sticks, lined with grass and threads.

Food Habits: They feed on fish, frogs, tadpoles, snails, insects and worms.

Reproduction: This species of ibis nests only during the rainy season. During the breeding season, bare patches under the wing turn blood-red. The head of some breeding adults gain a bluish tinge, or very rarely have a pink or bright red patch behind the neck. Some breeding adults also develop tufts of white feathers behind the neck, and rarely also get a yellowish colouration on the breast and back. Sexes are identical but juveniles are identifiable from adults in having greyish feathering on the neck and speckled brown-grey feathering on the wings and back. After an incubation period of 23–25 days, they usually lay 2-4 eggs.

Threats: It faces the full gambit of threats, from hunting and disturbance at breeding colonies to drainage and conversion of foraging habitats to agriculture.

Conservation Status: The IUCN Red list has listed it as a species of near threatened and has been categorised as Schedule IV as per Indian wildlife protection, Act 1972.

Ecosystem Roles: The Black headed Ibis symbolized the danger of an approaching storm, and also the safety after the maelstrom passed.

Captive breeding Programme; The International Studbook of the World Association of Zoos and Aquariums listed the Black headed Ibis Population housed in zoos around the World.

Present status of Black headed Ibis is 5 at Zoological Garden, Alipore, Kolkata, India.

West Bengal Zoo Authority is in a process to build a Conservation Breeding Centre at Zoological Garden, Alipore.

3. **Approximate number of animals of the species in the wild:**

   10,000 individuals in South East Asia.

4. **Number of animals of the species in captivity in Indian Zoos as per CZA Inventory, 2019-2020**

Sl. No.	Name of the Zoo	No. of Animals
1.	Sri Chamarajendra Zoological Garden, Karnataka	20
2.	Indira Gandhi Zoological Park, Andhra Pradesh	2
3.	National Zoological Park, Delhi	13
4.	Nawab Wazid Ali Shah Zoological Garden, Uttarpradesh	16
5.	Zoological Garden, Alipore	5
6.	Kamla Nehru Zoological Park, Ahmedabad, Gujarat	35
7.	Mahendra Chaudhury Zoological Park, Chandigarh, Punjab	6
8.	Nanadankanan Biological Park	169
9.	Nehru Zoological Park, Hyderabad	75
10.	Sakkarbaug Zoo, Junagarh, Gujarat	5
11.	Sri venkateswara Zoological Park, Andhra Pradesh	59
12.	Thiruvananthapuram Zoo, Kerala	42
13.	Alipore Zoological Garden, Kolkata	5
14.	Bhagwan Birsa Biological Park, Jharkhand	3
15.	Children's Park, Tamil Nadu	7
16.	Dr. Shyamaprasad Mukherjee Zoological Garden, Gujarat	7
17.	Indrora Nature Park, Gujarat	4
18.	Kamla Nehru Prani Sangrahalaya Zoo, Madhya Pradesh	7
19.	Nahargarh Biological Park, Jaipur	1
20.	Rajkot Municipal Zoo, Gujarat	8

Sl. No.	Name of the Zoo	No. of Animals
21.	Sayaji Baug Zoo, Gujarat	6
22.	Sepahijala Zoological Park, Tripura	1
23.	Tata Steel Zoological Park, Jharkhand	2
24.	Veermata Jijabai Bhonsale Udyan and Zoo, Maharashtra	1
25.	Marble Palace Zoo	2
26.	Rohtak Zoo, Haryana	9
27.	Arignar Anna Zoological Park, Tamil Nadu	26
28.	Assam State Zoo cum Botanical Garden	6
29.	Bannerghatta Biological Park, Karnataka	7
30.	Dr. K. Shivarma Karanth Pililkula Biological Park	14
31.	Sardar Patel Zoological Park	3

4. **Identification of coordinating Zoos**
5. **Identification of participating Zoos**
6. **Existence of animal enclosures in coordinating, participating and other Zoos.**

   Harinalaya. Off-display CBC will be constructed in the additional land given by WBHIDCO. (MLP)
7. **Existence/ creation of off-display enclosure for conservation breeding in coordinating Zoo**

   Zoological Garden, Alipore, Kolkata.
8. **Identification of founders**
9. **Marking of founders (transponders, ear tags or rings)**

   will be done after selection of founders.
10. **Preparation of animal history sheets and animal observation sheets of the identified founders by the Zoos**

    will be prepared.
11. **Compilation of Studbook by the National Studbook Keeper.**

    Will be complied after selection of founder couple.
12. **Liaison with the International Studbook Keeper of the species (if any)**

    Will be followed if required.
13. **Possibility of acquiring the founders from foreign Zoos (if required) and details of the Zoos from where founders can be acquired**

    Will be followed if required
14. **Physical health check-up of the founders using the veterinary hospital in the Zoo as well as National Referral Centre (Indian Veterinary Research Institute, Bareilly)**

    Central Zoo Authority prescribed guidelines will be followed for health check-up of the founders. Physical heath check-up of the existing population used to done by veterinary officers of Zoological Garden, Alipore.
15. **Genetic health check-up of the founders using blood samples or body parts with help from LaCONES, Hyderabad.**

    Central Zoo Authority prescribed guidelines will be followed for genetic health check-up of the founders
16. **Engagement of Technical Assistant in the coordinating Zoo**

    Will be done
17. **Preparation of Conservation Breeding Management Plan (CBMP) of the species**

    Objectives

    i. Developement of an ex-situ conservation facility for Black Headed Ibis at Zoological Garden, Alipore, Kolkata
    ii. Monitoring and screening of captive –bred Black Headed Ibis.
    iii. Sex determination of captive bred Black Headed Ibis.
    iv. Population assessment, conservation status survey, awareness and engagement of stakeholders for conservation of Black Headed Ibis.

    Duration of the project: 3 yrs.

Conservation breeding Programme of the Yellow Monitor Lizard

(*Varanus flavescens*) in **Harinalaya**

Identification of species: Yellow Monitor Lizard (*Varanus flavescens*) (Hardwicke & Gray, 1827)

Kingdom: Animalia

Phylum: Chordata

Class: Reptilia

Order: Squamata

Family: Varanidae

Genus: Varanus

Species: *Varanus flavescens*

1. **Identification of founders:** will be done as per CZA guidelines

   The yellow monitor is a medium-sized monitor, measuring from snout to vent between 45 cm and 95 cm including the tail and weighing up to 1450 gm. It has subcorneal teeth, scarcely compressed. Its snout is short and convex, measuring a little less than the distance from the anterior border of the orbit to the anterior border of the ear; canthus rostralis distinct. Its nostril an oblique slit, a little nearer to the end of the snout than to the orbit. Digits short, the length of the fourth toe, measured from its articulation with the tarsus to the base of the claw, not exceeding the length of the femur. The tail of the yellow monitor feebly compressed, keeled above. Scales of head small, subequal; the median series of supraocular scales slightly dilated transversely. Scales on upper surfaces moderate, oval, keeled. Abdominal scales smooth, in 65 to 75 transverse rows. Caudal scales keeled; the caudal keel with a very low, doubly toothed crest. Olive or yellowish brown above, with irregular darker markings which are generally confluent into broad cross bars; a blackish temporal streak; lower surfaces yellowish, with rather indistinct brown cross bars, which are most distinct on the throat. Young dark brown above, with yellow spots confluent into crossbars; lower surface yellow, with dark brown cross bars.

   Distribution and Habitat: The yellow monitor (*Varanus flavescens*) or golden monitor is a monitor lizard native to South Asia.

   They Prefers wet areas, edge of the forest and near to human settlements.

   Behaviour: It is a carnivorous lizard, and less adapted to climb on trees due to its short hind toes. They separate the habitat with sympatric Varanus bengalensis, as former prefers wet areas with high ground cover and later prefers the areas with large trees.

   Food Habits: They are carnivorous, feeds on fish, frog, rodents, birds, crabs.

   Reproduction: Monitor lizards are oviparous, laying eggs from 7 to 37, which they often cover with soil or protect in a hollow tree stump. Some monitor lizards, including the Komodo dragon, are capable of parthenogenesis.

   Threats: Yellow Monitor lizards are also threatened by large-scale habitat degradation due to urbanisation and rapid expansion of agricultural lands, pollution, overfishing, and infringement of forests and water bodies.

   Conservation Status: The IUCN Red List has listed it as Endangered. However, it has been categorised as Schedule I as per Indian wildlife protection, Act 1972, and includes in Appendix I of CITES.

   Ecosystem Roles: Monitor Lizard are important components of the food webs in most ecosystems. They fill a critical role both as predator and prey species.

   They loosen the soil, which not only create warm and moist conditions for the eggs, but also create conditions that a variety of other animals take advantage of, including reptiles, frogs, induces and marsupials.

   Captive breeding Programme: The International Studbook of the World Association of Zoos and Aquariums listed the Yellow Monitor Lizard Population housed in zoos around the World.

   Present status of Yellow Monitor Lizard is 1 at Zoological Garden, Alipore, Kolkata, India.

   West Bengal Zoo Authority is in a process to build a Conservation Breeding Centre at Zoological Garden, Alipore.

2. **Approximate number of animals of the species in the wild:** Searched but not found.

3. **Number of animals of the species in captivity in Indian Zoos.**

   As per CZA Inventory report, 2019-2020

Sl. No.	Name of the Zoo	No. of Animal
1.	Mahendra Chaudhury Zoological Park, Punjab	1
2.	Zoological Garden, Alipore	1

6. **Existence of animal enclosures in coordinating, participating and other Zoos.**

   Harinalaya: Off-display CBC will be constructed in the additional land given by WBHIDCO. (MLP)

7. **Existence/ creation of off-display enclosure for conservation breeding in coordinating Zoo**

   Zoological garden, Alipore, Kolkata.

8. **Identification of founders**

9. **Marking of founders (transponders, ear tags or rings)**

   will be done after selection of founders.

10. **Preparation of animal history sheets and animal observation sheets of the identified founders by the Zoos**

    will be prepared.

11. **Compilation of Studbook by the National Studbook Keeper.**

    Will be complied after selection of founder couple.

12. **Liaison with the International Studbook Keeper of the species (if any)**

    Will be followed if required.

13. **Possibility of acquiring the founders from foreign Zoos (if required) and details of the Zoos from where founders can be acquired**

    Will be followed if required

14. **Physical health check-up of the founders using the veterinary hospital in the Zoo as well as National Referral Centre (Indian Veterinary Research Institute, Bareilly)**

    Central Zoo Authority prescribed guidelines will be followed for health check-up of the founders. Physical health check-up of the existing population used to be done by veterinary officer of Zoological Garden, Alipore.

15. **Genetic health check-up of the founders using blood samples or body parts with help from LaCONES, Hyderabad.**

    Central Zoo Authority prescribed guidelines will be followed for genetic health check-up of the founders

16. **Engagement of Technical Assistant in the coordinating Zoo**

    Will be done

17. **Preparation of Conservation Breeding Management Plan (CBMP) of the species**

    Objectives

    i. Developement of an ex-situ conservation facility for Yellow Monitor Lizard at Zoological Garden, Alipore, Kolkata

    ii. Monitoring and screening of captive –bred Yellow Monitor Lizard.

    iii. Sex determination of captive bred Yellow Monitor Lizard.

    iv. Population assessment, conservation status survey, awareness and engagement of stakeholders for conservation of Yellow Monitor Lizard.

Duration of the project: 5 yrs.

PERSONNEL PLANNING

CHAPTER – 5

5.1 THE ZOO PERSONNEL

The Harinalaya is headed by the Deputy Conservator of Forests, Urban recreation Forestry Division, Directorate of Forests, Govt of West Bengal as Ex- officio Director.

In the formative years of the zoo, mostly casual workers were engaged. All of them have acquired required skill over the years based upon their experience and long association with permanent staff and experts in these fields. 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 staffs are being given specific job based upon their ability, attitude, and interest. They are to be given newer assignment to break the monotony after certain period. Many of them have developed specialized skills and expertise in certain fields for which they have to be retained for longer periods.

5.2 STAFF RECRUITMENT

There is large scale 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

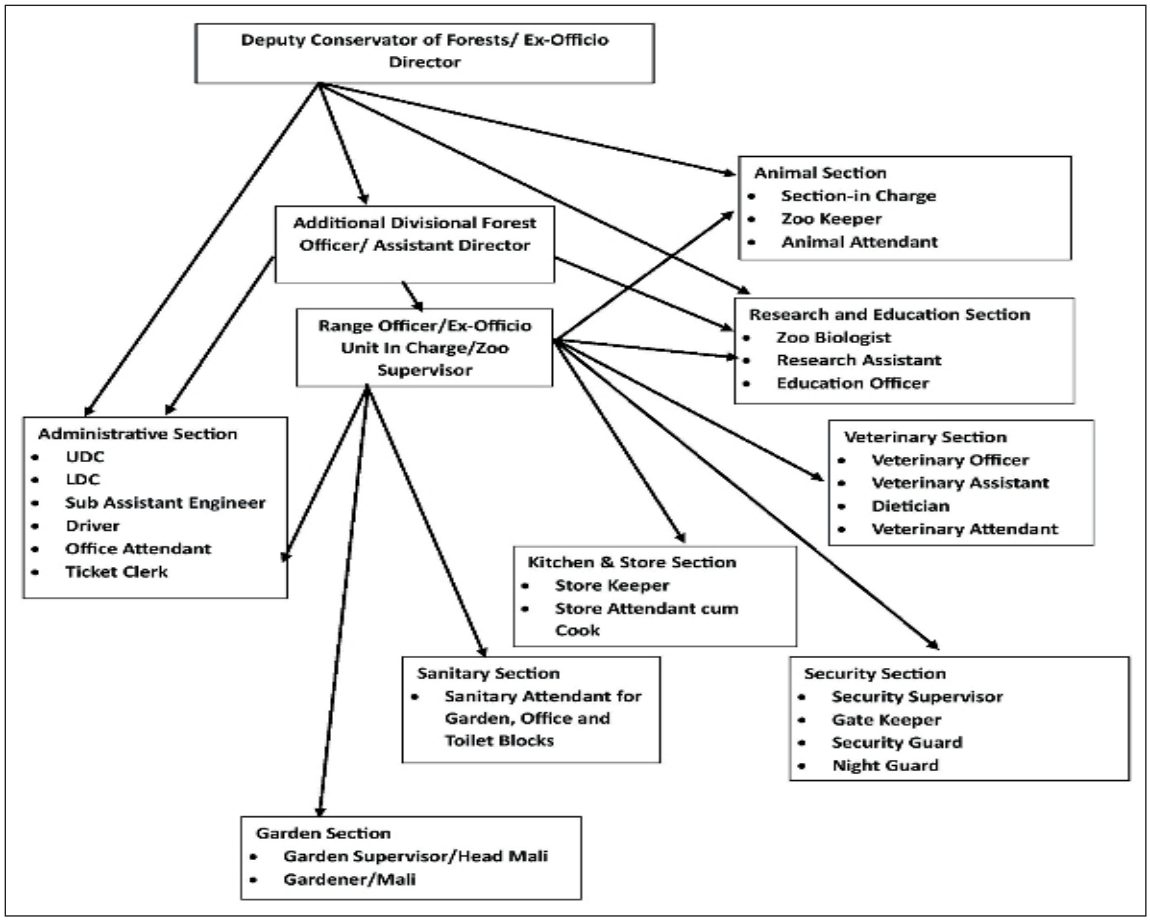
In the present condition it is better to execute certain works by outsourcing to service providers, private agencies or even credible NGOs who have desired expertise, skill and trained manpower. This would enhance the capability of the management and would reduce botheration in terms of time and effort. 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 PERSONNEL PLANNING OF HARINALAYA

Section	Name of the Post	Post Sanctioned	Post Filled-up	Proposed
Administrative Section	Director	1	1 (Ex-Officio)	1
	Assistant Director	1	1 (Ex-Officio)	1
	Range Officer/Unit In-Charge	-	1 (Ex-Officio)	1
	Zoo Supervisor	1	1	2
	Asst. Zoo Supervisor	1	-	3
	Lower Division Clerk	1	1	4
	Ticket Clerk	1	1	6
	Office Attendant	1	1	3
	Driver	1	1	3

Section	Name of the Post	Post Sanctioned	Post Filled-up	Proposed
Research & Education Section	Zoo biologist	-	1 (Consultant)	1
	Research Assistant	1	1	2
Construction and maintenance section	Sub-Assistant Engineer	-	1 (Consultant)	2
Animal Section	Animal Supervisor/Section In charge	-	-	1
	Zoo Keeper	2	2	12
	Animal Attendant	4	4	15
Kitchen & Store Section	Store Keeper	-	-	2
	Store Attendant cum Cook	-	-	3
Veterinary Section	Veterinary Officer	-	1 (Consultant)	2
	Veterinary Assistant	1	1	2
Sanitary Section	Sanitation Attendant	1	1	4
Garden Section	Garden Attendant	-	-	1
Security Section	Gate Keeper	1	1	9
	Security and Night Guard	7	10	30

Proposed staffing pattern and interaction planning



DISASTER MANAGEMENT

CHAPTER – 6

Harinalaya, by its geographical and climatological features is vulnerable to fire, flood, cyclone etc. The anticipated man-made disaster includes fire incidence, civil disturbance etc.

In order to enhance the capability of the staffs, Disaster management mock drill has been started in the Harinalaya. Screening has been adjoining enclosures by way of plantations. All staffs involved with upkeep and healthcare of zoo animals undergo screening against zoonotic diseases once every year.

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. 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

Harinalaya was vulnerable to water logging during heavy rainfall in monsoon as the 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. 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

Harinalaya is vulnerable to cyclonic storms as seen during super cyclone Aila, Amphan, Yaash etc. To combat the situation in the aftermath of cyclone, the zoo 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°C - 42°C. 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 thatching, 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 needs to be ensured well ahead of onset of summer special seasonal foods are also proposed to be provided to animals to reduce dehydration during summer months.

6.7 Cold wave

The minimum temperature in the area falls around 100C in month of January. To mitigate cold waves during winter months, winter arrangements need to be proposed to procure in Harinalaya. This includes providing protective netlon 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 OTHER ZOO

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 event of 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 Harinalaya, emergency procedure training is being 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 PowerPoint 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.

    Snowstorms, 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

CONTINGENCY PLAN

CHAPTER – 7

7.1 ANIMAL RESCUED FROM WILD

Harinalaya presently has temporary facility treatment centre for wild injured and orphaned animals. 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 Harinalaya 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 atleast 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 waterbodies 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

Harinalaya 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 keeper 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 antivenom injections need to be procure 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

Harinalaya 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 is 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, Haemoragic septicemia, 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, 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.

CAPACITY BUILDING

CHAPTER – 8

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

It is proposed to organize regular training sessions with experienced people for the staff. 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 authorized 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 Harinalaya. The training modules include animal care, education & outreach, veterinary expertise, management etc.

8.4 ENCOURAGE SPECIALIZATIONS

The Harinalaya 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 Harinalaya 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 encash 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, Biologist, Veterinary Officers attend specialized training courses so as to gain up to date knowledge on the relevant field conducted by various organisations.

8.8 PLAN TO UPGRADE SKILLS OF ZOO STAFF

Regular trainings and workshops are planned for staff to upgrade their skill in various aspect of zoo management, animal handling and relevant matters. The staff participate in trainings conducted by other zoos as well.

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. The zoo constantly endeavours to share and exchange knowledge and expertise with other zoos.

E-GOVERNANCE

CHAPTER – 9

Application of information and communication technology for gathering, recording and exchange of information and interaction with other zoos and organizations, maintenance of records and data in digital format would help the zoo to achieve its mission.

Harinalaya has planned use of significant advances in Information Technology sector and to computerize in all aspects to make fast, accurate and paperless office and to store the required data for better management.

9.1 GIS MAPPING

Using the GPS and satellite imagery the following maps will be prepare for Harinalaya:

- Location and access of Harinalaya
- Green zone and fodder zone and vegetation type by density
- Classes Map of existing waterholes in Harinalaya Administrative map showing blocks, compartments and sections
- Enclosures, visitor pathways, other attractions in the zoo
- Management plan showing proposed facilities in Harinalaya

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

Harinalaya 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. Harinalaya 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 are 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

Harinalaya 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

Harinalaya has a plan to introduce the Point of Sales facilities for facilitating the visitors to use their VISA card, Master Card, UPI via QR scanner for payment of entrance fee / donations/ sponsoring towards animal adoption scheme and other official remittances to the zoo through the website.

9.9 ELECTRONIC TRANSFER OF THE AMOUNT

Harinalaya 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 three 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

Harinalaya 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.

Harinalaya will acquire an 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. With chemicals management software, updating of all information will be done daily.
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 a 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, shared only through dedicated software and application system.

BUDGET

CHAPTER – 10

10.1 BROAD BUDGET ANALYSIS FOR IMPLEMENTING THE PLAN

The plan period of the Master Plan of Harinalaya is for 20 years starting from 2023-24 to 2043-44. The zoo expected a recorded highest foot falls i.e. 1-1.5 million per year. 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 biogeographical realms. At present zoo does not have separate Rescue and Rehabilitation Centre. As per suggestions of the experts, it is also proposed to develop a rescue, rehabilitation and captive breeding centre. Considering the above, the budget required is derived based on the current prices.

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.	Bengal Tiger Enclosure	**1,00,00,000**
2.	African Lion Enclosure	**1,00,00,000**
3.	Primate Enclosure (7 nos.)	**2,00,00,000**
4.	Snake House	**65,00,000**
5.	Reptile zone (Green Iguana, Indian Chameleon, Tokay Gecko, Monitor Lizards)	**83,00,000**
6.	Anaconda Enclosure	**40,00,000**
7.	Turtle Pond	**45,00,000**
8.	Tortoise House	**40,00,000**
9.	Pheasantry	**40,00,000**
10.	Mixed Flying Birds Aviaries (2 nos.)	**80,00,000**
11.	Mixed Water Bird Aviary	**40,00,000**

Sl. No.	Particulars	Amount Rs.
12.	Mixed Deer Enclosure	**70,00,000**
13.	Mouse Deer Enclosure	**50,00,000**
14.	Koala Enclosure	**20,00,000**
15.	Eastern Grey Kangaroo Enclosure	**60,00,000**
16.	Aquarium	**50,00,000**
17.	Rescue & Quarantine Zone	**80,00,000**
18.	CBC Lesser Adjutant Stork & Black Headed Ibis	**60,00,000**
19.	CBC Painted Stork	**60,00,000**
20.	CBC Yellow Monitor Lizard	**60,00,000**
TOTAL		**13,43,00,000**

In words: Thirteen Crore Forty Three Lakh 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 entry gate approach road, new service road, multipurpose pathway and Land development/drainage of surface run off with the help of recharge pit	**4,56,00,000**
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	**1,65,00,000**
3.	Construction of ticket counter & ATM main gate	**7,00,000**
4.	Construction of toilet block	**30,00,000**
5.	Construction of Staff Barrack	**60,00,000**
6.	Construction of additional boundary wall	**1,05,00,000**
7.	Construction of child care unit for visitors	**8,00,000**
8.	Construction of NIC and Souvenir Shop	**90,00,000**
9.	Construction of drainage system network and waste water treatment	**34,00,000**
10.	Construction of office car parking facility	**15,00,000**
11.	Construction of post-mortem room & incinerator	**20,00,000**
12.	Construction of in additional land entry gate and security room	**10,00,000**
13.	Reconstruction of animal feed store & kitchen	**50,00,000**
14.	Renovation & remodelling of cafeteria and toilet block	**1,00,00,000**
15.	Renovation & remodelling of veterinary hospital	**1,00,00,000**
16.	Remodelling of existing power system	**1,00,00,000**
17.	Roof Top Solar Plant	**50,00,000**
18.	Remodelling of Entry Gate & Security rooms	**35,00,000**
	Electrical network and transformer with DG complete electrical network,	**1,00,00,000**
TOTAL		**15,35,00,000**

In words: Fifteen Crore Thirty Five lakh 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	**1,00,00,000**
2.	Purchase of vehicles	**28,00,000**
3.	Survey and documentation	**6,00,000**
4.	Purchase & Up-gradation of available equipment at veterinary hospital	**80,00,000**
5.	Purchase of sanitation equipment, water pumps, miscellaneous equipment for maintenance	**5,00,000**
6.	Purchase of disaster management equipment	**3,00,000**
7.	Purchase of communication equipment	**5,00,000**
8.	Landscaping and beautification	**75,00,000**
9.	Bio-toilet (2 numbers)	**3,00,000**
10.	Installation of water ATM (6 numbers)	**51,00,000**
11.	Animal Transportation Cage	**12,00,000**
12.	Enclosure enrichment	**35,00,000**
13.	Camera, GPS, Search light etc	**10,00,000**
TOTAL		**4,13,00,000**

In words: Four Crore Thirteen Lakh only.

10.3 DAY TO DAY MAINTENANCE

The following recurring expenses are likely to be incurred annually which would increase proportionately with the construction of new enclosures, engagement of additional manpower, increase in visitors flow & an overall increase in various zoo activities. At present following recurring expenditure is incurred on various items.

Sl. No.	Particulars of work	Recurring expenses	
		Per Month (in lacs)	For 1 year (in lacs)
1.	Payment for engagement of manpower through agency, salary, wages & honorariums	5.5	66
2.	Animal Feed, medicines & supplements.	3	36
3.	Hiring vehicle for field visits of Officers.	1	12
4.	Thorough cleaning & maintenance of the compound & the entire zoo area by engaging daily labor.	1.5	18
5.	Rescue, temporary maintenance, treatment & release of wildlife.	1.5	18
7.	Electricity bills, LPG, fuel for generator, telephone bills, search light & batteries & other misc expenses.	2	24
8.	Office expenses, stationery, printing, tender uploading & publishing in newspapers	1	12
9.	Petty repairing & maintenance of electrical & plumbing works, staff quarters & rest house, animal enclosures, ponds, stand-off barriers etc.	3	36
10.	Renovation, replacement and maintenance of enclosure enrichments	1	12
	TOTAL	**18.5 Lacs**	**222 Lacs**


C
PART

MANAGEMENT PLAN

CHAPTER – 11

11.1 YEAR WISE BUDGET FOR 20 YEARS (FROM 2023-24 TO 2042-43)

Sl. No.	Particulars	Amount (Rs.) 2023-24	Amount (Rs.) 2024-25	Amount (Rs.) 2025-26	Amount (Rs.) 2026-27	Amount (Rs.) 2027-28
1.	Annual establishment charges (salary, incentive, uniform, security, statutory payments etc.)	96,80,000	1,06,48,000	1,17,12,800	1,28,84,080	1,41,72,488
2.	Feed & Fodder	96,80,000	1,06,48,000	1,17,12,800	1,28,84,080	1,41,72,488
3.	Annual outreach and education programme	12,10,000	13,31,000	14,64,100	16,10,510	17,71,561
4.	Computerisation of office system	12,10,000	13,31,000	14,64,100	16,10,510	17,71,561
5.	Enclosure maintenance	80,00,000	88,00,000	96,80,000	1,06,48,000	1,17,12,800
6.	Remodelling and Maintenance of transportation cages	18,15,000	19,96,500	21,96,150	24,15,765	26,57,342
7.	Zoo Management and Maintenance cost (Engineering, Gardening, Vehicle, telephones, electricity charges, etc.)	60,50,000	66,55,000	73,20,500	80,52,550	88,57,805
8.	Animal & staff health care (Sanitization, Medicines etc.)	24,20,000	26,62,000	29,28,200	32,21,020	35,43,122
9.	Miscellaneous (5% of annual budget)	18,15,000	19,96,500	21,96,150	24,15,765	26,57,342
TOTAL		**4,18,80,000**	**4,60,68,000**	**5,06,74,800**	**5,57,42,280**	**6,13,16,508**

Sl. No.	Particulars	Amount (Rs.) 2028-29	Amount (Rs.) 2029-30	Amount (Rs.) 2030-31	Amount (Rs.) 2031-32	Amount (Rs.) 2032-33
1.	Annual establishment charges (salary, incentive, uniform, security, statutory payments etc.)	1,55,89,737	1,71,48,710	1,88,63,582	2,07,49,940	2,28,24,934
2.	Feed & Fodder	1,55,89,737	1,71,48,710	1,88,63,582	2,07,49,940	2,28,24,934
3.	Annual outreach and education programme	19,48,717	21,43,589	23,57,948	25,93,742	28,53,117

Sl. No.	Particulars	Amount (Rs.) 2028-29	Amount (Rs.) 2029-30	Amount (Rs.) 2030-31	Amount (Rs.) 2031-32	Amount (Rs.) 2032-33
4.	Computerisation of office system	19,48,717	21,43,589	23,57,948	25,93,742	28,53,117
5.	Enclosure maintenance	1,28,84,080	1,41,72,488	1,55,89,737	1,71,48,710	1,88,63,582
6.	Remodelling and Maintenance of transportation cages	29,23,076	32,15,383	35,36,922	38,90,614	42,79,675
7.	Zoo Management and Maintenance cost (Engineering, Gardening, Vehicle, telephones, electricity charges, etc.)	97,43,586	1,07,17,944	1,17,89,738	1,29,68,712	1,42,65,584
8.	Animal & staff health care (Sanitization, Medicines etc.)	38,97,434	42,,87,178	47,15,895	51,87,485	57,06,233
9.	Miscellaneous (5% of annual budget)	29,23,076	32,15,383	35,36,922	38,90,614	42,79,675
TOTAL		**6,74,48,159**	**7,41,92,975**	**8,16,12,272**	**8,97,73,499**	**9,87,50,849**

Sl. No.	Particulars	Amount (Rs.) 2033-34	Amount (Rs.) 2034-35	Amount (Rs.) 2035-36	Amount (Rs.) 2036-37	Amount (Rs.) 2037-38
1.	Annual establishment charges (salary, incentive, uniform, security, statutory payments etc.)	2,51,07,427	2,76,18,170	3,03,79,987	3,34,17,985	3,67,59,784
2.	Feed & Fodder	2,51,07,427	2,76,18,170	3,03,79,987	3,34,17,985	3,67,59,784
3.	Annual outreach and education programme	31,38,428	34,52,271	37,97,498	41,77,248	45,94,973
4.	Computerisation of office system	31,38,428	34,52,271	37,97,498	41,77,248	45,94,973
5.	Enclosure maintenance	2,07,49,940	2,28,24,934	2,51,07,427	2,76,18,170	3,03,79,987
6.	Remodelling and Maintenance of transportation cages	47,07,643	51,78,407	56,96,248	62,65,872	68,92,459
7.	Zoo Management and Maintenance cost (Engineering, Gardening, Vehicle, telephones, electricity charges, etc.)	1,56,92,142	1,72,61,356	1,89,87,492	2,08,86,241	2,29,74,865
8.	Animal & staff health care (Sanitization, Medicines etc.)	62,76,857	69,04,542	75,94,997	83,54,496	91,89,946
9.	Miscellaneous (5% of annual budget)	47,07,643	51,78,407	56,96,248	62,65,872	68,92,459
TOTAL		10,86,25,934	11,94,88,528	13,14,37,380	14,45,81,118	15,90,39,230

Sl. No.	Particulars	Amount (Rs.) 2038-39	Amount (Rs.) 2039-40	Amount (Rs.) 2040-41	Amount (Rs.) 2041-42	Amount (Rs.) 2042-43
1.	Annual establishment charges (salary, incentive, uniform, security, statutory payments etc.)	4,04,35,762	4,44,79,339	4,89,27,272	5,38,20,000	5,92,02,000
2.	Feed & Fodder	4,04,35,762	4,44,79,339	4,89,27,272	5,38,20,000	5,92,02,000
3.	Annual outreach and education programme	50,54,470	55,59,917	61,15,909	67,27,500	74,00,250
4.	Computerisation of office system	50,54,470	55,59,917	61,15,909	67,27,500	74,00,250
5.	Enclosure maintenance	3,34,17,985	3,67,59,784	4,04,35,762	4,44,79,339	4,89,27,272
6.	Remodelling and Maintenance of transportation cages	75,81,705	83,39,876	91,73,864	1,00,91,250	1,11,00,375
7.	Zoo Management and Maintenance cost (Engineering, Gardening, Vehicle, telephones, electricity charges, etc.)	2,52,72,351	2,77,99,587	3,05,79,545	3,36,37,500	3,70,01,250
8.	Animal & staff health care (Sanitization, Medicines etc.)	1,01,08,941	1,11,19,835	1,22,31,818	1,34,55,000	1,48,00500
9.	Miscellaneous (5% of annual budget)	75,81,705	83,39,876	91,73,864	1,00,91,250	1,11,00,375
TOTAL		17,49,43,153	19,24,37,469	21,16,81,216	23,28,49,337	25,61,34,271

PART D

ANNEXURES

MASTER (LAYOUT) PLAN OF HARINALAYA, NEW TOWN, KOLKATA

LEGEND :	
	Feeding Cell
	Water Body
	Wooden Logs
	Stone
	Trees
	Lawn
	Hedge
	N.S. or Night Shelter
	Drinking Water Counter
	Service Pathway
	Existing Service Pathway
	Gate
	Boundary Wall
	Contours
	Store
	Hospital

ABBREVIATION :-
W.T.P.- WATER TREATMENT TANK
O.H.T.-OVER HEAD TANK
N.S.-NIGHT SHELTER
P.M.ROOM- POSTMORTEM ROOM

Area statement of Harinalaya

Sl No.	Place name	Area (Sq.M.)	Percentage
i	ANIMAL ENCLOSURES	20075.00	31.57%
ii	PATHWAY	8681.00	13.65%
iii	ZOO UTILITY & INFRASTRUCTURE	2834.00	4.46%
iv	NIGHT SHELTER & KRAAL	1778.00	2.80%
v	GREEN ZONE	30228.00	47.53%
	TOTAL ZOO AREA	**63596.00**	**100.00%**

ANIMAL COLLECTION PLAN FOR HARINALAYA, NEW TOWN, KOLKATA

Sl. No.		ANIMAL NAME	No. Of Animals	Area in Sq. M. As per CZA	Proposed	Kraal	Night House
		NATIVE SPECIES					
A		CARNIVORES					
A1	1	Bengal Tiger	4	1400	1600	120	80
E		HERBIVORES					
E1	2	Spotted Deer	5	800	2300	80	85
	3	Barking Deer	5	800			
	4	Four Horned Antelope	4				
	5	Blackbuck	4				
E4	6	Mouse Deer	5	100	110	30	27
B		PRIMATE					
B7	7	Western Hoolock Gibbon	4	700	700	50	84
C		REPTILES					
C1	8	Saltwater Crocodile	2	400	630	46	
C2	9	Marsh Crocodile	10	400	760	26	
C3	10	Reticulated Python	4	80	80		
C4	11	Burmese Python	4	80	80		
C5	12	Indian Rock Python	6	80	80		
C6	13	Banded Krait	4	40	40		
C7	14	Russell's Viper	4	40	40		
C8	15	Bamboo Pit Viper	4	40	40		
C9	16	Ornate Flying Snake/Kalnagini	4	40	40		
C10	17	Spectacled Cobra	4	40	40		
C11	18	Monocled Cobra	4	40	40		
C12	19	Indian Wolf Snake	4	40	40		
C13	20	Asian Water Monitor	4	80	80		
C14	21	Yellow Monitor	4	80	80		
C15	22	Desert Monitor	4	80	80		
C16	23	Indian Chameleon	10	40	40		
C17	24	Tokay Gecko	10	40	40		
C18		TURTLE POND			110		
	25	Indian Flapshell Turtle	10	80	-		
	26	Indian Softshell Turtle/Ganges Softshell Turtle	10	80	-		
	27	Peacock Softshell Turtle	10	80	-		
	28	Indian Tent Turtle	10	80	-		
	29	Indian Roof Turtle	10	80	-		
	30	Indian Eyed Turtle	10	80	-		
	31	Black Pond Turtle/Spotted Pond Turtle	10	80	-		
	32	Indian Black Turtle	10	80	-		
	33	Indian narrow-headed softshell Turtle	4	80	-		
C19		TORTOISE HOUSE			120		
	34	Indian Star Tortoise	10	40	-		
	35	Travancore Tortoise	10	40	-		
	36	Elongated/Yellow Tortoise	10	40	-		
	37	Asian Forest Tortoise	10	40	-		
D		BIRDS					
D1		PHEASANTRY			560		
I	38	Indian Peafowl / White Peafowl	4	160	-		
II	39	Red Jungle Fowl	4	80	-		
III	40	Grey Jungle Fowl	4	80	-		
IV	41	Kalij Pheasant	4	80	-		
D2		Mix. FLYING BIRDS AVIARY-I			310		
	42	Alexandrine Parakeet	4	80	-		
	43	Rose-ringed Parakeet	4	80	-		
	44	Blossom-headed Parakeet	4	80	-		
	45	Plum-headed Parakeet	4	80	-		
	46	Red breated Parakeet	4	80	-		
	47	House Sparrow	4	80	-		
	48	Asian Pied Starling	4	80	-		
	49	Brahminy Starling	4	80	-		
	50	Hill Myna	4	80	-		
	51	Common Myna	4	80	-		
	52	Jungle Myna	4	80	-		
	53	Indian Pied Myna	4	80	-		
	54	Scaly-breasted Munia	4	80	-		
	55	Tri-colour Munia Munia	4	80	-		
	56	White-rumped Munia	4	80	-		
	57	Black-headed/ Chestnut Munia	4	80	-		
	58	Red-whiskered Bulbul	4	80	-		
	59	Red-vented Bulbul	4	80	-		
D3		Mix. FLYING BIRDS AVIARY-II			500		
	60	Tailor Bird	4	80	-		
	61	Purple Sunbird	4	80	-		
	62	Purple-rumped Sunbird	4	80	-		
	63	Common Babbler	4	80	-		
	64	Common Kingfisher	4	80	-		
	65	White-throated Kingfisher	4	80	-		
	66	Pied Kingfisher	4	80	-		
	67	Stork-billed Kingfisher	4	80	-		
	68	Ruddy Kingfisher	4	80	-		
	69	Black Drongo	4	80	-		
	70	Greater Racket-tailed Drongo	4	80	-		
	71	Blue-throated Barbet	4	80	-		
	72	Lineated Barbet	4	80	-		
	73	Coppersmith Barbet	4	80	-		
	74	Asian Koel	4	80	-		
	75	Greater Coucal	4	80	-		
	76	Oriental Magpie Robin	4	80	-		
	77	Baya Weaver	4	80	-		
	78	Black-rumped Flameback	4	80	-		
	79	Indian Roller	4	80	-		
	80	Red Avadavat	4	80	-		
	81	Paddy field Pipit	4	80	-		
	82	Black headed Oriole	4	80	-		
	83	Asian Green Bee eater	4	80	-		
	84	Chestnut-headed Bee eater	4	80	-		
	85	Indian Paradise Flycatcher	4	80	-		
	86	Red-wattled Lapwing	4	80	-		
	87	Yellow-wattled Lapwing	4	80	-		
D4		Mix. WATER BIRDS AVIARY			435		
	88	Pond Heron	4		-		
	89	Purple Heron	4		-		
	90	Cattle Egret	4		-		
	91	Little Egret	4		-		
	92	Intermediate Egret	4		-		
	93	Spoonbill	4		-		
	94	Little Cormorant	4		-		
	95	Oriental Darter	4		-		
	96	Common Moorhen	4		-		
	97	Painted Stork	10		-		
	98	Lesser Adjutant Stork	12		-		
	99	White-breasted Waterhen	4		-		
	100	Black Headed Ibis	12		-		
H		FISHES (Aquarium)			160		
H1	101	Sting Ray	5		-		
	102	Toyo Loach	5		-		
	103	Kohli's Maskray	5		-		
	104	Odessa Barb	5		-		
	105	Arulius Barb	5		-		
	106	Denison Barb	5		-		
	107	Golden Dwarf Barb	5		-		
	108	Honey Gourami	5		-		
	109	Dwarf Gourami	5		-		
	110	Frail Gourami	5		-		
	111	Blue Badis	5		-		
	112	Zebra Fish	5		-		
	113	Assam Danio	5		-		
	114	Leopard Danio	5		-		
	115	Malabar Danio	5		-		
	116	Bengal Loach	5		-		
	117	Horseface Loach	5		-		
	118	Zebra Loach	5		-		
	119	Blue Spotted Hill Trout	5		-		
	120	Dwarf Pufferfish	5		-		
		TOTAL NATIVE ENCLOSURE AREA			9135	352	276

ANIMAL COLLECTION PLAN FOR HARINALAYA, NEW TOWN, KOLKATA

Sl. No.		ANIMAL NAME	No. Of Animals	Area in Sq. M. As per CZA	Proposed	Kraal	Night House
		NON NATIVE SPECIES					
A		CARNIVORES					
A2	1	African Lion	4	1400	1620	110	80
E		HERBIVORES					
E2	2	Grant's Zebra	6	1900	1940	130	80
E3	3	Northern Giraffe	6	1900	2124	136	92
G		OMNIVORES					
G1	4	Common Hippopotamus	3	1200	1766	220	82
B		PRIMATES					
B1	5	Common Marmoset	6	50	50		
B2	8	Golden-headed Lion Tamarin	6	50	50		
B3	7	White-lipped Tamarin	6	50	50		
B4	6	Tufted Capuchin	6	50	50		
B5	9	Red-tailed Monkey	4	700	500	80	40
B6	10	Orangutan	4	1200	1000		
F		MARSUPIALS					
F1	11	Koala	4		150		
F2	12	Eastern Grey Kangaroo	4	500	500	60	40
C		REPTILES					
C20	13	Green Iguana	5	100	100		
C21	14	Yellow Anaconda	4	80	80		
C22	15	Green Anaconda	4	80	80		
D		BIRDS					
D1.V	16	Golden Pheasant	4	80	-		
D1.VI	17	Lady Amherst's Pheasant	4	80	-		
D5	18	Greater Sulphur Crested Cockatoo	8	80	80		
D6	19	Umbrella Cockatoo	8	80	80		
D7	20	Red-tailed Black Cockatoo	8	80	80		
D8	21	Blue & Yellow Macaw	10	80	80		
D9	22	Scarlet Macaw	10	80	80		
D10	23	Red & Green Macaw	10	80	80		
D11	24	Orange winged Amazon	10	80	80		
D12	25	Grey Parrot	10	80	80		
D13	26	Eclectus Parrot	10	80	80		
D14	27	Black-capped Lory	10	80	80		
D15	28	Toco Toucan	4	80	80		
D4		Mix.WATER BIRDS AVIARY			-		
	28	Black Swan	6	300			
	29	Mute Swan	8	300			
		TOTAL NON NATIVE ENCLOSURE AREA			10940	736	414

I	OTHER FACILITIES		
Sl. No.		NAME OF THE FACILITIES	AREA OF FACILITIES
I1	1	Rescue-cum-Quarantine Center	735
I2	2	CBC Yellow Monitor Lizard	100
I3	3	CBC Painted Stork	245
I4	4	CBC Lesser Adjutant Stork & Black Headed Ibis	245
I5	5	Hospital and Recovery	196
I6	6	Vermicompost	186
I7	7	Postmortem Room	50
I8	8	Incinerator Room	60
I9	9	Water Treatment Plant	42
I10	10	Admin Block	345
I11	11	Cafeteria	154
I12	12	Souvenir shop	10
I13	13	Keepers' Area & Kitchen	239
I14	14	Store & Visitors Toilet	136
I15	15	Overhead Tanks	41
I16	16	NIC (Nature Interpretation Centre)	50
		TOTAL UTILITY AREA	2834

The revised Master (Layout) Plan of the Harinalaya Zoo, New Town, Kolkata, West Bengal was placed before 106th Meeting of the Technical Committee, CZA held on 27.09.2022. Subsequently, the 40th Meeting of the Central Zoo Authority held on 28.11.2023 approved recommendation of 106th Meeting of Technical Committee. The approval was communicated vide this office letter issue no. This office letter issue no. I/36463/2022 dated 22.12.2022. The zoo vide office letter no. 136/1-3 dated 31.01.2024 has submitted satisfactory compliance.

Authenticated

Ex-Officio Unit-in-Charge
Harinalaya (Deer Park)
& Range Officer
Jawharkunja Range

Assistant Director
Harinalaya Mini Zoo

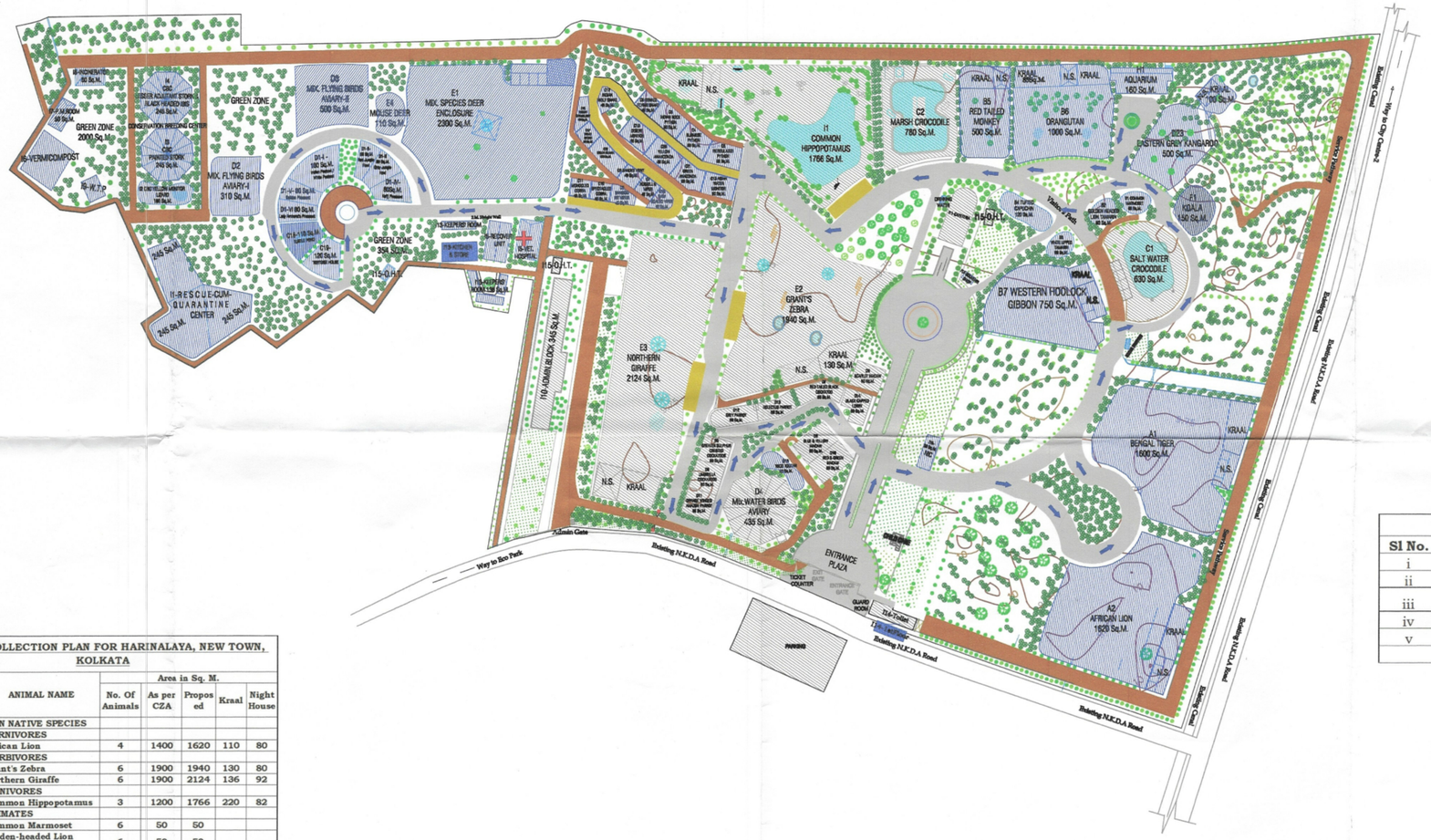
Ex-Officio Director
Harinalaya Mini Zoo

Principal Chief Conservator of Forests
Wildlife & Chief Wildlife Warden
West Bengal

Additional Principal Chief
Conservator of Forests
&
Member Secretary
West Bengal Zoo Authority

OWNER :	WEST BENGAL ZOO AUTHORITY Aranya Bhawan, Block-LA10A, Sector-III, Saltlake City, Kolkata-700 106				
PROJECT :	HARINALAYA NEWTOWN, KOLKATA				
TITLE :	PROPOSED MASTER (LAYOUT) PLAN			SCALE :	1:1000
				DATE :	17.11.2023
DRAWN BY	CHECKED BY	APPROVED BY	DRG. NO.	SHEET	REV.- R2
S. Ghosh			WBZA/HDP/SITS/AR/005	1	
				SHEET - A1	

CONTOUR PLAN OF HARINALAYA, NEW TOWN, KOLKATA



LEGEND :

	Feeding Cell
	Water Body
	Wooden Logs
	Stone
	Trees
	Lawn
	Hedge
	N.S. or Night Shelter
	Drinking Water Counter
	Service Pathway
	Existing Service Pathway
	Gate
	Boundary Wall
	Contours
	Store
	Hospital

ABBREVIATION :-
W.T.P.- WATER TREATMENT TANK
O.H.T.-OVER HEAD TANK
N.S.-NIGHT SHELTER
P.M.ROOM- POSTMORTEM ROOM

Area statement of Harinalaya

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ANIMAL COLLECTION PLAN FOR HARINALAYA, NEW TOWN, KOLKATA

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	3	Barking Dear	5	800			
	4	Four Horned Antelope	4				
	5	Blackbuck	4				
E4	6	Mouse Deer	5	100	110	30	27
B		PRIMATE					
B7	7	Western Hoolock Gibbon	4	700	700	50	84
C		REPTILES					
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C16	23	Indian Chameleon	10	40	40		
C17	24	Tokay Gecko	10	40	40		
C18		TURTLE POND			110		
	25	Indian Flapshell Turtle	10	80	-		
	26	Indian Softshell Turtle/Ganges Softshell Turtle	10	80	-		
	27	Peacock Softshell Turtle	10	80	-		
	28	Indian Tent Turtle	10	80	-		
	29	Indian Roof Turtle	10	80	-		
	30	Indian Eyed Turtle	10	80	-		
	31	Black Pond Turtle/Spotted Pond Turtle	10	80	-		
	32	Indian Black Turtle	10	80	-		
	33	Indian narrow-headed softshell Turtle	4	80	-		
C19		TORTOISE HOUSE			120		
	34	Indian Star Tortoise	10	40	-		
	35	Travancore Tortoise	10	40	-		
	36	Elongated/Yellow Tortoise	10	40	-		
	37	Asian Forest Tortoise	10	40	-		
D		BIRDS					
D1		PHEASANTRY			560		
I	38	Indian Peafowl / White Peafowl	4	160	-		
II	39	Red Jungle Fowl	4	80	-		
III	40	Grey Jungle Fowl	4	80	-		
IV	41	Kalij Pheasant	4	80	-		
D2		Mix. FLYING BIRDS AVIARY-I			310		
	42	Alexandrine Parakeet	4	80	-		
	43	Rose-ringed Parakeet	4	80	-		
	44	Blossom-headed Parakeet	4	80	-		
	45	Plum-headed Parakeet	4	80	-		
	46	Red brested Parakeet	4	80	-		
	47	House Sparrow	4	80	-		
	48	Asian Pied Starling	4	80	-		
	49	Brahminy Starling	4	80	-		
	50	Hill Myna	4	80	-		
	51	Common Myna	4	80	-		
	52	Jungle Myna	4	80	-		
	53	Indian Pied Myna	4	80	-		
	54	Scaly-breasted Munia	4	80	-		
	55	Tri-colour Munia Munia	4	80	-		
	56	White-rumped Munia	4	80	-		
	57	Black-headed/ Chestnut Munia	4	80	-		
	58	Red-whiskered Bulbul	4	80	-		
	59	Red-vented Bulbul	4	80	-		
D3		Mix. FLYING BIRDS AVIARY-II			500		
	60	Tailor Bird	4	80	-		
	61	Purple Sunbird	4	80	-		
	62	Purple-rumped Sunbird	4	80	-		
	63	Common Babbler	4	80	-		
	64	Common Kingfisher	4	80	-		
	65	White-throated Kingfisher	4	80	-		
	66	Pied Kingfisher	4	80	-		
	67	Stork-billed Kingfisher	4	80	-		
	68	Ruddy Kingfisher	4	80	-		
	69	Black Drongo	4	80	-		
	70	Greater Racket-tailed Drongo	4	80	-		
	71	Blue-throated Barbet	4	80	-		
	72	Lineated Barbet	4	80	-		
	73	Coppersmith Barbet	4	80	-		
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	80	Red Avadavat	4	80	-		
	81	Paddy field Pipit	4	80	-		
	82	Black headed Oriole	4	80	-		
	83	Asian Green Bee eater	4	80	-		
	84	Chestnut-headed Bee eater	4	80	-		
	85	Indian Paradise Flycatcher	4	80	-		
	86	Red-wattled Lapwing	4	80	-		
	87	Yellow-wattled Lapwing	4	80	-		
D4		Mix. WATER BIRDS AVIARY			435		
	88	Pond Heron	4		-		
	89	Purple Heron	4		-		
	90	Cattle Egret	4		-		
	91	Little Egret	4		-		
	92	Intermediate Egret	4		-		
	93	Spoonbill	4		-		
	94	Little Cormorant	4		-		
	95	Oriental Darter	4		-		
	96	Common Moorhen	4		-		
	97	Painted Stork	10		-		
	98	Lesser Adjutant Stork	12		-		
	99	White-breasted Waterhen	4		-		
	100	Black Headed Ibis	12		-		
H		FISHES (Aquarium)			160		
H1	101	Sting Ray	5		-		
	102	Yoyo Loach	5		-		
	103	Kuhl's Maskray	5		-		
	104	Odessa Barb	5		-		
	105	Arulius Barb	5		-		
	106	Denison Barb	5		-		
	107	Golden Dwarf Barb	5		-		
	108	Honey Gourami	5		-		
	109	Dwarf Gourami	5		-		
	110	Frail Gourami	5		-		
	111	Blue Badis	5		-		
	112	Zebra Fish	5		-		
	113	Assam Danio	5		-		
	114	Leopard Danio	5		-		
	115	Malabar Danio	5		-		
	116	Bengal Loach	5		-		
	117	Horseface Loach	5		-		
	118	Zebra Loach	5		-		
	119	Blue Spotted Hill Trout	5		-		
	120	Dwarf Pufferfish	5		-		
		TOTAL NATIVE ENCLOSURE AREA			9135	352	276

ANIMAL COLLECTION PLAN FOR HARINALAYA, NEW TOWN, KOLKATA

Sl. No.		ANIMAL NAME	Area in Sq. M. No. Of Animals	As per CZA	Proposed	Kraal	Night House
		NON NATIVE SPECIES					
A		CARNIVORES					
A2	1	African Lion	4	1400	1620	110	80
E		HERBIVORES					
E2	2	Grant's Zebra	6	1900	1940	130	80
E3	3	Northern Giraffe	6	1900	2124	136	92
G		OMNIVORES					
G1	4	Common Hippopotamus	3	1200	1766	220	82
B		PRIMATES					
B1	5	Common Marmoset	6	50	50		
B2	8	Golden-headed Lion Tamarin	6	50	50		
B3	7	White-lipped Tamarin	6	50	50		
B4	6	Tufted Capuchin	6	50	50		
B5	9	Red-tailed Monkey	4	700	500	80	40
B6	10	Orangutan	4	1200	1000		
F		MARSUPIALS					
F1	11	Koala	4		150		
F2	12	Eastern Grey Kangaroo	4	500	500	60	40
C		REPTILES					
C20	13	Green Iguana	5	100	100		
C21	14	Yellow Anaconda	4	80	80		
C22	15	Green Anaconda	4	80	80		
D		BIRDS					
D1.V	16	Golden Pheasant	4	80	-		
D1.VI	17	Lady Amherst's Pheasant	4	80	-		
D5	18	Greater Sulphur Crested Cockatoo	8	80	80		
D6	19	Umbrella Cockatoo	8	80	80		
D7	20	Red-tailed Black Cockatoo	8	80	80		
D8	21	Blue & Yellow Macaw	10	80	80		
D9	22	Scarlet Macaw	10	80	80		
D10	23	Red & Green Macaw	10	80	80		
D11	24	Orange winged Amazon	10	80	80		
D12	25	Grey Parrot	10	80	80		
D13	26	Eclectus Parrot	10	80	80		
D14	27	Black-capped Lory	10	80	80		
D15	28	Toco Toucan	4	80	80		
D4		Mix. WATER BIRDS AVIARY			-		
	28	Black Swan	6	300			
	29	Mute Swan	8	300			
		TOTAL NON NATIVE ENCLOSURE AREA			10940	736	414

I		OTHER FACILITIES	
Sl. No.		NAME OF THE FACILITIES	AREA OF FACILITIES
I1	1	Rescue-cum-Quarantine Center	735
I2	2	CBC Yellow Monitor Lizard	100
I3	3	CBC Painted Stork	245
I4	4	CBC Lesser Adjutant Stork & Black Headed Ibis	245
I5	5	Hospital and Recovery	196
I6	6	Vermicompost	186
I7	7	Postmortem Room	50
I8	8	Incinerator Room	60
I9	9	Water Treatment Plant	42
I10	10	Admin Block	345
I11	11	Cafeteria	154
I12	12	Souvenir shop	10
I13	13	Keepers' Area & Kitchen	239
I14	14	Store & Visitors Toilet	136
I15	15	Overhead Tanks	41
I16	16	NIC (Nature Interpretation Centre)	50
		TOTAL UTILITY AREA	2834

The revised Master (Layout) Plan of the Harinalaya Zoo, New Town, Kolkata, West Bengal was placed before 106th Meeting of the Technical Committee, CZA held on 27.09.2022. Subsequently, the 40th Meeting of the Central Zoo Authority held on 28.11.2023 approved recommendation of 106th Meeting of Technical Committee. The approval was communicated vide this office letter issue no. This office letter issue no. I/36463/2022 dated 22.12.2022. The zoo vide office letter no. 136/1-3 dated 31.01.2024 has submitted satisfactory compliance.

Authenticated

Ex-Officio Unit-in-Charge
Harinalaya (Deer Park)
& Range Officer
Jawharkunja Range

Assistant Director
Harinalaya Mini Zoo

Ex-Officio Director
Harinalaya Mini Zoo

Additional Principal Chief
Conservator of Forests
&
Member Secretary
West Bengal Zoo Authority

Principal Chief Conservator of Forests
Wildlife & Chief Wildlife Warden
West Bengal

OWNER :	WEST BENGAL ZOO AUTHORITY Aranya Bhawan, Block-LA10A, Sector-III, Saltlake City, Kolkata-700 106			
PROJECT :	HARINALAYA NEWTOWN, KOLKATA			
TITLE :	CONTOUR (LAYOUT) PLAN		SCALE :	1:1000
			DATE :	17.11.2023
DRAWN BY	CHECKED BY	APPROVED BY	DRG. NO.	SHEET / REV.
S. Ghosh			WBZA/HDP/SITE/AR/005	1 / R2

SHEET - A1

WATER SUPPLY LAYOUT PLAN OF HARINALAYA, NEW TOWN, KOLKATA

LEGEND :

	Feeding Cell
	Water Body
	Wooden Logs
	Stone
	Trees
	Lawn
	Hedge
	N.S. or Night Shelter
	Drinking Water Counter
	Service Pathway
	Existing Service Pathway
	Gate
	Boundary Wall
	Contours
	Store
	Hospital

ABBREVIATION :-
W.T.P.- WATER TREATMENT TANK
O.H.T.-OVER HEAD TANK
N.S.-NIGHT SHELTER
P.M.ROOM- POSTMORTEM ROOM

Area statement of Harinalaya

Sl No.	Place name	Area (Sq.M.)	Percentage
i	ANIMAL ENCLOSURES	20075.00	31.57%
ii	PATHWAY	8681.00	13.65%
iii	ZOO UTILITY & INFRASTRUCTURE	2834.00	4.46%
iv	NIGHT SHELTER & KRAAL	1778.00	2.80%
v	GREEN ZONE	30228.00	47.53%
	TOTAL ZOO AREA	**63596.00**	**100.00%**

ANIMAL COLLECTION PLAN FOR HARINALAYA, NEW TOWN, KOLKATA

Sl. No.		ANIMAL NAME	Area in Sq. M. No. Of Animals	As per CZA	Proposed	Kraal	Night House
		NATIVE SPECIES					
A		CARNIVORES					
A1	1	Bengal Tiger	4	1400	1600	120	80
E		HERBIVORES					
E1	2	Spotted Deer	5	800	2300	80	85
	3	Barking Dear	5	800			
	4	Four Horned Antelope	4				
	5	Blackbuck	4				
E4	6	Mouse Deer	5	100	110	30	27
B		PRIMATE					
B7	7	Western Hoolock Gibbon	4	700	700	50	84
C		REPTILES					
C1	8	Saltwater Crocodile	2	400	630	46	
C2	9	Marsh Crocodile	10	400	760	26	
C3	10	Reticulated Python	4	80	80		
C4	11	Burmese Python	4	80	80		
C5	12	Indian Rock Python	6	80	80		
C6	13	Banded Krait	4	40	40		
C7	14	Russell's Viper	4	40	40		
C8	15	Bamboo Pit Viper	4	40	40		
C9	16	Ornate Flying Snake/Kalnagini	4	40	40		
C10	17	Spectacled Cobra	4	40	40		
C11	18	Monocled Cobra	4	40	40		
C12	19	Indian Wolf Snake	4	40	40		
C13	20	Asian Water Monitor	4	80	80		
C14	21	Yellow Monitor	4	80	80		
C15	22	Desert Monitor	4	80	80		
C16	23	Indian Chameleon	10	40	40		
C17	24	Tokay Gecko	10	40	40		
C18		TURTLE POND			110		
	25	Indian Flapshell Turtle	10	80	-		
	26	Indian Softshell Turtle/Ganges Softshell Turtle	10	80	-		
	27	Peacock Softshell Turtle	10	80	-		
	28	Indian Tent Turtle	10	80	-		
	29	Indian Roof Turtle	10	80	-		
	30	Indian Eyed Turtle	10	80	-		
	31	Black Pond Turtle/Spotted Pond Turtle	10	80	-		
	32	Indian Black Turtle	10	80	-		
	33	Indian narrow-headed softshell Turtle	4	80	-		
C19		TORTOISE HOUSE			120		
	34	Indian Star Tortoise	10	40	-		
	35	Travancore Tortoise	10	40	-		
	36	Elongated/Yellow Tortoise	10	40	-		
	37	Asian Forest Tortoise	10	40	-		
D		BIRDS					
D1		PHEASANTRY			560		
I	38	Indian Peafowl / White Peafowl	4	160	-		
II	39	Red Jungle Fowl	4	80	-		
III	40	Grey Jungle Fowl	4	80	-		
IV	41	Kalij Pheasant	4	80	-		
D2		Mix. FLYING BIRDS AVIARY-I			310		
	42	Alexandrine Parakeet	4	80	-		
	43	Rose-ringed Parakeet	4	80	-		
	44	Blossom-headed Parakeet	4	80	-		
	45	Plum-headed Parakeet	4	80	-		
	46	Red brested Parakeet	4	80	-		
	47	House Sparrow	4	80	-		
	48	Asian Pied Starling	4	80	-		
	49	Brahminy Starling	4	80	-		
	50	Hill Myna	4	80	-		
	51	Common Myna	4	80	-		
	52	Jungle Myna	4	80	-		
	53	Indian Pied Myna	4	80	-		
	54	Scaly-breasted Munia	4	80	-		
	55	Tri-colour Munia Munia	4	80	-		
	56	White-rumped Munia	4	80	-		
	57	Black-headed/ Chestnut Munia	4	80	-		
	58	Red-whiskered Bulbul	4	80	-		
	59	Red-vented Bulbul	4	80	-		
D3		Mix. FLYING BIRDS AVIARY-II			500		
	60	Tailor Bird	4	80	-		
	61	Purple Sunbird	4	80	-		
	62	Purple-rumped Sunbird	4	80	-		
	63	Common Babbler	4	80	-		
	64	Common Kingfisher	4	80	-		
	65	White-throated Kingfisher	4	80	-		
	66	Pied Kingfisher	4	80	-		
	67	Stork-billed Kingfisher	4	80	-		
	68	Ruddy Kingfisher	4	80	-		
	69	Black Drongo	4	80	-		
	70	Greater Racket-tailed Drongo	4	80	-		
	71	Blue-throated Barbet	4	80	-		
	72	Lineated Barbet	4	80	-		
	73	Coppersmith Barbet	4	80	-		
	74	Asian Koel	4	80	-		
	75	Greater Coucal	4	80	-		
	76	Oriental Magpie Robin	4	80	-		
	77	Baya Weaver	4	80	-		
	78	Black-rumped Flameback	4	80	-		
	79	Indian Roller	4	80	-		
	80	Red Avadavat	4	80	-		
	81	Paddy field Pipit	4	80	-		
	82	Black headed Oriole	4	80	-		
	83	Asian Green Bee eater	4	80	-		
	84	Chestnut-headed Bee eater	4	80	-		
	85	Indian Paradise Flycatcher	4	80	-		
	86	Red-wattled Lapwing	4	80	-		
	87	Yellow-wattled Lapwing	4	80	-		
D4		Mix. WATER BIRDS AVIARY			435		
	88	Pond Heron	4		-		
	89	Purple Heron	4		-		
	90	Cattle Egret	4		-		
	91	Little Egret	4		-		
	92	Intermediate Egret	4		-		
	93	Spoonbill	4		-		
	94	Little Cormorant	4		-		
	95	Oriental Darter	4		-		
	96	Common Moorhen	4		-		
	97	Painted Stork	10		-		
	98	Lesser Adjutant Stork	12		-		
	99	White-breasted Waterhen	4		-		
	100	Black Headed Ibis	12		-		
H		FISHES (Aquarium)			160		
H1	101	Sting Ray	5		-		
	102	Yoyo Loach	5		-		
	103	Kuhl's Maskray	5		-		
	104	Odessa Barb	5		-		
	105	Arulius Barb	5		-		
	106	Denison Barb	5		-		
	107	Golden Dwarf Barb	5		-		
	108	Honey Gourami	5		-		
	109	Dwarf Gourami	5		-		
	110	Frail Gourami	5		-		
	111	Blue Badis	5		-		
	112	Zebra Fish	5		-		
	113	Assam Danio	5		-		
	114	Leopard Danio	5		-		
	115	Malabar Danio	5		-		
	116	Bengal Loach	5		-		
	117	Horseface Loach	5		-		
	118	Zebra Loach	5		-		
	119	Blue Spotted Hill Trout	5		-		
	120	Dwarf Pufferfish	5		-		
		TOTAL NATIVE ENCLOSURE AREA			9135	352	276

ANIMAL COLLECTION PLAN FOR HARINALAYA, NEW TOWN, KOLKATA

Sl. No.		ANIMAL NAME	Area in Sq. M. No. Of Animals	As per CZA	Proposed	Kraal	Night House
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G		OMNIVORES					
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B		PRIMATES					
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B3	7	White-lipped Tamarin	6	50	50		
B4	6	Tufted Capuchin	6	50	50		
B5	9	Red-tailed Monkey	4	700	500	80	40
B6	10	Orangutan	4	1200	1000		
F		MARSUPIALS					
F1	11	Koala	4		150		
F2	12	Eastern Grey Kangaroo	4	500	500	60	40
C		REPTILES					
C20	13	Green Iguana	5	100	100		
C21	14	Yellow Anaconda	4	80	80		
C22	15	Green Anaconda	4	80	80		
D		BIRDS					
D1.V	16	Golden Pheasant	4	80	-		
D1.VI	17	Lady Amherst's Pheasant	4	80	-		
D5	18	Greater Sulphur Crested Cockatoo	8	80	80		
D6	19	Umbrella Cockatoo	8	80	80		
D7	20	Red-tailed Black Cockatoo	8	80	80		
D8	21	Blue & Yellow Macaw	10	80	80		
D9	22	Scarlet Macaw	10	80	80		
D10	23	Red & Green Macaw	10	80	80		
D11	24	Orange winged Amazon	10	80	80		
D12	25	Grey Parrot	10	80	80		
D13	26	Eclectus Parrot	10	80	80		
D14	27	Black-capped Lory	10	80	80		
D15	28	Toco Toucan	4	80	80		
D4		Mix. WATER BIRDS AVIARY			-		
	28	Black Swan	6	300			
	29	Mute Swan	8	300			
		TOTAL NON NATIVE ENCLOSURE AREA			10940	736	414

I — OTHER FACILITIES

Sl. No.		NAME OF THE FACILITIES	AREA OF FACILITIES
I1	1	Rescue-cum-Quarantine Center	735
I2	2	CBC Yellow Monitor Lizard	100
I3	3	CBC Painted Stork	245
I4	4	CBC Lesser Adjutant Stork & Black Headed Ibis	245
I5	5	Hospital and Recovery	196
I6	6	Vermicompost	186
I7	7	Postmortem Room	50
I8	8	Incinerator Room	60
I9	9	Water Treatment Plant	42
I10	10	Admin Block	345
I11	11	Cafeteria	154
I12	12	Souvenir shop	10
I13	13	Keepers' Area & Kitchen	239
I14	14	Store & Visitors Toilet	136
I15	15	Overhead Tanks	41
I16	16	NIC (Nature Interpretation Centre)	50
		TOTAL UTILITY AREA	2834

The revised Master (Layout) Plan of the Harinalaya Zoo, New Town, Kolkata, West Bengal was placed before 106th Meeting of the Technical Committee, CZA held on 27.09.2022. Subsequently, the 40th Meeting of the Central Zoo Authority held on 28.11.2023 approved recommendation of 106th Meeting of Technical Committee. The approval was communicated vide this office letter issue no. This office letter issue no. I/36463/2022 dated 22.12.2022. The zoo vide office letter no. 136/1-3 dated 31.01.2024 has submitted satisfactory compliance.

Authenticated

	SERVICES LEGENDS :-	Symbol
1.	WATER SUPPLY LINE	
2.	OVERHEAD TANK / UNDERGROUND TANK	O.H.T.
3.	TUBE WELL / WELL	TUBE WELL

Ex-Officio Unit-in-Charge
Harinalaya (Deer Park)
& Range Officer
Jawharkunja Range

Assistant Director
Harinalaya Mini Zoo

Ex-Officio Director
Harinalaya Mini Zoo

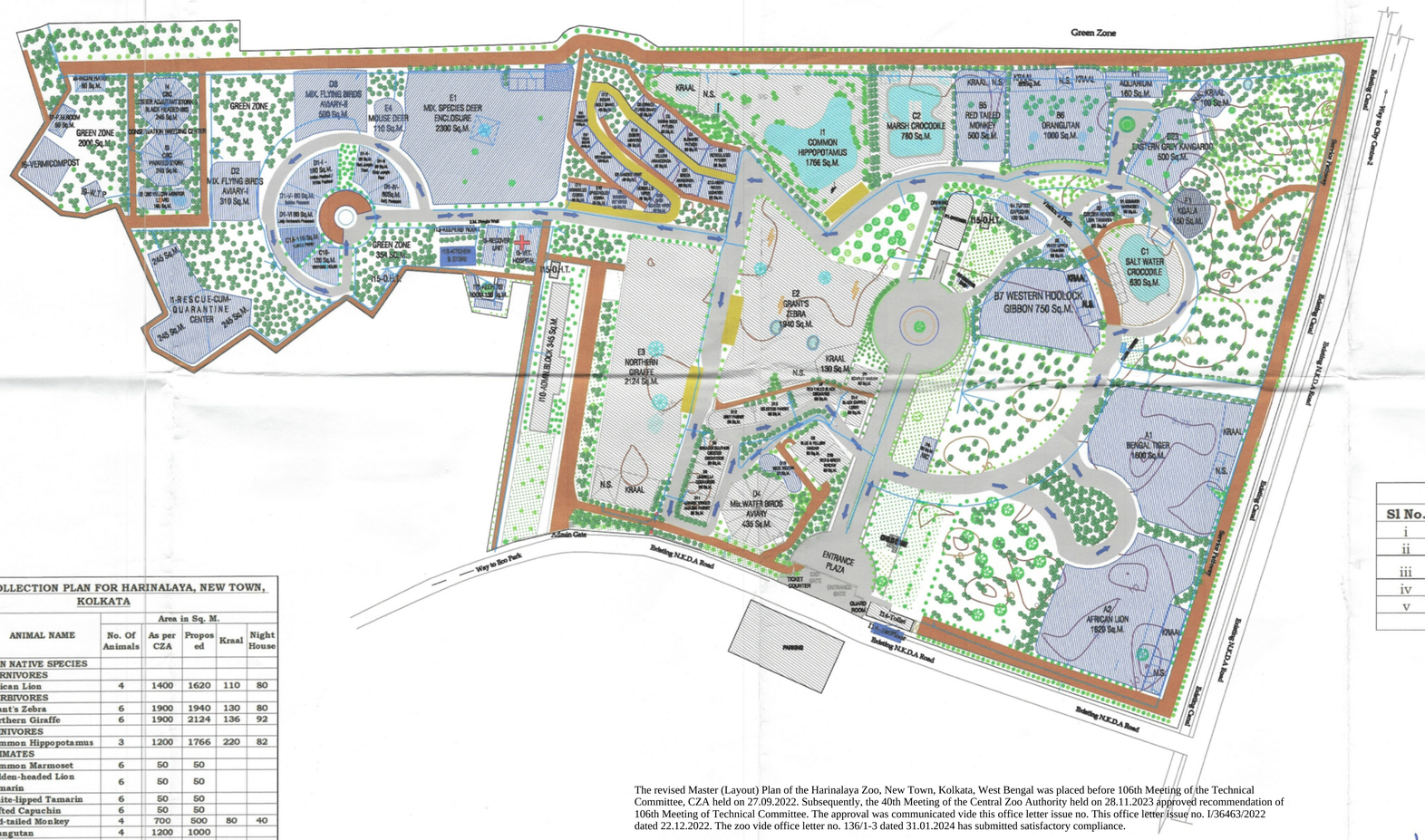
Additional Principal Chief
Conservator of Forests
&
Member Secretary
West Bengal Zoo Authority

Principal Chief Conservator of Forests
Wildlife & Chief Wildlife Warden
West Bengal

OWNER :	**WEST BENGAL ZOO AUTHORITY** Aranya Bhawan, Block-LA10A, Sector-III, Saltlake City, Kolkata-700 106
PROJECT :	**HARINALAYA** NEWTOWN, KOLKATA
TITLE :	**PROPOSED WATER SUPPLY (LAYOUT) PLAN**
SCALE :	1:1000
DATE :	17.11.2023
DRAWN BY	S. Ghosh
CHECKED BY	
APPROVED BY	
DRG. NO.	WBZA/HDP/SITE/AR/005
SHEET	1
REV.- R2	

SHEET - A1

STORM WATER DRAINAGE LAYOUT PLAN OF HARINALAYA, NEW TOWN, KOLKATA



LEGEND :

	Feeding Cell
	Water Body
	Wooden Logs
	Stone
	Trees
	Lawn
	Hedge
	N.S. or Night Shelter
	Drinking Water Counter
	Service Pathway
	Existing Service Pathway
	Gate
	Boundary Wall
	Contours
	Store
	Hospital

ABBREVIATION :-
W.T.P.- WATER TREATMENT TANK
O.H.T.-OVER HEAD TANK
N.S.-NIGHT SHELTER
P.M.ROOM- POSTMORTEM ROOM

Area statement of Harinalaya

Sl No.	Place name	Area (Sq.M.)	Percentage
i	ANIMAL ENCLOSURES	20075.00	31.57%
ii	PATHWAY	8681.00	13.65%
iii	ZOO UTILITY & INFRASTRUCTURE	2834.00	4.46%
iv	NIGHT SHELTER & KRAAL	1778.00	2.80%
v	GREEN ZONE	30228.00	47.53%
	TOTAL ZOO AREA	**63596.00**	**100.00%**

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Authenticated

Member Secretary
Central Zoo Authority
Ministry of Environment, Forest & Climate Change
Govt. of India, New Delhi

Additional Principal Chief Conservator of Forests
&
Member Secretary
West Bengal Zoo Authority

SERVICES LEGEND	SYMBOL
STORM WATER DRAIN	
RAIN WATER HARVESTING	

Ex-Officio Unit-in-Charge
Harinalaya (Deer Park)
& Range Officer
Jawharkunja Range

Assistant Director
Harinalaya Mini Zoo

Ex-Officio Director
Harinalaya Mini Zoo

Principal Chief Conservator of Forests
Wildlife & Chief Wildlife Warden
West Bengal

OWNER :	WEST BENGAL ZOO AUTHORITY Aranya Bhawan, Block-LA10A, Sector-III, Saltlake City, Kolkata-700 106
PROJECT :	HARINALAYA NEWTOWN, KOLKATA
TITLE :	PROPOSED STORM WATER MASTER (LAYOUT) PLAN
SCALE :	1:1000
DATE :	17.11.2023

DRAWN BY	CHECKED BY	APPROVED BY	DRG. NO.	SHEET	REV.- R2
S. Ghosh			WBZA/HDP/SITE/AR/005	1	

SHEET - A1

ANIMAL COLLECTION PLAN FOR HARINALAYA, NEW TOWN, KOLKATA

Sl. No.		ANIMAL NAME	Area in Sq. M. No. Of Animals	As per CZA	Proposed	Kraal	Night House
		NATIVE SPECIES					
A		CARNIVORES					
A1	1	Bengal Tiger	4	1400	1600	120	80
E		HERBIVORES					
E1	2	Spotted Deer	5	800	2300	80	85
	3	Barking Dear	5	800			
	4	Four Horned Antelope	4				
	5	Blackbuck	4				
E4	6	Mouse Deer	5	100	110	30	27
B		PRIMATE					
B7	7	Western Hoolock Gibbon	4	700	700	50	84
C		REPTILES					
C1	8	Saltwater Crocodile	2	400	630	46	
C2	9	Marsh Crocodile	10	400	760	26	
C3	10	Reticulated Python	4	80	80		
C4	11	Burmese Python	4	80	80		
C5	12	Indian Rock Python	6	80	80		
C6	13	Banded Krait	4	40	40		
C7	14	Russell's Viper	4	40	40		
C8	15	Bamboo Pit Viper	4	40	40		
C9	16	Ornate Flying Snake/Kalnagini	4	40	40		
C10	17	Spectacled Cobra	4	40	40		
C11	18	Monocled Cobra	4	40	40		
C12	19	Indian Wolf Snake	4	40	40		
C13	20	Asian Water Monitor	4	80	80		
C14	21	Yellow Monitor	4	80	80		
C15	22	Desert Monitor	4	80	80		
C16	23	Indian Chameleon	10	40	40		
C17	24	Tokay Gecko	10	40	40		
C18		TURTLE POND			110		
	25	Indian Flapshell Turtle	10	80	-		
	26	Indian Softshell Turtle/Ganges Softshell Turtle	10	80	-		
	27	Peacock Softshell Turtle	10	80	-		
	28	Indian Tent Turtle	10	80	-		
	29	Indian Roof Turtle	10	80	-		
	30	Indian Eyed Turtle	10	80	-		
	31	Black Pond Turtle/Spotted Pond Turtle	10	80	-		
	32	Indian Black Turtle	10	80	-		
	33	Indian narrow-headed softshell Turtle	4	80	-		
C19		TORTOISE HOUSE			120		
	34	Indian Star Tortoise	10	40	-		
	35	Travancore Tortoise	10	40	-		
	36	Elongated/Yellow Tortoise	10	40	-		
	37	Asian Forest Tortoise	10	40	-		
D		BIRDS					
D1		PHEASANTRY			560		
I	38	Indian Peafowl / White Peafowl	4	160	-		
II	39	Red Jungle Fowl	4	80	-		
III	40	Grey Jungle Fowl	4	80	-		
IV	41	Kalij Pheasant	4	80	-		
D2		Mix. FLYING BIRDS AVIARY-I			310		
	42	Alexandrine Parakeet	4	80	-		
	43	Rose-ringed Parakeet	4	80	-		
	44	Blossom-headed Parakeet	4	80	-		
	45	Plum-headed Parakeet	4	80	-		
	46	Red brested Parakeet	4	80	-		
	47	House Sparrow	4	80	-		
	48	Asian Pied Starling	4	80	-		
	49	Brahminy Starling	4	80	-		
	50	Hill Myna	4	80	-		
	51	Common Myna	4	80	-		
	52	Jungle Myna	4	80	-		
	53	Indian Pied Myna	4	80	-		
	54	Scaly-breasted Munia	4	80	-		
	55	Tri-colour Munia Munia	4	80	-		
	56	White-rumped Munia	4	80	-		
	57	Black-headed/ Chestnut Munia	4	80	-		
	58	Red-whiskered Bulbul	4	80	-		
	59	Red-vented Bulbul	4	80	-		
D3		Mix. FLYING BIRDS AVIARY-II			500		
	60	Tailor Bird	4	80	-		
	61	Purple Sunbird	4	80	-		
	62	Purple-rumped Sunbird	4	80	-		
	63	Common Babbler	4	80	-		
	64	Common Kingfisher	4	80	-		
	65	White-throated Kingfisher	4	80	-		
	66	Pied Kingfisher	4	80	-		
	67	Stork-billed Kingfisher	4	80	-		
	68	Ruddy Kingfisher	4	80	-		
	69	Black Drongo	4	80	-		
	70	Greater Racket-tailed Drongo	4	80	-		
	71	Blue-throated Barbet	4	80	-		
	72	Lineated Barbet	4	80	-		
	73	Coppersmith Barbet	4	80	-		
	74	Asian Koel	4	80	-		
	75	Greater Coucal	4	80	-		
	76	Oriental Magpie Robin	4	80	-		
	77	Baya Weaver	4	80	-		
	78	Black-rumped Flameback	4	80	-		
	79	Indian Roller	4	80	-		
	80	Red Avadavat	4	80	-		
	81	Paddy field Pipit	4	80	-		
	82	Black headed Oriole	4	80	-		
	83	Asian Green Bee eater	4	80	-		
	84	Chestnut-headed Bee eater	4	80	-		
	85	Indian Paradise Flycatcher	4	80	-		
	86	Red-wattled Lapwing	4	80	-		
	87	Yellow-wattled Lapwing	4	80	-		
D4		Mix. WATER BIRDS AVIARY			435		
	88	Pond Heron	4		-		
	89	Purple Heron	4		-		
	90	Cattle Egret	4		-		
	91	Little Egret	4		-		
	92	Intermediate Egret	4		-		
	93	Spoonbill	4		-		
	94	Little Cormorant	4		-		
	95	Oriental Darter	4		-		
	96	Common Moorhen	4		-		
	97	Painted Stork	10		-		
	98	Lesser Adjutant Stork	12		-		
	99	White-breasted Waterhen	4		-		
	100	Black Headed Ibis	12		-		
H		FISHES (Aquarium)			160		
H1	101	Sting Ray	5		-		
	102	Yoyo Loach	5		-		
	103	Kuhl's Maskray	5		-		
	104	Odessa Barb	5		-		
	105	Arulius Barb	5		-		
	106	Denison Barb	5		-		
	107	Golden Dwarf Barb	5		-		
	108	Honey Gourami	5		-		
	109	Dwarf Gourami	5		-		
	110	Frail Gourami	5		-		
	111	Blue Badis	5		-		
	112	Zebra Fish	5		-		
	113	Assam Danio	5		-		
	114	Leopard Danio	5		-		
	115	Malabar Danio	5		-		
	116	Bengal Loach	5		-		
	117	Horseface Loach	5		-		
	118	Zebra Loach	5		-		
	119	Blue Spotted Hill Trout	5		-		
	120	Dwarf Pufferfish	5		-		
		TOTAL NATIVE ENCLOSURE AREA			9135	352	276

ANIMAL COLLECTION PLAN FOR HARINALAYA, NEW TOWN, KOLKATA

Sl. No.		ANIMAL NAME	Area in Sq. M. No. Of Animals	As per CZA	Proposed	Kraal	Night House
		NON NATIVE SPECIES					
A		CARNIVORES					
A2	1	African Lion	4	1400	1620	110	80
E		HERBIVORES					
E2	2	Grant's Zebra	6	1900	1940	130	80
E3	3	Northern Giraffe	6	1900	2124	136	92
G		OMNIVORES					
G1	4	Common Hippopotamus	3	1200	1766	220	82
B		PRIMATES					
B1	5	Common Marmoset	6	50	50		
B2	8	Golden-headed Lion Tamarin	6	50	50		
B3	7	White-lipped Tamarin	6	50	50		
B4	6	Tufted Capuchin	6	50	50		
B5	9	Red-tailed Monkey	4	700	500	80	40
B6	10	Orangutan	4	1200	1000		
F		MARSUPIALS					
F1	11	Koala	4		150		
F2	12	Eastern Grey Kangaroo	4	500	500	60	40
C		REPTILES					
C20	13	Green Iguana	5	100	100		
C21	14	Yellow Anaconda	4	80	80		
C22	15	Green Anaconda	4	80	80		
D		BIRDS					
D1.V	16	Golden Pheasant	4	80	-		
D1.VI	17	Lady Amherst's Pheasant	4	80	-		
D5	18	Greater Sulphur Crested Cockatoo	8	80	80		
D6	19	Umbrella Cockatoo	8	80	80		
D7	20	Red-tailed Black Cockatoo	8	80	80		
D8	21	Blue & Yellow Macaw	10	80	80		
D9	22	Scarlet Macaw	10	80	80		
D10	23	Red & Green Macaw	10	80	80		
D11	24	Orange winged Amazon	10	80	80		
D12	25	Grey Parrot	10	80	80		
D13	26	Eclectus Parrot	10	80	80		
D14	27	Black-capped Lory	10	80	80		
D15	28	Toco Toucan	4	80	80		
D4		Mix.WATER BIRDS AVIARY			-		
	28	Black Swan	6	300			
	29	Mute Swan	8	300			
		TOTAL NON NATIVE ENCLOSURE AREA			10940	736	414

I	OTHER FACILITIES		
Sl. No.		NAME OF THE FACILITIES	AREA OF FACILITIES
I1	1	Rescue-cum-Quarantine Center	735
I2	2	CBC Yellow Monitor Lizard	100
I3	3	CBC Painted Stork	245
I4	4	CBC Lesser Adjutant Stork & Black Headed Ibis	245
I5	5	Hospital and Recovery	196
I6	6	Vermicompost	186
I7	7	Postmortem Room	50
I8	8	Incinerator Room	60
I9	9	Water Treatment Plant	42
I10	10	Admin Block	345
I11	11	Cafeteria	154
I12	12	Souvenir shop	10
I13	13	Keepers' Area & Kitchen	239
I14	14	Store & Visitors Toilet	136
I15	15	Overhead Tanks	41
I16	16	NIC (Nature Interpretation Centre)	50
		TOTAL UTILITY AREA	2834

SEWERAGE LAYOUT PLAN OF HARINALAYA, NEW TOWN, KOLKATA

LEGEND :	
	Feeding Cell
	Water Body
	Wooden Logs
	Stone
	Trees
	Lawn
	Hedge
	N.S. or Night Shelter
	Drinking Water Counter
	Service Pathway
	Existing Service Pathway
	Gate
	Boundary Wall
	Contours
	Store
	Hospital

ABBREVIATION :-
W.T.P.- WATER TREATMENT TANK
O.H.T.-OVER HEAD TANK
N.S.-NIGHT SHELTER
P.M.ROOM- POSTMORTEM ROOM

Area statement of Harinalaya

Sl No.	Place name	Area (Sq.M.)	Percentage
i	ANIMAL ENCLOSURES	20075.00	31.57%
ii	PATHWAY	8681.00	13.65%
iii	ZOO UTILITY & INFRASTRUCTURE	2834.00	4.46%
iv	NIGHT SHELTER & KRAAL	1778.00	2.80%
v	GREEN ZONE	30228.00	47.53%
	TOTAL ZOO AREA	**63596.00**	**100.00%**

The revised Master (Layout) Plan of the Harinalaya Zoo, New Town, Kolkata, West Bengal was placed before 106th Meeting of the Technical Committee, CZA held on 27.09.2022. Subsequently, the 40th Meeting of the Central Zoo Authority held on 28.11.2023 approved recommendation of 106th Meeting of Technical Committee. The approval was communicated vide this office letter issue no. This office letter issue no. I/36463/2022 dated 22.12.2022. The zoo vide office letter no. 136/1-3 dated 31.01.2024 has submitted satisfactory compliance.

Authenticated

सदस्य सचिव/Member Secretary
केन्द्रीय चिड़ियाघर प्राधिकरण, Central Zoo Authority
पर्यावरण वन और जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest & Climate Change
भारत सरकार/ Govt of India
New Delhi

Additional Principal Chief Conservator of Forests
&
Member Secretary
West Bengal Zoo Authority

ANIMAL COLLECTION PLAN FOR HARINALAYA, NEW TOWN, KOLKATA

Sl. No.		ANIMAL NAME	No. Of Animals	Area in Sq. M. As per CZA	Proposed	Kraal	Night House
		NATIVE SPECIES					
A		CARNIVORES					
A1	1	Bengal Tiger	4	1400	1600	120	80
E		HERBIVORES					
E1	2	Spotted Deer	5	800	2300	80	85
	3	Barking Dear	5	800			
	4	Four Horned Antelope	4				
E4	5	Blackbuck	4	100	110	30	27
	6	Mouse Deer	5				
B		PRIMATE					
B7	7	Western Hoolock Gibbon	4	700	700	50	84
C		REPTILES					
C1	8	Saltwater Crocodile	2	400	630	46	
C2	9	Marsh Crocodile	10	400	760	26	
C3	10	Reticulated Python	4	80	80		
C4	11	Burmese Python	4	80	80		
C5	12	Indian Rock Python	6	80	80		
C6	13	Banded Krait	4	40	40		
C7	14	Russell's Viper	4	40	40		
C8	15	Bamboo Pit Viper	4	40	40		
C9	16	Orvsate Flying Snake/Kainagini	4	40	40		
C10	17	Spectacled Cobra	4	40	40		
C11	18	Monocled Cobra	4	40	40		
C12	19	Indian Wolf Snake	4	40	40		
C13	20	Asian Water Monitor	4	80	80		
C14	21	Yellow Monitor	4	80	80		
C15	22	Desert Monitor	4	80	80		
C16	23	Indian Chameleon	10	40	40		
C17	24	Tokay Gecko	10	40	40		
C18		TURTLE POND			110		
	25	Indian Flapshell Turtle	10	80	-		
	26	Indian Softshell Turtle/Ganges Softshell Turtle	10	80	-		
	27	Peacock Softshell Turtle	10	80	-		
	28	Indian Tent Turtle	10	80	-		
	29	Indian Roof Turtle	10	80	-		
	30	Indian Eyed Turtle	10	80	-		
	31	Black Pond Turtle/Spotted Pond Turtle	10	80	-		
	32	Indian Black Turtle	10	80	-		
	33	Indian narrow-headed softshell Turtle	4	80	-		
C19		TORTOISE HOUSE			120		
	34	Indian Star Tortoise	10	40	-		
	35	Travancore Tortoise	10	40	-		
	36	Elongated/Yellow Tortoise	10	40	-		
	37	Asian Forest Tortoise	10	40	-		
D		BIRDS					
D1		PHEASANTRY			560		
I	38	Indian Peafowl / White Peafowl	4	160	-		
II	39	Red Jungle Fowl	4	80	-		
III	40	Grey Jungle Fowl	4	80	-		
IV	41	Kalij Pheasant	4	80	-		
D2		Mix. FLYING BIRDS AVIARY-I			310		
	42	Alexandrine Parakeet	4	80	-		
	43	Rose-ringed Parakeet	4	80	-		
	44	Blossom-headed Parakeet	4	80	-		
	45	Plum-headed Parakeet	4	80	-		
	46	Red brested Parakeet	4	80	-		
	47	House Sparrow	4	80	-		
	48	Asian Pied Starling	4	80	-		
	49	Brahminy Starling	4	80	-		
	50	Hill Myna	4	80	-		
	51	Common Myna	4	80	-		
	52	Jungle Myna	4	80	-		
	53	Indian Pied Myna	4	80	-		
	54	Scaly-breasted Munia	4	80	-		
	55	Tri-colour Munia Munia	4	80	-		
	56	White-rumped Munia	4	80	-		
	57	Black-headed/ Chestnut Munia	4	80	-		
	58	Red-whiskered Bulbul	4	80	-		
	59	Red-vented Bulbul	4	80	-		
D3		Mix. FLYING BIRDS AVIARY-II			500		
	60	Tailor Bird	4	80	-		
	61	Purple Sunbird	4	80	-		
	62	Purple-rumped Sunbird	4	80	-		
	63	Common Babbler	4	80	-		
	64	Common Kingfisher	4	80	-		
	65	White-throated Kingfisher	4	80	-		
	66	Pied Kingfisher	4	80	-		
	67	Stork-billed Kingfisher	4	80	-		
	68	Ruddy Kingfisher	4	80	-		
	69	Black Drongo	4	80	-		
	70	Greater Racket-tailed Drongo	4	80	-		
	71	Blue-throated Barbet	4	80	-		
	72	Lineated Barbet	4	80	-		
	73	Coppersmith Barbet	4	80	-		
	74	Asian Koel	4	80	-		
	75	Greater Coucal	4	80	-		
	76	Oriental Magpie Robin	4	80	-		
	77	Baya Weaver	4	80	-		
	78	Black-rumped Flameback	4	80	-		
	79	Indian Roller	4	80	-		
	80	Red Avadavat	4	80	-		
	81	Paddy field Pipit	4	80	-		
	82	Black headed Oriole	4	80	-		
	83	Asian Green Bee eater	4	80	-		
	84	Chestnut-headed Bee eater	4	80	-		
	85	Indian Paradise Flycatcher	4	80	-		
	86	Red-wattled Lapwing	4	80	-		
	87	Yellow-wattled Lapwing	4	80	-		
D4		Mix. WATER BIRDS AVIARY			435		
	88	Pond Heron	4		-		
	89	Purple Heron	4		-		
	90	Cattle Egret	4		-		
	91	Little Egret	4		-		
	92	Intermediate Egret	4		-		
	93	Spoonbill	4		-		
	94	Little Cormorant	4		-		
	95	Oriental Darter	4		-		
	96	Common Moorhen	4		-		
	97	Painted Stork	10		-		
	98	Lesser Adjutant Stork	12		-		
	99	White-breasted Waterhen	4		-		
	100	Black Headed Ibis	12		-		
H		FISHES (Aquarium)			160		
H1	101	Sting Ray	5		-		
	102	Yoyo Loach	5		-		
	103	Kuhli's Maskray	5		-		
	104	Odessa Barb	5		-		
	105	Arulius Barb	5		-		
	106	Denison Barb	5		-		
	107	Golden Dwarf Barb	5		-		
	108	Honey Gourami	5		-		
	109	Dwarf Gourami	5		-		
	110	Frail Gourami	5		-		
	111	Blue Badis	5		-		
	112	Zebra Fish	5		-		
	113	Assam Danio	5		-		
	114	Leopard Danio	5		-		
	115	Malabar Danio	5		-		
	116	Bengal Loach	5		-		
	117	Horseface Loach	5		-		
	118	Zebra Loach	5		-		
	119	Blue Spotted Hill Trout	5		-		
	120	Dwarf Pufferfish	5		-		
		TOTAL NATIVE ENCLOSURE AREA			9135	352	276

ANIMAL COLLECTION PLAN FOR HARINALAYA, NEW TOWN, KOLKATA

Sl. No.		ANIMAL NAME	No. Of Animals	Area in Sq. M. As per CZA	Proposed	Kraal	Night House
		NON NATIVE SPECIES					
A		CARNIVORES					
A2	1	African Lion	4	1400	1620	110	80
E		HERBIVORES					
E2	2	Grant's Zebra	6	1900	1940	130	80
E3	3	Northern Giraffe	6	1900	2124	136	92
G		OMNIVORES					
G1	4	Common Hippopotamus	3	1200	1766	220	82
B		PRIMATES					
B1	5	Common Marmoset	6	50	50		
B2	8	Golden-headed Lion Tamarin	6	50	50		
B3	7	White-lipped Tamarin	6	50	50		
B4	6	Tufted Capuchin	6	50	50		
B5	9	Red-tailed Monkey	4	700	500	80	40
B6	10	Orangutan	4	1200	1000		
F		MARSUPIALS					
F1	11	Koala	4		150		
F2	12	Eastern Grey Kangaroo	4	500	500	60	40
C		REPTILES					
C20	13	Green Iguana	5	100	100		
C21	14	Yellow Anaconda	4	80	80		
C22	15	Green Anaconda	4	80	80		
D		BIRDS					
D1.V	16	Golden Pheasant	4	80	-		
D1.VI	17	Lady Amherst's Pheasant	4	80	-		
D5	18	Greater Sulphur Crested Cockatoo	8	80	80		
D6	19	Umbrella Cockatoo	8	80	80		
D7	20	Red-tailed Black Cockatoo	8	80	80		
D8	21	Blue & Yellow Macaw	10	80	80		
D9	22	Scarlet Macaw	10	80	80		
D10	23	Red & Green Macaw	10	80	80		
D11	24	Orange winged Amazon	10	80	80		
D12	25	Grey Parrot	10	80	80		
D13	26	Eclectus Parrot	10	80	80		
D14	27	Black-capped Lory	10	80	80		
D15	28	Toco Toucan	4	80	80		
D4		Mix.WATER BIRDS AVIARY			-		
	28	Black Swan	6	300			
	29	Mute Swan	8	300			
		TOTAL NON NATIVE ENCLOSURE AREA		10940	736	414	

I	OTHER FACILITIES		
Sl. No.		NAME OF THE FACILITIES	AREA OF FACILITIES
I1	1	Rescue-cum-Quarantine Center	735
I2	2	CBC Yellow Monitor Lizard	100
I3	3	CBC Painted Stork	245
I4	4	CBC Lesser Adjutant Stork & Black Headed Ibis	245
I5	5	Hospital and Recovery	196
I6	6	Vermicompost	186
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I8	8	Incinerator Room	60
I9	9	Water Treatment Plant	42
I10	10	Admin Block	345
I11	11	Cafeteria	154
I12	12	Souvenir shop	10
I13	13	Keepers' Area & Kitchen	239
I14	14	Store & Visitors Toilet	136
I15	15	Overhead Tanks	41
I16	16	NIC (Nature Interpretation Centre)	50
		TOTAL UTILITY AREA	2834

SERVICES LEGENDS :-	Symbol
SEWERAGE LINE	
MANHOLE	
SEWERAGE TREATMENT PLANT	STP
SOAK PIT	
COMPOST PIT	VERMI COMPOST
WATER TREATMENT PLANT	WTP

Ex-Officio Unit-in-Charge
Harinalaya (Deer Park)
& Range Officer
Jawharkunja Range

Assistant Director
Harinalaya Mini Zoo

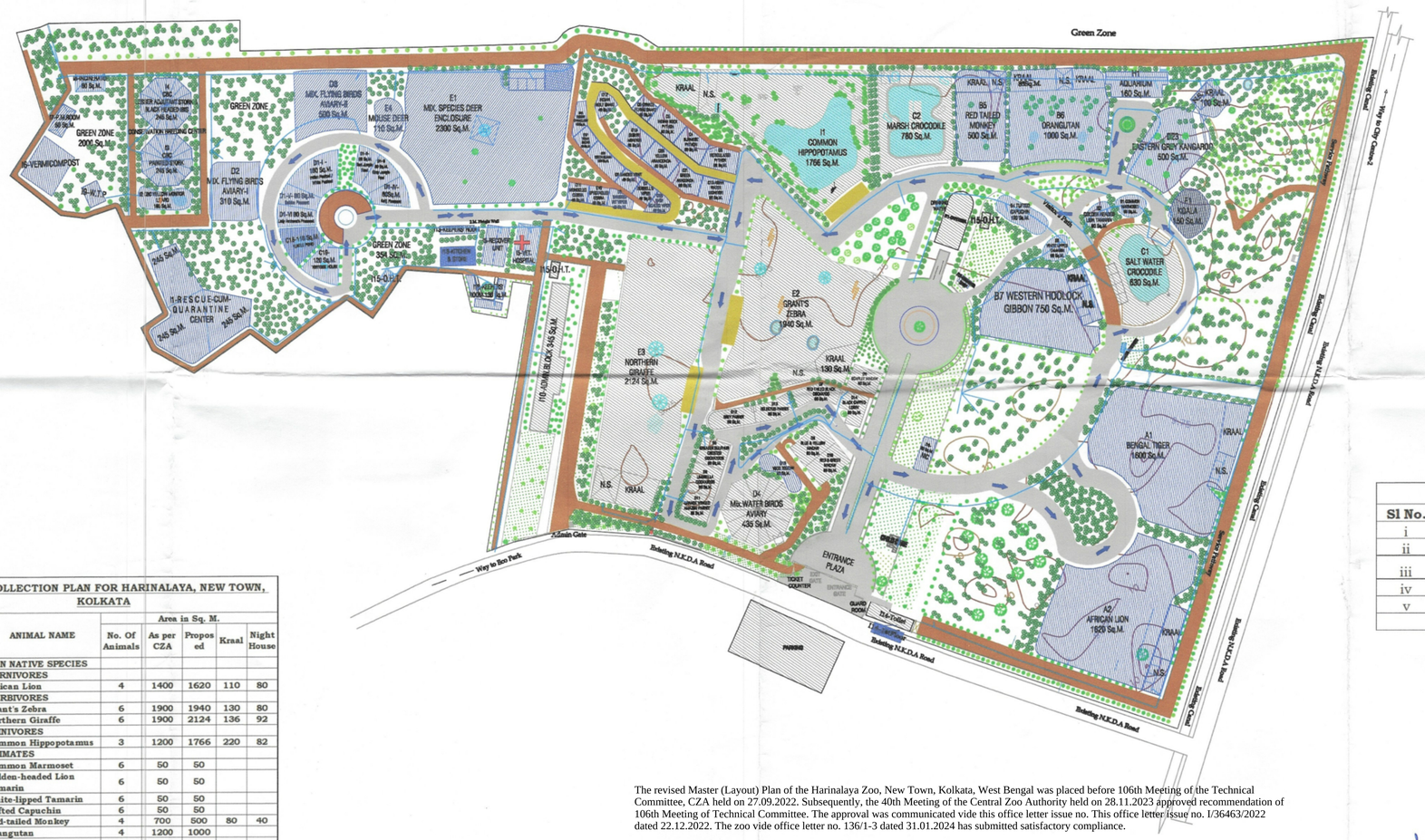
Ex-Officio Director
Harinalaya Mini Zoo

Principal Chief Conservator of Forests
Wildlife & Chief Wildlife Warden
West Bengal

OWNER :	WEST BENGAL ZOO AUTHORITY Aranya Bhawan, Block-LA10A, Sector-III, Saltlake City, Kolkata-700 106		
PROJECT :	HARINALAYA NEWTOWN, KOLKATA		
TITLE :	PROPOSED SEWERAGE (LAYOUT) PLAN	SCALE :	1:1000
		DATE :	17.11.2023
DRAWN BY	CHECKED BY / APPROVED BY	DRG. NO.	SHEET / REV.- R2
S. Ghosh		WBZA/HDP/SITE/AR/005	1

SHEET - A1

STORM WATER DRAINAGE LAYOUT PLAN OF HARINALAYA, NEW TOWN, KOLKATA



LEGEND :

	Feeding Cell
	Water Body
	Wooden Logs
	Stone
	Trees
	Lawn
	Hedge
	N.S. or Night Shelter
	Drinking Water Counter
	Service Pathway
	Existing Service Pathway
	Gate
	Boundary Wall
	Contours
	Store
	Hospital

ABBREVIATION :-
W.T.P.- WATER TREATMENT TANK
O.H.T.-OVER HEAD TANK
N.S.-NIGHT SHELTER
P.M.ROOM- POSTMORTEM ROOM

Area statement of Harinalaya

Sl No.	Place name	Area (Sq.M.)	Percentage
i	ANIMAL ENCLOSURES	20075.00	31.57%
ii	PATHWAY	8681.00	13.65%
iii	ZOO UTILITY & INFRASTRUCTURE	2834.00	4.46%
iv	NIGHT SHELTER & KRAAL	1778.00	2.80%
v	GREEN ZONE	30228.00	47.53%
	TOTAL ZOO AREA	**63596.00**	**100.00%**

The revised Master (Layout) Plan of the Harinalaya Zoo, New Town, Kolkata, West Bengal was placed before 106th Meeting of the Technical Committee, CZA held on 27.09.2022. Subsequently, the 40th Meeting of the Central Zoo Authority held on 28.11.2023 approved recommendation of 106th Meeting of Technical Committee. The approval was communicated vide this office letter issue no. This office letter issue no. 1/36463/2022 dated 22.12.2022. The zoo vide office letter no. 136/1-3 dated 31.01.2024 has submitted satisfactory compliance.

Authenticated

Member Secretary
Central Zoo Authority
Ministry of Environment, Forest & Climate Change
Govt. of India, New Delhi

Additional Principal Chief Conservator of Forests
&
Member Secretary
West Bengal Zoo Authority

SERVICES LEGEND	SYMBOL
STORM WATER DRAIN	
RAIN WATER HARVESTING	

Ex-Officio Unit-in-Charge
Harinalaya (Deer Park)
& Range Officer
Jawharkunja Range

Assistant Director
Harinalaya Mini Zoo

Ex-Officio Director
Harinalaya Mini Zoo

Principal Chief Conservator of Forests
Wildlife & Chief Wildlife Warden
West Bengal

OWNER :	WEST BENGAL ZOO AUTHORITY Aranya Bhawan, Block-LA10A, Sector-III, Saltlake City, Kolkata-700 106
PROJECT :	HARINALAYA NEWTOWN, KOLKATA
TITLE :	PROPOSED STORM WATER MASTER (LAYOUT) PLAN
SCALE :	1:1000
DATE :	17.11.2023

DRAWN BY	CHECKED BY	APPROVED BY	DRG. NO.	SHEET	REV.- R2
S. Ghosh			WBZA/HDP/SITE/AR/005	1	

SHEET - A1

ANIMAL COLLECTION PLAN FOR HARINALAYA, NEW TOWN, KOLKATA

Sl. No.		ANIMAL NAME	Area in Sq. M. No. Of Animals	As per CZA	Proposed	Kraal	Night House
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	3	Barking Dear	5	800			
	4	Four Horned Antelope	4				
	5	Blackbuck	4				
E4	6	Mouse Deer	5	100	110	30	27
B		PRIMATE					
B7	7	Western Hoolock Gibbon	4	700	700	50	84
C		REPTILES					
C1	8	Saltwater Crocodile	2	400	630	46	
C2	9	Marsh Crocodile	10	400	760	26	
C3	10	Reticulated Python	4	80	80		
C4	11	Burmese Python	4	80	80		
C5	12	Indian Rock Python	6	80	80		
C6	13	Banded Krait	4	40	40		
C7	14	Russell's Viper	4	40	40		
C8	15	Bamboo Pit Viper	4	40	40		
C9	16	Ornate Flying Snake/Kalnagini	4	40	40		
C10	17	Spectacled Cobra	4	40	40		
C11	18	Monocled Cobra	4	40	40		
C12	19	Indian Wolf Snake	4	40	40		
C13	20	Asian Water Monitor	4	80	80		
C14	21	Yellow Monitor	4	80	80		
C15	22	Desert Monitor	4	80	80		
C16	23	Indian Chameleon	10	40	40		
C17	24	Tokay Gecko	10	40	40		
C18		TURTLE POND			110		
	25	Indian Flapshell Turtle	10	80	-		
	26	Indian Softshell Turtle/Ganges Softshell Turtle	10	80	-		
	27	Peacock Softshell Turtle	10	80	-		
	28	Indian Tent Turtle	10	80	-		
	29	Indian Roof Turtle	10	80	-		
	30	Indian Eyed Turtle	10	80	-		
	31	Black Pond Turtle/Spotted Pond Turtle	10	80	-		
	32	Indian Black Turtle	10	80	-		
	33	Indian narrow-headed softshell Turtle	4	80	-		
C19		TORTOISE HOUSE			120		
	34	Indian Star Tortoise	10	40	-		
	35	Travancore Tortoise	10	40	-		
	36	Elongated/Yellow Tortoise	10	40	-		
	37	Asian Forest Tortoise	10	40	-		
D		BIRDS					
D1		PHEASANTRY			560		
I	38	Indian Peafowl / White Peafowl	4	160	-		
II	39	Red Jungle Fowl	4	80	-		
III	40	Grey Jungle Fowl	4	80	-		
IV	41	Kalij Pheasant	4	80	-		
D2		Mix. FLYING BIRDS AVIARY-I			310		
	42	Alexandrine Parakeet	4	80	-		
	43	Rose-ringed Parakeet	4	80	-		
	44	Blossom-headed Parakeet	4	80	-		
	45	Plum-headed Parakeet	4	80	-		
	46	Red brested Parakeet	4	80	-		
	47	House Sparrow	4	80	-		
	48	Asian Pied Starling	4	80	-		
	49	Brahminy Starling	4	80	-		
	50	Hill Myna	4	80	-		
	51	Common Myna	4	80	-		
	52	Jungle Myna	4	80	-		
	53	Indian Pied Myna	4	80	-		
	54	Scaly-breasted Munia	4	80	-		
	55	Tri-colour Munia Munia	4	80	-		
	56	White-rumped Munia	4	80	-		
	57	Black-headed/ Chestnut Munia	4	80	-		
	58	Red-whiskered Bulbul	4	80	-		
	59	Red-vented Bulbul	4	80	-		
D3		Mix. FLYING BIRDS AVIARY-II			500		
	60	Tailor Bird	4	80	-		
	61	Purple Sunbird	4	80	-		
	62	Purple-rumped Sunbird	4	80	-		
	63	Common Babbler	4	80	-		
	64	Common Kingfisher	4	80	-		
	65	White-throated Kingfisher	4	80	-		
	66	Pied Kingfisher	4	80	-		
	67	Stork-billed Kingfisher	4	80	-		
	68	Ruddy Kingfisher	4	80	-		
	69	Black Drongo	4	80	-		
	70	Greater Racket-tailed Drongo	4	80	-		
	71	Blue-throated Barbet	4	80	-		
	72	Lineated Barbet	4	80	-		
	73	Coppersmith Barbet	4	80	-		
	74	Asian Koel	4	80	-		
	75	Greater Coucal	4	80	-		
	76	Oriental Magpie Robin	4	80	-		
	77	Baya Weaver	4	80	-		
	78	Black-rumped Flameback	4	80	-		
	79	Indian Roller	4	80	-		
	80	Red Avadavat	4	80	-		
	81	Paddy field Pipit	4	80	-		
	82	Black headed Oriole	4	80	-		
	83	Asian Green Bee eater	4	80	-		
	84	Chestnut-headed Bee eater	4	80	-		
	85	Indian Paradise Flycatcher	4	80	-		
	86	Red-wattled Lapwing	4	80	-		
	87	Yellow-wattled Lapwing	4	80	-		
D4		Mix. WATER BIRDS AVIARY			435		
	88	Pond Heron	4		-		
	89	Purple Heron	4		-		
	90	Cattle Egret	4		-		
	91	Little Egret	4		-		
	92	Intermediate Egret	4		-		
	93	Spoonbill	4		-		
	94	Little Cormorant	4		-		
	95	Oriental Darter	4		-		
	96	Common Moorhen	4		-		
	97	Painted Stork	10		-		
	98	Lesser Adjutant Stork	12		-		
	99	White-breasted Waterhen	4		-		
	100	Black Headed Ibis	12		-		
H		FISHES (Aquarium)			160		
H1	101	Sting Ray	5		-		
	102	Yoyo Loach	5		-		
	103	Kuhl's Maskray	5		-		
	104	Odessa Barb	5		-		
	105	Arulius Barb	5		-		
	106	Denison Barb	5		-		
	107	Golden Dwarf Barb	5		-		
	108	Honey Gourami	5		-		
	109	Dwarf Gourami	5		-		
	110	Frail Gourami	5		-		
	111	Blue Badis	5		-		
	112	Zebra Fish	5		-		
	113	Assam Danio	5		-		
	114	Leopard Danio	5		-		
	115	Malabar Danio	5		-		
	116	Bengal Loach	5		-		
	117	Horseface Loach	5		-		
	118	Zebra Loach	5		-		
	119	Blue Spotted Hill Trout	5		-		
	120	Dwarf Pufferfish	5		-		
		TOTAL NATIVE ENCLOSURE AREA			9135	352	276

ANIMAL COLLECTION PLAN FOR HARINALAYA, NEW TOWN, KOLKATA

Sl. No.		ANIMAL NAME	Area in Sq. M. No. Of Animals	As per CZA	Proposed	Kraal	Night House
		NON NATIVE SPECIES					
A		CARNIVORES					
A2	1	African Lion	4	1400	1620	110	80
E		HERBIVORES					
E2	2	Grant's Zebra	6	1900	1940	130	80
E3	3	Northern Giraffe	6	1900	2124	136	92
G		OMNIVORES					
G1	4	Common Hippopotamus	3	1200	1766	220	82
B		PRIMATES					
B1	5	Common Marmoset	6	50	50		
B2	8	Golden-headed Lion Tamarin	6	50	50		
B3	7	White-lipped Tamarin	6	50	50		
B4	6	Tufted Capuchin	6	50	50		
B5	9	Red-tailed Monkey	4	700	500	80	40
B6	10	Orangutan	4	1200	1000		
F		MARSUPIALS					
F1	11	Koala	4		150		
F2	12	Eastern Grey Kangaroo	4	500	500	60	40
C		REPTILES					
C20	13	Green Iguana	5	100	100		
C21	14	Yellow Anaconda	4	80	80		
C22	15	Green Anaconda	4	80	80		
D		BIRDS					
D1.V	16	Golden Pheasant	4	80	-		
D1.VI	17	Lady Amherst's Pheasant	4	80	-		
D5	18	Greater Sulphur Crested Cockatoo	8	80	80		
D6	19	Umbrella Cockatoo	8	80	80		
D7	20	Red-tailed Black Cockatoo	8	80	80		
D8	21	Blue & Yellow Macaw	10	80	80		
D9	22	Scarlet Macaw	10	80	80		
D10	23	Red & Green Macaw	10	80	80		
D11	24	Orange winged Amazon	10	80	80		
D12	25	Grey Parrot	10	80	80		
D13	26	Eclectus Parrot	10	80	80		
D14	27	Black-capped Lory	10	80	80		
D15	28	Toco Toucan	4	80	80		
D4		Mix.WATER BIRDS AVIARY			-		
	28	Black Swan	6	300			
	29	Mute Swan	8	300			
		TOTAL NON NATIVE ENCLOSURE AREA			10940	736	414

I	OTHER FACILITIES		
Sl. No.		NAME OF THE FACILITIES	AREA OF FACILITIES
I1	1	Rescue-cum-Quarantine Center	735
I2	2	CBC Yellow Monitor Lizard	100
I3	3	CBC Painted Stork	245
I4	4	CBC Lesser Adjutant Stork & Black Headed Ibis	245
I5	5	Hospital and Recovery	196
I6	6	Vermicompost	186
I7	7	Postmortem Room	50
I8	8	Incinerator Room	60
I9	9	Water Treatment Plant	42
I10	10	Admin Block	345
I11	11	Cafeteria	154
I12	12	Souvenir shop	10
I13	13	Keepers' Area & Kitchen	239
I14	14	Store & Visitors Toilet	136
I15	15	Overhead Tanks	41
I16	16	NIC (Nature Interpretation Centre)	50
		TOTAL UTILITY AREA	2834

ELECTRICAL LAYOUT PLAN OF HARINALAYA, NEW TOWN, KOLKATA

LEGEND :	
	Feeding Cell
	Water Body
	Wooden Logs
	Stone
	Trees
	Lawn
	Hedge
	N.S. or Night Shelter
	Drinking Water Counter
	Service Pathway
	Existing Service Pathway
	Gate
	Boundary Wall
	Contours
	Store
	Hospital

ABBREVIATION :-
W.T.P.- WATER TREATMENT TANK
O.H.T.-OVER HEAD TANK
N.S.-NIGHT SHELTER
P.M.ROOM- POSTMORTEM ROOM

Area statement of Harinalaya

Sl No.	Place name	Area (Sq.M.)	Percentage
i	ANIMAL ENCLOSURES	20075.00	31.57%
ii	PATHWAY	8681.00	13.65%
iii	ZOO UTILITY & INFRASTRUCTURE	2834.00	4.46%
iv	NIGHT SHELTER & KRAAL	1778.00	2.80%
v	GREEN ZONE	30228.00	47.53%
	TOTAL ZOO AREA	63596.00	100.00%

The revised Master (Layout) Plan of the Harinalaya Zoo, New Town, Kolkata, West Bengal was placed before 106th Meeting of the Technical Committee, CZA held on 27.09.2022. Subsequently, the 40th Meeting of the Central Zoo Authority held on 28.11.2023 approved recommendation of 106th Meeting of Technical Committee. The approval was communicated vide this office letter issue no. This office letter issue no. I/36463/2022 dated 22.12.2022. The zoo vide office letter no. 136/1-3 dated 31.01.2024 has submitted satisfactory compliance.

Authenticated

ELECTRICAL LEGEND		
1.	STREET LIGHT POLE	
2.	ELECTRICAL LINE	

Ex-Officio Unit-in-Charge
Harinalaya (Deer Park)
& Range Officer
Jawharkunja Range

Assistant Director
Harinalaya Mini Zoo

Ex-Officio Director
Harinalaya Mini Zoo

Additional Principal Chief
Conservator of Forests
&
Member Secretary
West Bengal Zoo Authority

Principal Chief Conservator of Forests
Wildlife & Chief Wildlife Warden
West Bengal

OWNER :	WEST BENGAL ZOO AUTHORITY Aranya Bhawan, Block-LA10A, Sector-III, Saltlake City, Kolkata-700 106			
PROJECT :	HARINALAYA NEWTOWN, KOLKATA			
TITLE :	PROPOSED ELECTRICAL (LAYOUT) PLAN		SCALE :	1:1000
			DATE :	17.11.2023
DRAWN BY	CHECKED BY	APPROVED BY	DRG. NO.	SHEET / REV.- R2
S. Ghosh			WBZA/HDP/SITE/AR/005	1 /

SHEET - A1

ANIMAL COLLECTION PLAN FOR HARINALAYA, NEW TOWN, KOLKATA

	Sl. No.	ANIMAL NAME	Area in Sq. M. No. Of Animals	As per CZA	Proposed	Kraal	Night House
		NATIVE SPECIES					
A		CARNIVORES					
A1	1	Bengal Tiger	4	1400	1600	120	80
E		HERBIVORES					
E1	2	Spotted Deer	5	800	2300	80	85
	3	Barking Dear	5	800			
	4	Four Horned Antelope	4				
	5	Blackbuck	4				
E4	6	Mouse Deer	5	100	110	30	27
B		PRIMATE					
B7	7	Western Hoolock Gibbon	4	700	700	50	84
C		REPTILES					
C1	8	Saltwater Crocodile	2	400	630	46	
C2	9	Marsh Crocodile	10	400	760	26	
C3	10	Reticulated Python	4	80	80		
C4	11	Burmese Python	4	80	80		
C5	12	Indian Rock Python	6	80	80		
C6	13	Banded Krait	4	40	40		
C7	14	Russell's Viper	4	40	40		
C8	15	Bamboo Pit Viper	4	40	40		
C9	16	Ornate Flying Snake/Kalnagini	4	40	40		
C10	17	Spectacled Cobra	4	40	40		
C11	18	Monocled Cobra	4	40	40		
C12	19	Indian Wolf Snake	4	40	40		
C13	20	Asian Water Monitor	4	80	80		
C14	21	Yellow Monitor	4	80	80		
C15	22	Desert Monitor	4	80	80		
C16	23	Indian Chameleon	10	40	40		
C17	24	Tokay Gecko	10	40	40		
C18		TURTLE POND			110		
	25	Indian Flapshell Turtle	10	80	-		
	26	Indian Softshell Turtle/Ganges Softshell Turtle	10	80	-		
	27	Peacock Softshell Turtle	10	80	-		
	28	Indian Tent Turtle	10	80	-		
	29	Indian Roof Turtle	10	80	-		
	30	Indian Eyed Turtle	10	80	-		
	31	Black Pond Turtle/Spotted Pond Turtle	10	80	-		
	32	Indian Black Turtle	10	80	-		
	33	Indian narrow-headed softshell Turtle	4	80	-		
C19		TORTOISE HOUSE			120		
	34	Indian Star Tortoise	10	40	-		
	35	Travancore Tortoise	10	40	-		
	36	Elongated/Yellow Tortoise	10	40	-		
	37	Asian Forest Tortoise	10	40	-		
D		BIRDS					
D1		PHEASANTRY			560		
I	38	Indian Peafowl / White Peafowl	4	160	-		
II	39	Red Jungle Fowl	4	80	-		
III	40	Grey Jungle Fowl	4	80	-		
IV	41	Kalij Pheasant	4	80	-		
D2		Mix. FLYING BIRDS AVIARY-I			310		
	42	Alexandrine Parakeet	4	80	-		
	43	Rose-ringed Parakeet	4	80	-		
	44	Blossom-headed Parakeet	4	80	-		
	45	Plum-headed Parakeet	4	80	-		
	46	Red brested Parakeet	4	80	-		
	47	House Sparrow	4	80	-		
	48	Asian Pied Starling	4	80	-		
	49	Brahminy Starling	4	80	-		
	50	Hill Myna	4	80	-		
	51	Common Myna	4	80	-		
	52	Jungle Myna	4	80	-		
	53	Indian Pied Myna	4	80	-		
	54	Scaly-breasted Munia	4	80	-		
	55	Tri-colour Munia Munia	4	80	-		
	56	White-rumped Munia	4	80	-		
	57	Black-headed/ Chestnut Munia	4	80	-		
	58	Red-whiskered Bulbul	4	80	-		
	59	Red-vented Bulbul	4	80	-		
D3		Mix. FLYING BIRDS AVIARY-II			500		
	60	Tailor Bird	4	80	-		
	61	Purple Sunbird	4	80	-		
	62	Purple-rumped Sunbird	4	80	-		
	63	Common Babbler	4	80	-		
	64	Common Kingfisher	4	80	-		
	65	White-throated Kingfisher	4	80	-		
	66	Pied Kingfisher	4	80	-		
	67	Stork-billed Kingfisher	4	80	-		
	68	Ruddy Kingfisher	4	80	-		
	69	Black Drongo	4	80	-		
	70	Greater Racket-tailed Drongo	4	80	-		
	71	Blue-throated Barbet	4	80	-		
	72	Lineated Barbet	4	80	-		
	73	Coppersmith Barbet	4	80	-		
	74	Asian Koel	4	80	-		
	75	Greater Coucal	4	80	-		
	76	Oriental Magpie Robin	4	80	-		
	77	Baya Weaver	4	80	-		
	78	Black-rumped Flameback	4	80	-		
	79	Indian Roller	4	80	-		
	80	Red Avadavat	4	80	-		
	81	Paddy field Pipit	4	80	-		
	82	Black headed Oriole	4	80	-		
	83	Asian Green Bee eater	4	80	-		
	84	Chestnut-headed Bee eater	4	80	-		
	85	Indian Paradise Flycatcher	4	80	-		
	86	Red-wattled Lapwing	4	80	-		
	87	Yellow-wattled Lapwing	4	80	-		
D4		Mix. WATER BIRDS AVIARY			435		
	88	Pond Heron	4		-		
	89	Purple Heron	4		-		
	90	Cattle Egret	4		-		
	91	Little Egret	4		-		
	92	Intermediate Egret	4		-		
	93	Spoonbill	4		-		
	94	Little Cormorant	4		-		
	95	Oriental Darter	4		-		
	96	Common Moorhen	4		-		
	97	Painted Stork	10		-		
	98	Lesser Adjutant Stork	12		-		
	99	White-breasted Waterhen	4		-		
	100	Black Headed Ibis	12		-		
F		FISHES (Aquarium)			160		
R1	101	Sting Ray	5		-		
	102	Yoyo Loach	5		-		
	103	Kuhl's Maskray	5		-		
	104	Odessa Barb	5		-		
	105	Arulius Barb	5		-		
	106	Denison Barb	5		-		
	107	Golden Dwarf Barb	5		-		
	108	Honey Gourami	5		-		
	109	Dwarf Gourami	5		-		
	110	Frail Gourami	5		-		
	111	Blue Badis	5		-		
	112	Zebra Fish	5		-		
	113	Assam Danio	5		-		
	114	Leopard Danio	5		-		
	115	Malabar Danio	5		-		
	116	Bengal Loach	5		-		
	117	Horseface Loach	5		-		
	118	Zebra Loach	5		-		
	119	Blue Spotted Hill Trout	5		-		
	120	Dwarf Pufferfish	5		-		
		TOTAL NATIVE ENCLOSURE AREA			9135	352	276

ANIMAL COLLECTION PLAN FOR HARINALAYA, NEW TOWN, KOLKATA

	Sl. No.	ANIMAL NAME	Area in Sq. M. No. Of Animals	As per CZA	Proposed	Kraal	Night House
		NON NATIVE SPECIES					
A		CARNIVORES					
A2	1	African Lion	4	1400	1620	110	80
E		HERBIVORES					
E2	2	Grant's Zebra	6	1900	1940	130	80
E3	3	Northern Giraffe	6	1900	2124	136	92
G		OMNIVORES					
G1	4	Common Hippopotamus	3	1200	1766	220	82
B		PRIMATES					
B1	5	Common Marmoset	6	50	50		
B2	8	Golden-headed Lion Tamarin	6	50	50		
B3	7	White-lipped Tamarin	6	50	50		
B4	6	Tufted Capuchin	6	50	50		
B5	9	Red-tailed Monkey	4	700	500	80	40
B6	10	Orangutan	4	1200	1000		
F		MARSUPIALS					
F1	11	Koala	4		150		
F2	12	Eastern Grey Kangaroo	4	500	500	60	40
C		REPTILES					
C20	13	Green Iguana	5	100	100		
C21	14	Yellow Anaconda	4	80	80		
C22	15	Green Anaconda	4	80	80		
D		BIRDS					
D1.V	16	Golden Pheasant	4	80	-		
D1.VI	17	Lady Amherst's Pheasant	4	80	-		
D5	18	Greater Sulphur Crested Cockatoo	8	80	80		
D6	19	Umbrella Cockatoo	8	80	80		
D7	20	Red-tailed Black Cockatoo	8	80	80		
D8	21	Blue & Yellow Macaw	10	80	80		
D9	22	Scarlet Macaw	10	80	80		
D10	23	Red & Green Macaw	10	80	80		
D11	24	Orange winged Amazon	10	80	80		
D12	25	Grey Parrot	10	80	80		
D13	26	Eclectus Parrot	10	80	80		
D14	27	Black-capped Lory	10	80	80		
D15	28	Toco Toucan	4	80	80		
D4		Mix.WATER BIRDS AVIARY			-		
	28	Black Swan	6	300			
	29	Mute Swan	8	300			
		TOTAL NON NATIVE ENCLOSURE AREA			10940	736	414

I		OTHER FACILITIES	
Sl. No.		NAME OF THE FACILITIES	AREA OF FACILITIES
I1	1	Rescue-cum-Quarantine Center	735
I2	2	CBC Yellow Monitor Lizard	100
I3	3	CBC Painted Stork	245
I4	4	CBC Lesser Adjutant Stork & Black Headed Ibis	245
I5	5	Hospital and Recovery	196
I6	6	Vermicompost	186
I7	7	Postmortem Room	50
I8	8	Incinerator Room	60
I9	9	Water Treatment Plant	42
I10	10	Admin Block	345
I11	11	Cafeteria	154
I12	12	Souvenir shop	10
I13	13	Keepers' Area & Kitchen	239
I14	14	Store & Visitors Toilet	136
I15	15	Overhead Tanks	41
I16	16	NIC (Nature Interpretation Centre)	50
		TOTAL UTILITY AREA	2834

ANNEXURE II: ANIMAL COLLECTION PLAN

Sl No.	Species	Present Stock				Proposed collection				Animals to be acquired/ disposed			
		M	F	U	T	M	F	U	T	M	F	U	T
NATIVE MAMMALS													
1.	Bengal Tiger *(Panthera tigris)*	0	0	0	0	2	2	0	4	2	2	0	4
2.	Spotted Deer (*Axis axis*)	8	7	8	23	2	3	0	5	-6	-4	-8	-18
3.	Barking Deer (*Muntiacus muntjak*)	1	7	0	8	2	3	0	5	1	-4	0	-3
4.	Blackbuck (*Antilope cervicapra*)	0	0	0	0	2	2	0	4	2	2	0	4
5.	Four-horned Antelope (*Tetracerus quadricornis*)	0	0	0	0	2	2	0	4	2	2	0	4
6.	Mouse Deer (*Tragulus kanchil*)	0	0	0	0	2	3	0	5	2	3	0	5
7.	Western Hoolock Gibbon (*Hoolock hoolock*)	0	0	0	0	2	2	0	4	2	2	0	4
NON-NATIVE MAMMALS													
8.	African Lion *(Panthera leo)*	0	0	0	0	2	2	0	4	2	2	0	4
9.	Grant's Zebra *(Equus quagga)*	1	1	0	2	3	3	0	6	2	2	0	4
10.	Northern Giraffe *(Giraffa camelopardalis)*	1	1	0	2	3	3	0	6	2	2	0	4
11.	Common Hippopotamus *(Hippopotamus amphibius)*	1	0	0	1	1	2	0	3	0	2	0	2
12.	Common Marmoset (*Callithrix jacchus*)	0	0	0	0	3	3	0	6	3	3	0	6
13.	Tufted Capuchin (*Cebus apella*)	1	1	0	2	3	3	0	6	2	2	0	4
14.	White-lipped Tamarin (*Saguinus labiatus*)	1	1	0	2	3	3	0	6	2	2	0	4
15.	Golden-headed lion Tamarin (*Leontopithecus chrysomelas*)	1	1	0	2	3	3	0	6	2	2	0	4
16.	Red-tailed Monkey (*Cercopithecus ascanius*)	0	0	0	0	3	3	0	6	3	3	0	6
17.	Orangutan (*Pongo sp.)*	0	0	0	0	2	2	0	4	2	2	0	4
18.	Eastern Grey Kangaroo (*Macropus giganteus*)	0	0	0	0	2	2	0	4	2	2	0	4
19	Koala (*Phascolarctos cinereus*)	0	0	0	0	2	2	0	4	2	2	0	4
NATIVE REPTILES													
20	Marsh Crocodile (*Crocodylus palustris*)	3	2	0	5	4	6	0	10	1	4	0	5
21	Saltwater Crocodile (*Crocodylus porosus*)	1	3	0	4	1	1	0	2	0	-2	0	-2

Sl No.	Species	Present Stock				Proposed collection				Animals to be acquired/ disposed			
		M	F	U	T	M	F	U	T	M	F	U	T
22	Reticulated Python (*Malayopython reticulatus*)	0	0	0	0	2	2	0	4	2	2	0	4
23.	Burmese Python (*Python bivittatus*)	0	0	0	0	2	2	0	4	2	2	0	4
24.	Indian Rock Python (*Python morulus*)	0	0	0	0	3	3	0	6	3	3	0	6
25.	Banded Krait (*Bungarus fasciatus*)	0	0	0	0	2	2	0	4	2	2	0	4
26.	Russell's Viper (*Daboia russelii*)	0	0	0	0	2	2	0	4	2	2	0	4
27.	Bamboo Pit Viper (*Trimeresurus stejnegeri*)	0	0	0	0	2	2	0	4	2	2	0	4
28.	Ornate Flying Snake/Kalnagini (*Chrysopelea ornate*)	0	0	0	0	2	2	0	4	2	2	0	4
29.	Spectacled Cobra (*Naja naja*)	0	0	0	0	2	2	0	4	2	2	0	4
30.	Monocled Cobra (*Naja kaouthia*)	0	0	0	0	2	2	0	4	2	2	0	4
31.	Indian Wolf Snake (*Lycodon aulicus*)	0	0	0	0	2	2	0	4	2	2	0	4
32.	Asian Water Monitor (*Varanus salvator*)	0	0	0	0	2	2	0	4	2	2	0	4
33.	Yellow Monitor (*Varanus flavescens*)	0	0	0	0	4	8	0	12	4	8	0	12
34.	Desert Monitor (*Varanus griseus*)	0	0	0	0	2	2	0	4	2	2	0	4
35	Indian Flapshell Turtle (*Lissemys punctata*)	0	0	0	0	5	5	0	10	5	5	0	10
36	Indian Softshell Turtle/Ganges Softshell Turtle (*Nilssonia gangetica*)	0	0	0	0	5	5	0	10	5	5	0	10
37.	Peacock Softshell Turtle (*Nilssonia hurum*)	0	0	0	0	5	5	0	10	5	5	0	10
38.	Indian Tent Turtle (*Pangshura tentoria*)	0	0	0	0	5	5	0	10	5	5	0	10
39.	Indian Roof Turtle (*Pangshura tecta*)	0	0	0	0	5	5	0	10	5	5	0	10
40.	Indian Eyed Turtle (*Morenia petersi*)	0	0	0	0	5	5	0	10	5	5	0	10
41.	Black Pond Turtle/Spotted Pond Turtle (*Geoclemys hamiltonii*)	0	0	0	0	5	5	0	10	5	5	0	10
42.	Indian Black turtle (*Melanochelys trijuga*)	0	0	0	0	5	5	0	10	5	5	0	10

Sl No.	Species	Present Stock				Proposed collection				Animals to be acquired/ disposed			
		M	F	U	T	M	F	U	T	M	F	U	T
43	Indian narrow-headed softshell turtle (*Chitra indica*)	0	0	0	0	2	2	0	4	2	2	0	4
44	Indian Star Tortoise (*Geochelone elegans*)	0	0	0	0	5	5	0	10	5	5	0	10
45	Travancore Tortoise (*Indotestudo travancorica*)	0	0	0	0	5	5	0	10	5	5	0	10
46	Elongated/Yellow Tortoise (*Indotestudo elongate*)	0	0	0	0	5	5	0	10	5	5	0	10
47	Asian Forest Tortoise (*Manouria emys*)	0	0	0	0	5	5	0	10	5	5	0	10
48	Indian chameleon *(Chamaeleo zeylanicus*)	0	0	0	0	5	5	0	10	5	5	0	10
49	Tokay gecko *(Gekko gecko)*	0	0	0	0	5	5	0	10	5	5	0	10
NON-NATIVE REPTILES													
50	Green Iguana *(Iguana iguana)*	0	0	0	0	2	3	0	5	2	3	0	5
51	Yellow Anaconda (*Eunectes notaeus*)	0	0	0	0	2	2	0	4	2	2	0	4
52	Green Anaconda (*Eunectes murinus*)	0	0	0	0	2	2	0	4	2	2	0	4
NATIVE BIRDS													
53	Indian Peafowl/White Peafowl (*Pavo cristatus*)	0	0	0	0	1	3	0	4	1	3	0	4
54	Red Jungle Fowl (*Gallus gallus*)	0	0	0	0	1	3	0	4	1	3	0	4
55	Grey Jungle Fowl (*Gallus sonneratii*)	0	0	0	0	1	3	0	4	1	3	0	4
56	Kalij Pheasant (*Lophura leucomelanos*)	0	0	0	0	1	3	0	4	1	3	0	4
57	Alexandrine Parakeet (*Psittacula eupatria*)	0	3	0	3	2	2	0	4	2	-1	0	1
58	Rose-ringed Parakeet (*Psittacula krameri*)	0	4	0	4	2	2	0	4	2	-2	0	0
59	Blossom-headed Parakeet (*Psittacula roseata*)	0	0	0	0	2	2	0	4	2	2	0	4
60	Plum-headed Parakeet (*Psittacula cyanocephala*)	0	0	0	0	2	2	0	4	2	2	0	4
61	Red breasted parakeet (*Psittacula alexandri*)	0	0	0	0	2	2	0	4	2	2	0	4
62	House Sparrow (*Passer domesticus*)	0	0	0	0	2	2	0	4	2	2	0	4

Sl No.	Species	Present Stock				Proposed collection				Animals to be acquired/ disposed			
		M	F	U	T	M	F	U	T	M	F	U	T
63	Asian Pied Starling (*Gracupica contra*)	0	0	0	0	2	2	0	4	2	2	0	4
64	Brahminy Starling (*Sturnia pagobarum*)	0	0	0	0	2	2	0	4	2	2	0	4
65	Hill Myna (*Gracula religiosa*)	0	0	0	0	2	2	0	4	2	2	0	4
66	Common Myna (*Acridotheres tristis*)	0	0	0	0	2	2	0	4	2	2	0	4
67	Jungle Myna (*Acridotheres fuscus*)	0	0	0	0	2	2	0	4	2	2	0	4
68	Indian Pied Myna (*Gracupica contra*)	0	0	0	0	2	2	0	4	2	2	0	4
69	Scaly-breasted Munia (*Lonchura punctulata*)	0	0	0	0	2	2	0	4	2	2	0	4
70	Tri-colour Munia Munia (*Lonchura Malacca*)	0	0	0	0	2	2	0	4	2	2	0	4
71	White-rumped Munia (*Lonchura striata*)	0	0	0	0	2	2	0	4	2	2	0	4
72	Red Avadavat (*Amandava amandava*)	0	0	0	0	2	2	0	4	2	2	0	4
73	Black-headed Munia/Chestnut Munia (*Lonchura articapilla*)	0	0	0	0	2	2	0	4	2	2	0	4
74	Red-whiskered Bulbul (*Pycnonotus jocosus*)	0	0	0	0	2	2	0	4	2	2	0	4
75	Red-vented Bulbul (*Pycnonotus cafer*)	0	0	0	0	2	2	0	4	2	2	0	4
76	Tailor Bird (*Orthotomus sp.*)	0	0	0	0	2	2	0	4	2	2	0	4
77.	Purple Sunbird (*Cinnyris asiaticus*)	0	0	0	0	2	2	0	4	2	2	0	4
78.	Purple-rumped Sunbird (*leptocoma zeylonica*)	0	0	0	0	2	2	0	4	2	2	0	4
79.	Common Babbler (*Purdoides caudate*)	0	0	0	0	2	2	0	4	2	2	0	4
80.	Common Kingfisher (*Alcedo atthis*)	0	0	0	0	2	2	0	4	2	2	0	4
81.	White-throated Kingfisher (*Halcyon smyrnensis*)	0	0	0	0	2	2	0	4	2	2	0	4
82.	Pied Kingfisher (*Ceryle rudis*)	0	0	0	0	2	2	0	4	2	2	0	4
83.	Stork-billed Kingfisher (*Pelargopsis capensis*)	0	0	0	0	2	2	0	4	2	2	0	4

Sl No.	Species	Present Stock				Proposed collection				Animals to be acquired/ disposed			
		M	F	U	T	M	F	U	T	M	F	U	T
84.	Ruddy Kingfisher (*Halcyon coromanda*)	0	0	0	0	2	2	0	4	2	2	0	4
85.	Black Drongo (*Dicrurus macrocercus*)	0	0	0	0	2	2	0	4	2	2	0	4
86.	Greater Racket-tailed Drongo (*Dicrurus paradiseus*)	0	0	0	0	2	2	0	4	2	2	0	4
87.	Blue-throated Barbet (*Megalaima asiatica*)	0	0	0	0	2	2	0	4	2	2	0	4
88.	Lineated Barbet (*Megalaima lineata*)	0	0	0	0	2	2	0	4	2	2	0	4
89.	Coppersmith barbet (*Megalaima haemacephala*)	0	0	0	0	2	2	0	4	2	2	0	4
90.	Asian Koel (*Eudynamys scolopaceus*)	0	0	0	0	2	2	0	4	2	2	0	4
91.	Greater Coucal (*Centropus sinensis*)	0	0	0	0	2	2	0	4	2	2	0	4
92.	Oriental Magpie robin (*Copsychus saularis)*	0	0	0	0	2	2	0	4	2	2	0	4
93.	Baya Weaver (*Ploceus philippinus*)	0	0	0	0	2	2	0	4	2	2	0	4
94.	Black-rumped Flameback (*Dinopium benghalense*)	0	0	0	0	2	2	0	4	2	2	0	4
95.	Indian roller (*Coracias benghalensis*)	0	0	0	0	2	2	0	4	2	2	0	4
96.	Paddy field Pipit (*Anthus rufulus*)	0	0	0	0	2	2	0	4	2	2	0	4
97.	Black headed oriole (*Oriolus xanthormus*)	0	0	0	0	2	2	0	4	2	2	0	4
98.	Asian Green Bee eater (*Meropos orientalis*)	0	0	0	0	2	2	0	4	2	2	0	4
99.	Chestnut-headed Bee eater (*Merops leschenaulti*)	0	0	0	0	2	2	0	4	2	2	0	4
100.	Indian Paradise Flycatcher (*Terpsiphone paradisi*)	0	0	0	0	2	2	0	4	2	2	0	4
101.	Red-wattled Lapwing (*Vanellus indicus*)	0	0	0	0	2	2	0	4	2	2	0	4
102.	Yellow-wattled Lapwing (*Vanellus malabaricus*)	0	0	0	0	2	2	0	4	2	2	0	4
103.	Pond Heron (*Ardeola sp.*)	0	0	0	0	2	2	0	4	2	2	0	4
104.	Purple Heron (*Ardea purpurea*)	0	0	0	0	2	2	0	4	2	2	0	4

Sl No.	Species	Present Stock				Proposed collection				Animals to be acquired/ disposed			
		M	F	U	T	M	F	U	T	M	F	U	T
105.	Cattle Egret (*Bubulcus ibis*)	0	0	0	0	2	2	0	4	2	2	0	4
106.	Little Egret (*Egretta garzetta*)	0	0	0	0	2	2	0	4	2	2	0	4
107.	Intermediate Egret (*Ardea intermedia*)	0	0	0	0	2	2	0	4	2	2	0	4
108.	Spoonbill (*Platalea leucorodia*)	0	0	0	0	2	2	0	4	2	2	0	4
109.	Little Cormorant (*Mycrocarbo niger*)	0	0	0	0	2	2	0	4	2	2	0	4
110.	Oriental Darter (*Anhinga melanogaster)*	0	0	0	0	2	2	0	4	2	2	0	4
111.	Common Moorhen (*Gallinula chloropus*)	0	0	0	0	2	2	0	4	2	2	0	4
112.	Painted Stork (*Mycteria leucocephala*)	0	0	0	0	3	7	0	10	3	7	0	10
113.	Lesser Adjutant Stork (*Leptoptilos javanicus*)	0	0	0	0	4	8	0	12	4	8	0	12
114.	White-breasted Waterhen (*Amaurornis phoenicurus*)	0	0	0	0	2	2	0	4	2	2	0	4
115.	Black Headed Ibis *(Threskiornis melanocephalus)*	0	0	0	0	4	8	0	12	4	8	0	12
NON-NATIVE BIRDS													
116.	Golden Pheasant (*Chrysolophus pictus*)	4	5	0	9	1	3	0	4	-3	-2	0	-5
117.	Lady Amherst's Pheasant (*Chrysolophus amherstiae*)	0	0	0	0	1	3	0	4	1	3	0	4
118.	Greater Sulphur Crested Cockatoo (*Cacatua galerita*)	0	0	6	6	4	4	0	8	0	2	0	2
119.	Umbrella Cockatoo (*Cacatua alba*)	0	0	4	4	4	4	0	8	0	4	0	4
120.	Red-tailed Black Cockatoo (*Calyptorhynchus banksii*)	1	2	0	3	4	4	0	8	3	2	0	5
121.	Blue & Yellow Macaw (*Ara ararauna*)	9	11	0	20	5	5	0	10	-4	-6	0	-10
122.	Scarlet Macaw (*Ara macao*)	4	0	0	4	5	5	0	10	1	5	0	6
123.	Red & Green Macaw (*Ara chloropterus*)	3	1	1	5	5	5	0	10	2	4	-1	5
124.	Orange winged Amazon (*Amazona amazonica)*	17	12	0	29	5	5	0	10	-12	-7	0	-19
125.	Grey Parrot (*Psittacus erithacus*)	6	6	0	12	5	5	0	10	-1	-1	0	-2

Sl No.	Species	Present Stock				Proposed collection				Animals to be acquired/ disposed			
		M	F	U	T	M	F	U	T	M	F	U	T
126.	Eclectus Parrot (*Eclectus roratus*)	2	3	0	5	5	5	0	10	3	2	0	5
127	Black-capped Lory (*Lorius lory*)	0	0	22	22	5	5	0	10	5	5	-22	-12
128.	Toco Toucan (*Ramphastos toco*)	0	0	0	0	2	2	0	4	2	2	0	4
129	Black Swan (*Cygnus atratus*)	0	0	4	4	3	3	0	6	3	3	-4	2
130.	Mute Swan (*Cygnus olor*)	1	1	0	2	4	4	0	8	3	3	0	6
NATIVE FISHES													
131.	Sting Ray (*Telatrygon zugei)*	0	0	0	0	2	3	0	5	2	3	0	5
132.	Yoyo Loach (*Botia almorhae*)	0	0	0	0	2	3	0	5	2	3	0	5
133.	Kuhl's Maskray (*Neotrygon kuhlii*)	0	0	0	0	2	3	0	5	2	3	0	5
134.	Odessa Barb (*Pethia padamya*)	0	0	0	0	2	3	0	5	2	3	0	5
135.	Arulius Barb (*Dawkinsia arulius*)	0	0	0	0	2	3	0	5	2	3	0	5
136.	Denison Barb (*Sahyadria denisonmi*)	0	0	0	0	2	3	0	5	2	3	0	5
137.	Golden Dwarf Barb (*Pethia gelius*)	0	0	0	0	2	3	0	5	2	3	0	5
138.	Honey Gourami (*Trichogaster chuna*)	0	0	0	0	2	3	0	5	2	3	0	5
139.	Dwarf Gourami (*Colisa lalia)*	0	0	0	0	2	3	0	5	2	3	0	5
140.	Frail Gourami (*Ctenops nobilis*)	0	0	0	0	2	3	0	5	2	3	0	5
141.	Blue Badis (*Badis badis)*	0	0	0	0	2	3	0	5	2	3	0	5
142.	Zebra Fish (*Danio rerio)*	0	0	0	0	2	3	0	5	2	3	0	5
143.	Assam danio (*Devario assamensis*)	0	0	0	0	2	3	0	5	2	3	0	5
144.	Leopard Danio (*Danio rerio)*	0	0	0	0	2	3	0	5	2	3	0	5
145.	Malabar Danio (*Devario malabaricus)*	0	0	0	0	2	3	0	5	2	3	0	5
146.	Bengal Loach (*Botia Dario*)	0	0	0	0	2	3	0	5	2	3	0	5
147.	Horseface loach (*Acantopsis dialuzona*)	0	0	0	0	2	3	0	5	2	3	0	5
148.	Zebra Loach (*Botia striata*)	0	0	0	0	2	3	0	5	2	3	0	5
149.	Blue Spotted Hill Trout (*Barilius bakeri)*	0	0	0	0	2	3	0	5	2	3	0	5
150.	Dwarf pufferfish (*Carinotetraodon travancoricus*)	0	0	0	0	2	3	0	5	2	3	0	5

ANNEXURE III: FREE LIVING SPECIES (FLORA & FAUNA) FOUND AT HARINALAYA

Free Living Flora of Harinalaya

1.	Eucalyptus	:	*Eucalyptus sp.*
2.	Earleaf Acacia	:	*Acacia auriculiformes*
3.	Siris	:	*Albizia lebbeck*
4.	Mango Tree	:	*Mangifera indica*
5.	Jamun	:	*Syzygium cumini*
6.	Neem	:	*Azadirachta indica*
7.	Tamarind	:	*Tamarindus indica*
8.	Jackfruit	:	*Artocarpus heterophyllus*
9.	Black Palm	:	*Astrocaryum standleyanum*
10.	Mehagini	:	*Swietenia mahagon i*
11.	Guava	:	*Psidium guajava*
12.	Sandal Wood	:	*Psidium guajava*
13.	Areca Palm	:	*Chrysalidocarpus lutescens*
14.	Java Apple	:	*Syzygium samarangense*
15.	Coconut	:	*Cocos nucifera*
16.	Peacock Flower	:	*Caesalpinia pulcherrima*
17.	Betel Nut Tree	:	*Areca catechu*
18.	Indian Bael	:	*Aegle marmelos*
19	Gum Arabic Tree	:	*Vachellia nilotica*
20	Subabul	:	*Leucaena leucocephala*
21	Arjun Tree	:	*Terminalia arjuna*
22	Indian Gooseberry	:	*Phyllanthus emblica*
23.	Fig	:	*Ficus carica*
24.	Banyan	:	*Ficus benghalensis*
25.	Sacred Fig	:	*Ficus religiosa*
26.	Indian Fir Tree	:	*Polyalthia longifolia*
27.	Blackboard Tree	:	*Alstonia scholaris*
28.	Camel Hoof Tree	:	*Bauhinia variegata*
29.	Date Palm	:	*Phoenix dactylifera*
30.	Golden shower tree	:	*Cassia fistula*
31.	Pink Poui	:	*Tabebuia rosea*
32.	Banana	:	*Musa sp.*
33.	Indian jujube	:	*Ziziphus mauritiana*
34.	Papaya	:	*Carica papaya*
35	Sapodilla	:	*Manilkara zapota*
36	Falsa	:	*Grewia asiatica*
37.	Bamboo	:	*Bambusa sp.*
38.	Indian almond	:	*Terminalia catappa*
39.	Basil	:	*Ocimum tenuiflorum*
40.	Hibiscus	:	*Hibiscus rosa-sinensis*
41.	Asafoetida	:	*Ferula asafoetida*
42.	Brahmi	:	*Bacopa monnieri*
43	Lemongrass	:	*Cymbopogon citratus*
44	Liquorice	:	*Glycyrrhiza glabra*
45	Aloe vera	:	*Aloe vera*
46	Garlic	:	*Allium sativum*
47	Ashwagandha	:	*Withania somnifera*
48	Indian pennywort	:	*Centella asiatica*
49	Onion	:	*Allium cepa*
50	Green chiretta	:	*Andrographis paniculata*
51	Ginger	:	*Zingiber officinale*
52	Shatavari	:	*Asparagus racemosus*
53	Indian snakeroot	:	*Rauvolfia serpentina*
54	Long pepper	:	*Piper longum*
55	Mint	:	*Mentha spicata*
56	Turmeric	:	*Curcuma longa*
57	Bitter gourd	:	*Momordica charantia*

Free Living Fauna of Harinalaya

Mammals

1.	Small Indian Civet	:	*Viverricula indica*
2.	Asian Palm Civet	:	*Paradoxurus hermaphroditus*
3.	Common Mongoose	:	*Urva edwardsii*
4.	Five-striped Palm Squirrel	:	*Funambulus pennantii*
5.	Lesser Bandicoot Rat	:	*Bandicota bengalensis*

Reptiles

1.	Spectacled Cobra	:	*Naja naja*
2.	Monocled Cobra	:	*Naja kaouthia*
3.	Banded Krait	:	*Bungarus fasciatus*
4.	Russell's Viper	:	*Daboia russelii*
5.	Checkered Keelback	:	*Fowlea piscator*

Birds

1.	Black-crowned Night Heron	:	*Nycticorax nycticorax*
2.	Indian Pond Heron	:	*Ardeola grayii*
3.	Cattle Egret	:	*Bubulcus ibis*
4.	Little Egret	:	*Egretta garzetta*
5.	Little Cormorant	:	*Microcarbo niger*
6.	Black Kite	:	*Milvus migrans*
7.	Shikra	:	*Accipiter badius*
8.	White-breasted Waterhen	:	*Amaurornis phoenicurus*
9.	Common Pigeon	:	*Columba livia*
10.	Yellow-footed green pigeon	:	*Treron phoenicoptera*
11.	Eurasian Collared Dove	:	*Streptopelia decaocto*
12.	Spotted Dove	:	*Spilopelia chinensis*
13.	Rose-ringed Parakeet	:	*Psittacula krameri*
14.	Alexandrine Parakeet	:	*Psittacula eupatria*
15.	Common Hawk Cuckoo	:	*Hierococcyx varius*
16.	Asian Koel	:	*Eudynamys scolopaceus*
17.	Greater Coucal	:	*Centropus sinensis*
18.	Asian Palm Swift	:	*Cypsiurus balasiensis*
19.	Common Hoopoe	:	*Upupa epops*
20.	White-throated Kingfisher	:	*Halcyon smyrnensis*
21.	Common Kingfisher	:	*Alcedo atthis*
22.	Green Bee-eater	:	*Merops orientalis*
23.	Lineated Barbet	:	*Psilopogon lineatus*
24.	Blue-throated Barbet	:	*Psilopogon asiaticus*
25.	Coppersmith Barbet	:	*Psilopogon haemacephalus*
26.	Black-rumped Flameback	:	*Dinopium benghalense*
27.	Common Iora	:	*Aegithina tiphia*
28.	Brown Shrike	:	*Lanius cristatus*
29.	Black Drongo	:	*Dicrurus macrocercus*
30.	Black-hooded Oriole	:	*Oriolus xanthornus*
31.	Black-naped Oriole	:	*Oriolus chinensis*
32.	Rufous Treepie	:	*Dendrocitt avagabunda*
33.	House Crow	:	*Corvus splendens*
34.	Red-whiskered Bulbul	:	*Pycnonotu sjocosus*
35.	Red-vented Bulbul	:	*Pycnonotus cafer*
36.	Common Tailorbird	:	*Orthotomus sutorius*
37.	Jungle Babbler	:	*Argya striata*
38.	Jungle Myna	:	*Acridothere sfuscus*
39.	Common Myna	:	*Acridotheres tristis*
40.	Asian Pied Starling	:	*Gracupica contra*
41.	Chestnut-tailed Starling	:	*Sturnia malabarica*
42.	Oriental Magpie Robin	:	*Copsychu ssaularis*
43.	Purple-rumped Sunbird	:	*Leptocoma zeylonica*
44.	Purple Sunbird	:	*Cinnyris asiaticus*
45.	House Sparrow	:	*Passer domesticus*
46.	Red Avadavat	:	*Amandava amandava*
47.	Scaly-breasted Munia	:	*Lonchura punctulata*
48.	White Wagtail	:	*Motacilla alba*
49.	Western yellow wagtail	:	*Motacilla flava*
50.	Barn Owl	:	*Tyto alba*

Butterflies

Family: Papilionidae

1.	Common Jay	:	*Graphium doson*
2.	Tailed Jay	:	*Graphium agamemnon*
3.	Lime Butterfly	:	*Papilio demoleus*
4.	Common Mormon	:	*Papilio polytes*
5.	Common Rose	:	*Pachliopta aristolochiae*

Family: Pieridae

6.	Mottled Emigrant	:	*Catopsilia pyranthe*
7.	Common Emigrant	:	*Catopsilia pomona*
8.	Common Jezebel	:	*Delias eucharis*
9.	Psyche	:	*Leptosia nina*
10.	Indian Cabbage White	:	*Pieris canidia*
11.	Common Wanderer	:	*Pareronia valeria*
12.	Common Grass Yellow	:	*Eurema hecabe*

Family: Lycaenidae

13.	Striped Pierrot	:	*Tarucus nara*
14.	Tiny Grass Blue	:	*Zizula hylax*

Family: Nymphalidae

15.	Common Bushbrown	:	*Mycalesis perseus*
16.	Common Five-ring	:	*Ypthima baldus*
17.	Common Four-ring	:	*Ypthima huebneri*
18.	Tawny Coster	:	*Acraea violae*
19.	Danaid Eggfly	:	*Hypolimnas misippus*
20.	Blue Tiger	:	*Tirumala limniace*
21.	Striped Tiger	:	*Danaus genutia*
22.	Plain Tiger	:	*Danaus chrysippus*
23.	Common Indian Crow	:	*Euploea core*
24.	Common Evening Brown	:	*Melanitis leda*

ANNEXURE IV: SANCTIONED, PROPOSED & PRESENT STAFFING PATTERN AND POSITION OF HARINALAYA

Section	Name of the Post	Post Sanctioned	Post Filled-up	Proposed
Administrative Section	Director	1	1 (Ex-Officio)	-
	Assistant Director	1	1 (Ex-Officio)	-
	Range Officer/Unit In-Charge	-	1 (Ex-Officio)	-
	Zoo Supervisor	1	1	1
	Asst. Zoo Supervisor	1	-	2
	Lower Division Clerk	1	1	3
	Ticket Clerk	1	1	4
	Office Attendant	1	1	2
	Driver	1	1	2
Research & Education Section	Zoo biologist	-	-	1
	Research Assistant	1	1	2
Construction and maintenance section	Sub-Assistant Engineer	-	1	1

Section	Name of the Post	Post Sanctioned	Post Filled-up	Proposed
Animal Section	Animal Supervisor/ Section In charge	-	-	2
	Zoo Keeper	2	2	6
	Animal Attendant	4	4	12
Kitchen & Store Section	Store Keeper	-	-	2
	Store Attendant cum Cook	-	-	2
Veterinary Section	Veterinary Officer	-	-	2
	Veterinary Assistant	1	1	1
Sanitary Section	Sanitation Attendant	1	1	3
Garden Section	Garden Attendant	-	-	1
Security Section	Gate Keeper	1	1	6
	Security and Night Guard	7	7	15

ANNEXURE V: LIST OF BUILDINGS/STRUCTURES OTHER THAN ANIMAL ENCLOSURES

1. Administrative Block
   Director's Chamber-1
   Assistant Director's Chamber-1
   Unit-In-Charge/ Range Officer's Chamber-1
   Office Room-1
   Training Center-1
2. Staff Barrack-3
3. Veterinary Hospital-1
4. Post-Mortem Room-1
5. Store and Feed supply Section-1
6. Ticket counter-6
7. Guard room-10
8. Public toilet-4
9. Child care unit-1
10. Souvenir Shop-1
11. Cafeteria -1
12. Nature Interpretation Centre-1

ANNEXURE VI (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. 3382-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 VI (B): NOTIFICATION REGARDING TRANSFER OF ZOOLOGICAL PARKS OF THE STATE UNDER THE MANAGEMENT CONTROL OF THE WEST BENGAL ZOO AUTHORITY

Government of West Bengal
Department of Forests,
For Branch,
Aranya Bhavan (1st Floor), Block-LA-10A, Sector-III, Salt Lake City,
Kolkata-700 098

No. 1947-For/P/11S-07/2016 Kolkata, the 23rd June, 2017

NOTIFICATION

The maintenance of 'Harinalaya' (Deer Park) at New Town has been placed under the administrative control of West Bengal Zoo Authority from March, 2017 vide Notification No. 1287-For/O/D/8M-37/2015 dt. 21st April, 2017.

Now, the Governor has been pleased to designate Deputy Conservator of Forests, Urban Recreational Forestry as Ex-officio Director of 'Harinalaya' at New Town. He will be under administrative control of West Bengal Zoo Authority only in the capacity of Ex-officio Director of 'Harinalaya' at New Town.

This notification shall have immediate effect.

Sd/- C. Sinha
Principal Secretary to the Govt. of West Bengal

No. 1947/1(6)-For Kolkata, the 23rd June, 2017

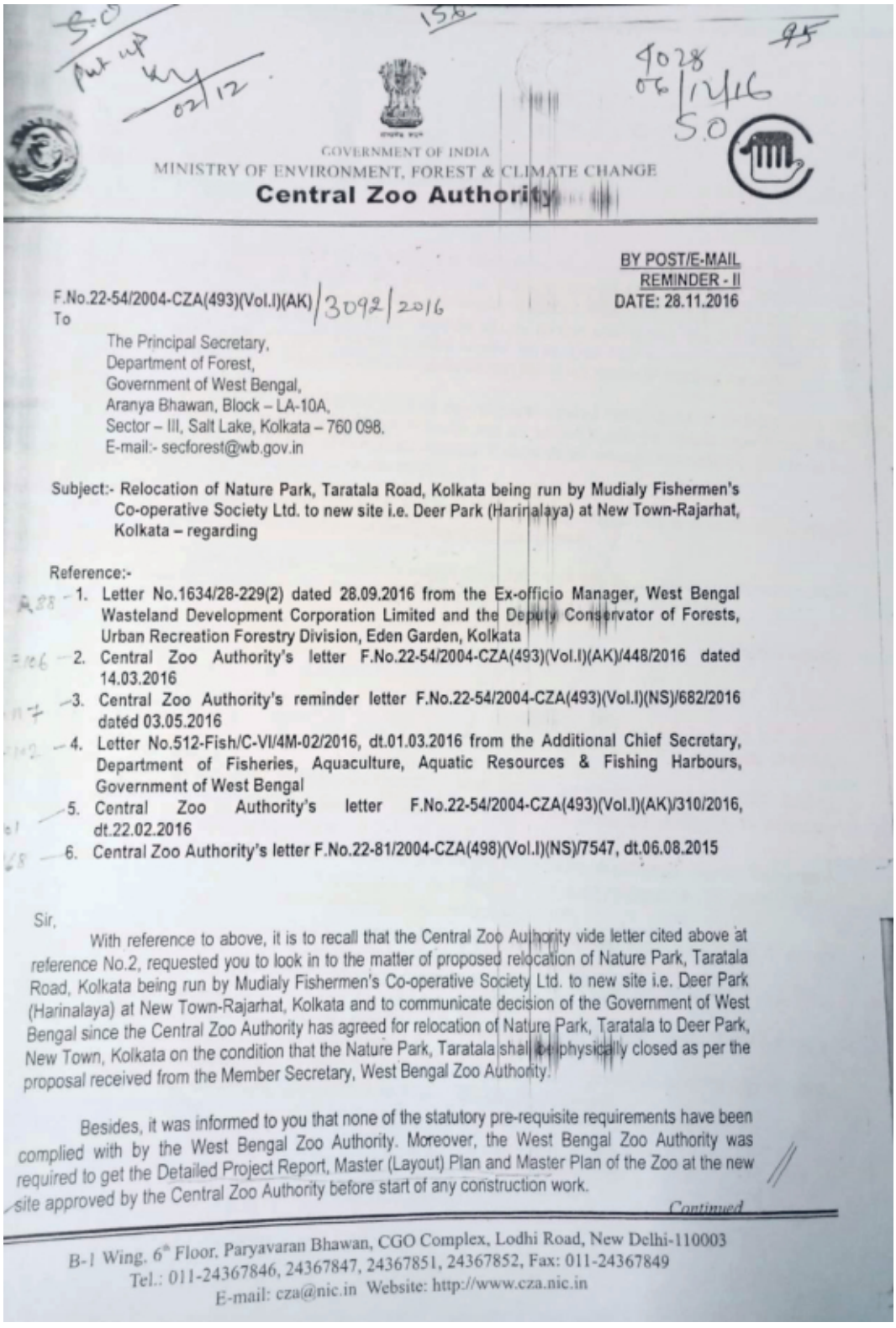
Copy forwarded for information and necessary action to:

1) The PCCF (General), W.B.
2) The PCCF (Wildlife & Chief Wildlife Warden), W.B.
3) The Member Secretary, WB Zoo Authority
4) The Managing Director, W.B. Wasteland Development Corporation Ltd.
5) The PS to MIC
6) Deputy Conservator of Forests, Urban Recreational Forestry

Joint Secretary

F:\Suman Roy\11S\P-11S-07-16.docx

ANNEXURE VII: RELOCATION OF NATURE PARK TARATALA TO HARINALAYA



GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE
Central Zoo Authority

BY POST/E-MAIL
REMINDER - II
DATE: 28.11.2016

F.No.22-54/2004-CZA(493)(Vol.I)(AK)/3092/2016
To

The Principal Secretary,
Department of Forest,
Government of West Bengal,
Aranya Bhawan, Block – LA-10A,
Sector – III, Salt Lake, Kolkata – 760 098.
E-mail:- secforest@wb.gov.in

Subject:- Relocation of Nature Park, Taratala Road, Kolkata being run by Mudialy Fishermen's Co-operative Society Ltd. to new site i.e. Deer Park (Harinalaya) at New Town-Rajarhat, Kolkata – regarding

Reference:-

1. Letter No.1634/28-229(2) dated 28.09.2016 from the Ex-officio Manager, West Bengal Wasteland Development Corporation Limited and the Deputy Conservator of Forests, Urban Recreation Forestry Division, Eden Garden, Kolkata
2. Central Zoo Authority's letter F.No.22-54/2004-CZA(493)(Vol.I)(AK)/448/2016 dated 14.03.2016
3. Central Zoo Authority's reminder letter F.No.22-54/2004-CZA(493)(Vol.I)(NS)/682/2016 dated 03.05.2016
4. Letter No.512-Fish/C-VI/4M-02/2016, dt.01.03.2016 from the Additional Chief Secretary, Department of Fisheries, Aquaculture, Aquatic Resources & Fishing Harbours, Government of West Bengal
5. Central Zoo Authority's letter F.No.22-54/2004-CZA(493)(Vol.I)(AK)/310/2016, dt.22.02.2016
6. Central Zoo Authority's letter F.No.22-81/2004-CZA(498)(Vol.I)(NS)/7547, dt.06.08.2015

Sir,

With reference to above, it is to recall that the Central Zoo Authority vide letter cited above at reference No.2, requested you to look in to the matter of proposed relocation of Nature Park, Taratala Road, Kolkata being run by Mudialy Fishermen's Co-operative Society Ltd. to new site i.e. Deer Park (Harinalaya) at New Town-Rajarhat, Kolkata and to communicate decision of the Government of West Bengal since the Central Zoo Authority has agreed for relocation of Nature Park, Taratala to Deer Park, New Town, Kolkata on the condition that the Nature Park, Taratala shall be physically closed as per the proposal received from the Member Secretary, West Bengal Zoo Authority.

Besides, it was informed to you that none of the statutory pre-requisite requirements have been complied with by the West Bengal Zoo Authority. Moreover, the West Bengal Zoo Authority was required to get the Detailed Project Report, Master (Layout) Plan and Master Plan of the Zoo at the new site approved by the Central Zoo Authority before start of any construction work.

Continued

B-1 Wing, 6th Floor, Paryavaran Bhawan, CGO Complex, Lodhi Road, New Delhi-110003
Tel.: 011-24367846, 24367847, 24367851, 24367852, Fax: 011-24367849
E-mail: cza@nic.in Website: http://www.cza.nic.in

ANNEXURE VIII: LEGAL STATUS OF LAND

भारतीय गैर न्यायिक

पचास रुपये रु.50

FIFTY RUPEES Rs.50

INDIA NON JUDICIAL

पश्चिमबङ्ग पश्चिम बंगाल WEST BENGAL W 857610

Deed of LICENSE

THIS DEED OF LICENSE made this ...06th... day of ...August... Two Thousand and Eighteen BETWEEN WEST BENGAL HOUSING INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED, a Government of West Bengal Undertaking incorporated under the Companies Act, 1956, having its registered office at premises No.35-1111, Biswa Bangla Sarani, 3rd Rotary, New Town, Kolkata – 700156 represented by the Joint Managing Director(Admn.)/General Manager (Admn)/General Manger(Commercial)/General Manager(Marketing) of the said State Govt. Company who is so authorized by the Chairman-cum-Managing Director for the purpose of execution of this INDENTURE of LICENSE hereinafter referred to as the **"WBHIDCO /LICENSOR."** (Which expression shall unless excluded by or repugnant to the subject or context be deemed to include its successors and assigns) of ONE PART.

AND

The Department of Forest, Government of West Bengal **represented by the** Member Secretary, W.Bengal Zoo Authority, hereinafter referred to as the **"LICENSEE"** (which expression shall unless excluded by or

General Manager (Admn.)
WB HIDCO Limited

Additional Principal Chief Conservator of Forests
&
Member Secretary
West Bengal Zoo Authority

Page No. 1 of 4

repugnant to the subject or context be deemed to include its successors-in-Office and assigns) /of the OTHER PART.

WHEREAS although the FIRST PARTY WBHIDCO LTD. has a statewide mandate to provide larger supply of developed lands, the immediate focus area has been limited to the development of a planned town near the city of Kolkata (hereinafter called the New Town, Kolkata). Accordingly, WBHIDCO decided to promote various schemes of activities including creation and operation of "Harinalaya" – Deer Park within Prakriti Tirtha, Eco-tourism Park in New Town, Kolkata.

AND WHEREAS WBHIDCO in its 76th Board Meeting held on 14.09.2013 resolved for setting-up of a scientifically planned and designed Deer Park within Prakriti Tirtha, Eco-tourism Park in New Town, Kolkata and accordingly the Deer Park "Harinalaya" has been set-up by WBHIDCO Ltd.

AND WHEREAS The Principal Chief Conservator of Forests, Wildlife & CWFW, West Bengal approached to the Chairman, WBHIDCO (vide letter no. 4516/WL.2W-624/2014 dated 03.09.2014) for the land of Deer Park having an area of 12.5 acres at Eco Park in New Town for the purpose of relocation of Spotted Deers from Nature Park, Taratala to the new site Deer Park "Harinalaya" within Prakriti Tirtha, Eco-tourism Park in New Town, Kolkata at New Town, Kolkata.

AND WHEREAS in consideration of such request WBHIDCO Ltd. decided for allotment of 12.5 acres plot of land in New Town, Kolkata, in favour of the LICENSEE for using the "Harinalaya" – Deer Park within Prakriti Tirtha, Eco-tourism Park in New Town, Kolkata for the purpose for which they have approached WBHIDCO Ltd. on usual terms and conditions and on revenue sharing basis of 50:50% between LICENSOR AND LICENSEE generated out of operation of the "Harinalaya" – Deer Park within Prakriti Tirtha, Eco-tourism Park in New Town, Kolkata only for 30 years on LICENSE basis.

In consideration of the above WBHIDCO Ltd., the LICENSOR being agreed to the proposal of the LICENSEE hereby allowed the LICENSEE to occupy and run the "Harinalaya" – Deer Park within Prakriti Tirtha, Eco-tourism Park in New Town, Kolkata on the basis of share of profit generated out of this venture on 50% and 50 % basis between licensor and Licensee respectively for a period of 30 years from the date of taking over possession with the following terms and conditions.

Additional Principal Chief Conservator of Forests & Member Secretary West Bengal Zoo Authority

General Manager (Admn.)
WB HIDCO Limited

The terms and conditions to be abided by the LICENSEE are as under:-

1. The term of this Agreement shall commence on 01.08.2017 and shall end on 31.07.2047. This Agreement may be terminated at any time by either party by giving six months' prior written notice to the OTHER PARTY.
2. The LICENSEE shall use the allotted LAND AND constructed area only for "Harinalaya" – Deer Park and for no other purposes.
3. Maintenance of the allotted land and constructed area of the Deer Park including feeding, protection, safety and medical treatment of the deer will be done by the LICENSEE and cost thereof will also be borne by the LICENSEE.
4. The LICENSEE shall not divide or sublet the said land and constructed area or any part thereof without prior consent in writing of the LICENSOR who shall have the right to refuse its consent as a matter of absolute discretion.
5. The cost for common services like dfinking water, sewerage and other infrastructure amenities will be shared proportionately by the LICENSOR and LICENSEE.
6. The LICENSEE shall not assign or transfer the said allotted land together with the constructed area to any body during the term of this agreement and hand over peaceful vacant possession of the demised premises relinquishing all its interest therein in good condition as the same now is after the expiry of the agreement.
7. The LICENSEE shall allow the persons authorized by the LICENSOR to inspect repair and clear the sewerage lines land manholes or such other works in connection therewith as the authority will decide essential within the allotted constructed space.
8. The LICENSEE shall pay the LICENSOR share of 50% profit generated out of the operation of "Harinalaya" – Deer Park at the end of every year as per terms of agreement.
9. If any of the aforesaid terms and conditions is violated or any act is done in contravention of the aforesaid terms and conditions mentioned herein before by LICENSEE, This agreement / license shall stand terminated automatically. This termination will not create any right in favour of the LICENSEE to sue or seek any legal remedy against such termination in any court of law.

SCHEDULE

ALL THAT piece and parcel of land measuring about 12.5 acres be the same or little more or less being Plot No. 06-0787 in Action Area — IIE within Eco Tourism Park Area in the New Town, Kolkata, Police Station New Town, District–North 24 Pgs, presently in the Panchayat area falling within Mouza

Additional Principal Chief Conservator of Forests & Member Secretary West Bengal Zoo Authority

General Manager (Admin.)

Page No. 3 of 4

Sulangari, Ghuni and Reckjoani, JL No.22,23 and 13 respectively under Jyangra – Hatiara-II Gram Panchayat and Mouza: Hatiara, JL No. -14 under Bidhannagar Municipal Corporation.

ON THE NORTH:	Street No. 787
ON THE SOUTH:	Part of Eco-park
ON THE WEST:	Existing Canal
ON THE EAST :	Road for Gate -5 of Eco-park

IN WITNESS WHEREOF the parties to these presents have hereunto set and subscribed their respective hands the day, month and year first above written.

SIGNED, SEALED AND DELIVERED BY

FOR AND ON BEHALF OF THE WEST BENGAL HOUSING INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. (LICENSOR)

In presence of the Witnesses

06/08/2018
General Manager (Admin.)
WB HIDCO Limited

1. Bijoy Kumar Biswas S.O.(Land), WBHIDCO Ltd.

2. Tapan Kumar Mazumder (Sr. Asstt) Land, WB HIDCO LTD.

SIGNED BY THE AUTHORISED SIGNATORY FOR AND ON BEHALF OF……………………………………

In presence of the Witnesses

1. Swapan Bardhan 06/08/2018
Administrative officer, WBZA

2. Biswanath Roy 06/08/2018
VRF Dim

K. yadav
06/8/2018
Additional Principal Chief Conservator of Forests
&
Member Secretary
West Bengal Zoo Authority

Drafted by WBHIDCO Ltd. the Competent Authority.

Page no. 4 of 4

Government of West Bengal
Directorate of Forests
Office of the Ex-Officio Director, Harinalaya & Deputy Conservator of Forest
Urban Recreation Forestry Division
10A, Auckland Road, Eden Gardens, Kolkata-21
Phone – Fax: (033) 2248-2504, e-mail: dcfurfkolkata@gmail.com
Visit us at: www.westbengalforest.gov.in

No 475 /1-3 Dated, Kolkata, the 04 .05.2023.

From : Ex-Officio Director, Harinalaya (Deer Park) &
Deputy Conservator of Forests
Urban Recreation Forestry Division

To : The Member Secretary
West Bengal Zoo Authority
Aranya Bhawan
Kolkata-7000098

Sub : Approval of Additional land from WBHIDCO of 2.7 acres for Harinalaya Mini Zoo.

Ref : WBHIDCO Approval Memo No.- nil dt. 03.05.2023

Sir,

With respect to mentioned subject, it is bring to your kind notice that, the above reference for requisition of additional land from WBHIDO has been approved of 2.7 acres by the authority of WBHIDCO for extension of Harinalaya Mini Zoo.

So, your good self is hereby requested to accord sanction and approval for the same.

This is for your kind information and for taking necessary action.

Enclosed: As Stated.

Ex-Officio Director, Harinalaya (Deer Park),&
Deputy Conservator of Forests
Urban Recreation Forestry Division

No. /1-3 Dated, Kolkata, the / /2023

Copy Forwarded to:-

1) The Ex-Officio Asst. Director, Harinalaya & ADFO,URF Division for kind Information.
2) Ex-Officio Unit In Charge , Harinalya & R.O Jawaharkunja Range for Kind Information.

Sd/- R. P. Badana, IFS

Ex-Officio Director, Harinalaya (Deer Park),&
Deputy Conservator of Forests
Urban Recreation Forestry Division

Gmail

URBAN RECREATION FORESTRY DIVISION <dcfurfkolkata@gmail.com>

Additional land needed by the Forest Department for the extension of the "Harinalay" Zoo Authority in New Town

1 message

dgp@wbhidco.in <dgp@wbhidco.in> Wed, May 3, 2023 at 4:52 PM
To: dcfurfkolkata@gmail.com, harinalaya2017@gmail.com
Cc: debashis.sen@wbhidco.in, gcghose@wbhidco.in, em@wbhidco.in

To
Ex-Officio Director Harinalay Mini Zoo& Deputy Conservator of Forests
Urban Recreation Forestry Division, Kolkata.

Dear Sir,

In response to the letter from the Additional Chief Secretary of the Department of Forest to the Managing Director of WBHIDCO, dated March 22, 2023, regarding the additional land needed by the Forest Department for the extension of the "Harinalay" Zoo Authority in New Town, I am directed to inform you that the WBHIDCO Authority has been approved in principle to provide the following encroachment-free vacant land:

a) To offer encroachment-free 2.7 acres, unevenly shaped land at the present location to the Forest Department/Zoo Authority.
b) Encroachers may be relocated so as to gain a plot having a regular contour.

Therefore, in order to prevent further encroachment, you are requested to fence off the land.
Site Plan was handed over to Mr Vivek Ojha on 28/03/2023.
If required, you may contact with Estate Management Wing of WBHIDCO em@wbhidco.in

Thanks and regards
DG,PLNG

A unit of UD & MA Department
Government of West Bengal

Reference: Proposal for provision of additional land to *'Harinalaya'*

Kindly refer to your verbal instruction to report about the additional land requirement by the Forest Department for extension of *'Harinalay'*, Zoo Authority in New Town, Kolkata. In this connection, the observations of the undersigned are given below: -

1) Site inspection has been done by the Planning Wing on 17/02/23 and it is observed that the proposed land area of 1.239 Acre is at present partially encroached upon by hutments.
2) GM (Admin.) was requested to provide land details of the adjoining land of *'Harinalay'* by conducting fresh survey.
3) GM (Admin.) has submitted a report stating that 3 *dags* (55,61&64) are involved in not verified case
4) Estate Management Department of WBHIDCO has been entrusted to prepare a Map showing actual position at site along with coordinates.
5) On study of the map and discussion with GM (Ping) and Surveyor, it is understood that there are more or less 7 Acres (approx.) of land which was acquisitioned. The details of the lands are as follows: -
   a) Old Village settlements (area not mentioned)
   b) (i) New settlements of 0.346 Acre beside
      (ii) New settlements of 0.78 Acre beside canal
      (iii) New settlement total 1.126 Acres
   c) Encroachment free vacant land – over 2.7 Acres
6) Following three options are proposed:

a) To handover irregular shaped encroachment free land as is where basis to the Forest Department/ Zoo Authority.

(8)

HIDCO
A unit of UD & MA Department
Government of West Bengal

b) To get a regular shaped plot, resettlement of encroachers may be done beside canal.

c) To get bigger land for development, '*Banglar Bari*' may be made for resettlement of the encroachers.

Under the above circumstances your order is solicited to proceed further on this issue.

13/3/23
DG(P)

naging Director
HIDCO

V.O. No. 202/HIDCO/Plan8/467(P)/2021
Date: 13/03/2023

Chairman may kindly approve in principle

13/3/2023

Chairman

MD/HIDCO

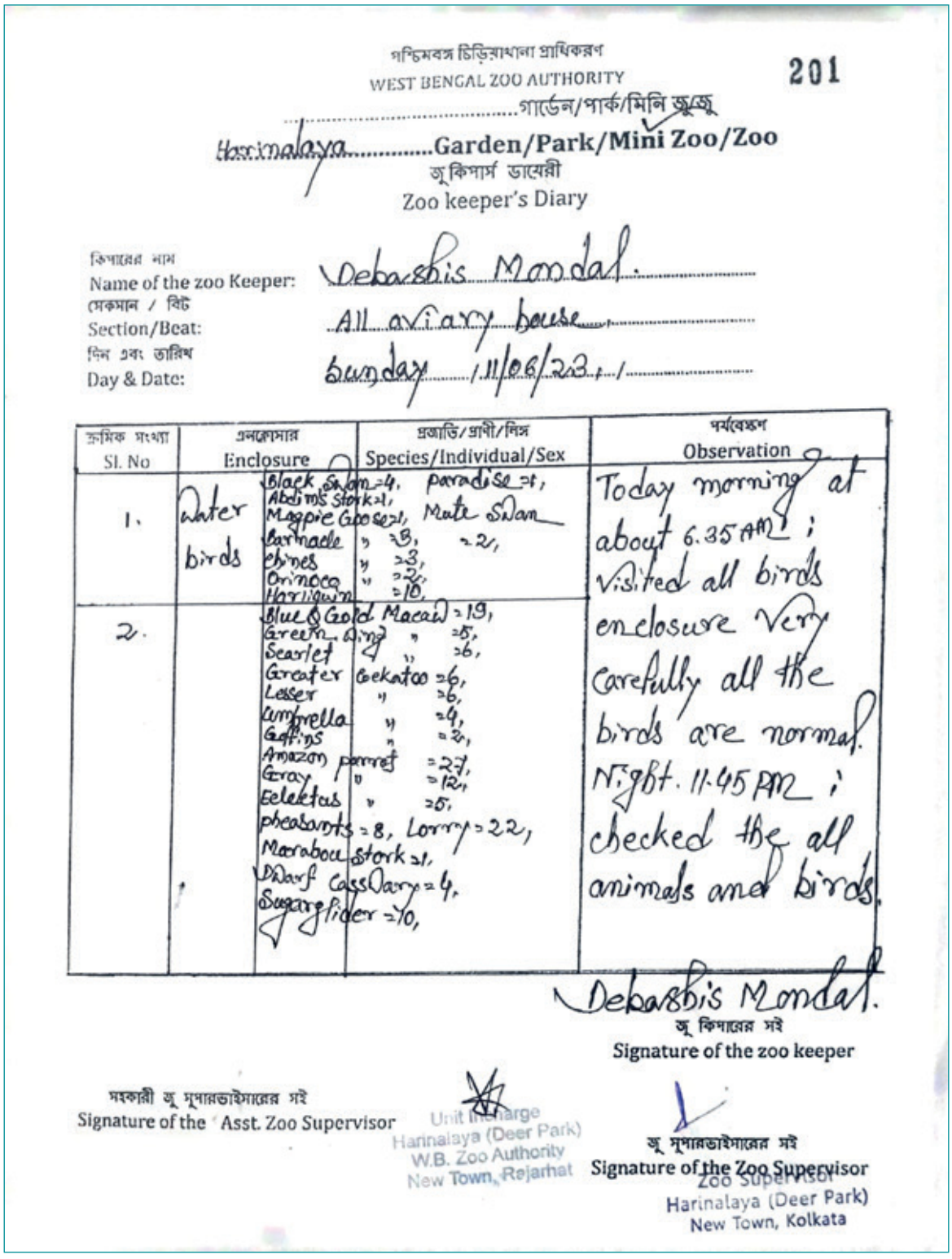
DG(P)

16/3/2023

R.No. 490
103/2023

ANNEXURE IX: FORMAT OF RECORD KEEPING AT HARINALAYA

Annexure IX (a): Keeper's Diary



পশ্চিমবঙ্গ চিড়িয়াখানা প্রাধিকরণ
WEST BENGAL ZOO AUTHORITY

201

.....গার্ডেন/পার্ক/মিনি জু/জু

Harinalaya .....Garden/Park/Mini Zoo/Zoo

জু কিপার্স ডায়েরী
Zoo keeper's Diary

কিপারের নাম
Name of the zoo Keeper: Debasbis Mandal.

সেকশান / বিট
Section/Beat: All aviary house

দিন এবং তারিখ
Day & Date: Sunday /11/06/23

ক্রমিক সংখ্যা Sl. No	এনক্লোসার Enclosure	প্রজাতি/প্রাণী/লিঙ্গ Species/Individual/Sex	পর্যবেক্ষণ Observation
1.	Water birds	Black Swan =4, paradise =1, Abdim's Stork =1, Magpie Goose =1, Mute Swan Barnacle " =3, =2, Chines " =3, Orinoca " =2, Harliquin =10,	Today morning at about 6.35 AM ; visited all birds enclosure very carefully all the birds are normal. Night. 11.45 PM ; checked the all animals and birds.
2.		Blue & Gold Macaw =19, Green Wing " =5, Scarlet " =6, Greater Cockatoo =6, Lesser " =6, Umbrella " =4, Goffins " =2, Amazon parrot =27, Gray " =12, Eclectus " =5, pheasants =8, Lorry =22, Marabou stork =1, Dwarf Cassowary =4, Sugarglider =10,	

Debasbis Mandal.

জু কিপারের সই
Signature of the zoo keeper

সহকারী জু সুপারভাইসারের সই
Signature of the Asst. Zoo Supervisor

Unit In-charge
Harinalaya (Deer Park)
W.B. Zoo Authority
New Town, Rajarhat

জু সুপারভাইসারের সই
Signature of the Zoo Supervisor

Zoo Supervisor
Harinalaya (Deer Park)
New Town, Kolkata

West Bengal Zoo Authority
Harinalaya Mini Zoo
Daily Report of Water Birds

Page No.
Day: Friday

Date 05/05/2023

SL No.	Section/ Beat and Enclosure	Species/ Individual/Herd		Observations	Action taken/ Required/ Comments	Comments of Biologist/ Unit in charge/ Asst. Director/ Director
1.	Water Bird Aviary	Black Swan	04	All water birds are physically fit and sound.		
2.		Mute Swan	02			
3.		Magpie Goose	01			
4.		Barnacle Goose	03			
5.		White Chinese Goose	03			
6.		Orinoco Goose	02			
7.		Harlequin Duck	10			
8.		Paradise Shelduck	01			
9.		Abdim's Stork	01			

Veterinary Officer / Veterinary Assistant | Zoo Biologist | Unit in charge/ Range Officer | Asst. Director Harinalaya Mini Zoo | Director Harinalaya Mini Zoo

Annexure IX (c): Post Mortem Report

Sl No. 008

West Bengal Zoo Authority
Harinalaya (Deer Park)

NECROPSY (POST-MORTEM) REPORT

Kind of animal	Scientific Name & Common Name	Sex	House Name and Local ID #	Age	Size	Weight
Barking Deer	Muntiacus	F		5-6 years	101 cm (approx. from nose to tail)	17.340 kg.

Time, date and place of death : 12 Noon (approx), 09.06.2023. Harinalaya mini Zoo.

Time and date of Post-Mortem Examination : 1-40 P.M. on 09.06.2023.

Short history of illness, if any - The carcass was observed at 1-10 P.M, found dead in the enclosure. No history of illness.

A. General description :

B. Organ wise description :

1. Head and neck :

a) Skull and brain : No fracture of Skull, only meninges layer was hyperaemic.

b) Cervical vertebrae : Nothing abnormality detected. Tongue - Purple colour haemorrhage in gum.

2. Thorax :

a) Lungs : Lungs Parenchyma Normal, Colour of lungs were dark

b) Heart : - Size and shape is normal. chambers were filled with blood.

c) Ribs : Normal and no fracture.

3. Abdomen :

a) Liver : - Shape & Size normal, Looking Congested.

b) Stomach : Filled with feed.

c) Intestine : Filled with semidigested feed, no worm observed.

d) Kidney : Normal. (NAD)

e) Spleen : Normal (NAD).

4. Pelvic girdle :

a) Uterus and Ovaries : - N A D.

b) Bladder : - Filled with urine.

c) Genital Passage : N A D.

5. Limbs :

a) Fore limbs : - No fracture or injury.

b) Hind limbs : No fracture or injury.

C. Any other special features :

Biological tests done (if any) : NIL.

i) Blood

ii) Urine :

iii) Discharges :

iv) Biopsy :

D. Opinion (Cause of death) The death may be due to "Heat stroke"

E. List of organs preserved for confirmative tests : NIL.

F. Instruction for disposal : Burning.

G. Name of Officer's present during disposal :

Place : Harinalaya mini Zoo.

Date : 09.06.2023.

Name :

Designation :

[illegible] B.V.Sc & AH
Signature of Veterinary Officer
Regd. No - 1680
with stamp

ANNEXURE X: COMPLIANCE TO THE CONDITIONS STIPULATED BY THE CENTRAL ZOO AUTHORITY WHILE GRANTING RENEWAL OF RECOGNITION TO THE ZOO

Government of West Bengal
Directorate of Forests
Office of the Ex-Officio Director, Harinalaya & Deputy Conservator of Forest
Urban Recreation Forestry Division
10A, Auckland Road, Eden Gardens, Kolkata-21
Phone – Fax: (033) 2248-2504, e-mail: dcfurfkolkata@gmail.com
Visit us at: www.westbengalforest.gov.in

No. 1256(8) 1-3 Dated, Kolkata, the 21./11/2023.

From : Ex-Officio Director, Harinalaya &
Deputy Conservator of Forests
Urban Recreation Forestry Division.

To :The Member Secretary
Central Zoo Authority
New Delhi 110003

Sub : Submission of Compliance Report for Renewal of Recognition of Harinalaya, Kolkata, West Bengal- Regarding.

Ref: CZA Memo No. 22-54/2004-CZA (493) (NE) dt. 26.05.2023

Sir,

With referenced to the subject mentioned above, kindly find enclosed herewith of compliance report for renewal of recognition of Harinalaya, New Town, Kolkata for your kind consideration and recognition of renewal of Harinalaya, New Town, Kolkata.

This is for your kind information and necessary action.

Enclosed: 1) ***Compliance Report***

Your Sincerely,

Ex-Officio Director, Harinalaya, &
Deputy Conservator of Forests
Urban Recreation Forestry Division

No. /1-3 Dated, Kolkata, the / /2023

Copy Forwarded to: -

1. The Member Secretary, West Bengal Zoo Authority, Aranya Bhawan, Kolkata
2. The Conservator of Forest, Parks & Garden Circle, West Bengal
3. The Ex-Officio Assistant Director & ADFO, Harinalaya
4. Ex-Officio Unit In-Charge, Harinalaya
5. Office Copy.

Sd/-R. P. Badana, IFS

Ex-Officio Director, Harinalaya,&
Deputy Conservator of Forests
Urban Recreation Forestry Division

Compliance Report

on conditions stipulated by the Central Zoo Authority during Renewal of Recognition of Harinalaya, New Town, Kolkata, West Bengal under section 38-H (1), (3) & (4) of the Wildlife (Protection) Act, 1972 for period beyond 19.08.2021 based on the zoo evaluation on September 7th 2022

Sr. No.	Norm No.	Particulars of suggestions/ recommendation	Time Period to Comply	Remarks
3. Development and Planning				
1.	10.3(3)	Disaster management mock drill should be carried out.	One month	Complied with
4. Animal housing, display of animals and animal enclosures				
2.	10.4(2)	Live screens should be developed in a planned manner between *pucca* buildings and visitor facilities.	Six months	Complied with
3.	10.4(7)	Screening should be developed between adjoining enclosures by way of plantation.	Six months	Complied with
4.	10.4(8)	Although Harinalaya is presently under the category of mini zoo construction of enclosure for carnivores like tigers and Asiatic lion, reptiles' section, herbivore section, enclosure for hippopotamus, giraffe and zebra is going on without any approval from CZA. Proper approval should be taken.	Immediately	Complied with. The enclosure designs have been submitted to CZA for further approval, Vide memo no. 970/1-3 dated 29/08/2023 Sub: Submission of Enclosure Design of Harinalaya Mini Zoo, Newtown, Kolkata for approval
5.	10.4(10)	More educational signages with important details near the enclosure of animals should be displayed	Three months	Complied with
5. Upkeep and healthcare of animals				
6.	10.5 (9)	All staff involved with upkeep and healthcare of zoo animals should be screened against zoonotic diseases once every year.	Three months	Complied with

1

6. Veterinary and Infrastructure facilities				
7.	10.6(1)	Sufficient medical equipment and storage facilities should be provided in the zoo.	Three months	Complied with
8.	10.6(3)	Post mortem facility should be equipped properly. Post mortem room should be well ventilated with proper lights, should have *pucca* post mortem platform, top surface with glazed tiles, underground pipe fitted drainage system and	Three months	Complied with
11. Educational and outreach activities				
9.	10.11(1)	There is a lot of scope for improving the interpretative and educational aspects. Qualitatively superior material should be generated and displayed and made available to the visitor.	Three months	Complied with

Ex-Officio Director, Harinalaya
&
The Deputy Conservator of Forests
Urban Recreation Forestry Division
10A, Auckland Road, Eden Gardens,
Kolkata – 21, West Bengal


ENTRY
NO
PARKING


হরিণালয়


আবর্জনা
ফেলে জন্তুদের
বিপদে ফেলবেন না!