

Latuk  
(Received on  
24/04/2015)

O/o Central Zoo Authority

Diary No.....005.....

Date.....18/6/15.....

# **MASTER PLAN**

2014-15 to 2034-35

## ***Nehru Zoological Park, Hyderabad***



***Telangana Forest Department***

O/o Central Zoo Authority

Diary No. 005

Date 18/6/15

**NEHRU ZOOLOGICAL PARK, HYDERABAD**

# MASTER PLAN

2014-15 to 2034-35

A COMPREHENSIVE PLAN FOR FUTURISTIC DEVELOPMENT

**PREPARED BY**



G. Rama Krishna Rao, S.F.S.,  
M.Sc., L.L.B., PG.DWIM (Hons)  
Curator  
Nehru Zoological Park,  
Hyderabad

**COUNTER SIGNED BY**



Sri N. Syam Prasad, I.F.S.,  
Addl. Prl. C.C.F  
and Member Secretary Zoos and Parks  
Authority of Telangana,  
Wildlife Management Circle  
Hyderabad




## Nehru Zoological Park, Hyderabad

# Master Plan 2014-15 to 2034-35


PREPARED BY

  
Sri G. Rama Krishna Rao,  
M.Sc., LL.B., PGDWLM (Hon'rs)  
Curator,  
Nehru Zoological Park,  
Hyderabad

COUNTER SIGNED BY

  
Sri N. Syam Prasad, IFS  
Addl.P.C.C.F.,  
Wildlife Management Circle,  
Hyderabad and  
Member Secretary, Zoos and Parks  
Authority of Telangana,

COUNTER SIGNED BY

  
Sri P.K. Sharma, IFS  
Spl.Prl.C.C.F. (Dev) and  
Chief Wildlife Warden,  
Telangana, Hyderabad

Master Plan of Nehru Zoological Park, Hyderabad is approved in the 74th Meeting of the Technical Committee held on 22 nd May 2015 subject to the condition that the responsibility of mobilizing the financial resources for implementation of the Master Plan will be sole responsibility of the Forest Department, Government of Telangana.

  
Member Secretary  
Central Zoo Authority  
(Ministry of Environment & Forests)  
Govt. of India, New Delhi



## ACKNOWLEDGEMENTS

The Zoological Park has made tremendous progress and development, with rich animal collection and successful breeding. Improvement and development activities in any established institute is a regular feature. The expected results of such intended developments could be achieved only if they are planned in advance, in a systematic way. I feel extremely happy that I got the privilege of preparing the Master Plan for this prestigious Zoological Park. It is a huge exercise to study past, present and future for preparing a master plan to suit the Zoo for taking up various improvements and other developmental activities.

I extend my a sincere thanks to all my friends, colleagues, well wishers, retired forest officers, senior officers of the Forest Department for their magnanimous support, valuable suggestions and ideas over the years, which helped me in writing this Master Plan.

Master Layout (Plan) and Master Plan are the culmination of the efforts of entire Zoo staff. Contribution of previous Curator Sri. A. Shankaran, Shri B.N.N. Murthy, IFS., Veterinary Assistant Surgeon Dr. P. Srinivas and Asst. Curator Sri. S. Ramesh are greatly acknowledged.

Sri. B. S. Bonal, Member Secretary, Central Zoo Authority and experts of Zoo design Sri. S. C. Sharma, Sri. Brij Kishore Gupta and Sri. S.K. Patnayakhave immensely contributed the quality of output during the various meetings held with them. I sincerely acknowledge the support and advice received by the Central Zoo Authority and all the members of technical committee.

I sincerely acknowledge the encouragement received from Sri. P. K. Sharma, Spl. PCCF (Dev) and Chief Wildlife Warden, Telangana State for writing the Master Plan. I also extend my sincere thanks to Sri P. Mallikarjuna Rao, the then Director of Zoological Parks, the Governing Board of Zoos & Parks Authority of Telangana for their constant support in writing the Master Plan.

I profusely thank Sri. N. Shyam Prasad, Addl. Prl. CCF/Director, Zoos & Parks, Govt. of Telangana and Member Secretary, Zoos & Parks Authority of Telangana for his valuable guidance and support in successfully writing the Master Plan.

Thanks are also due to Office staff of Nehru Zoological Park, Hyderabad for their consistent support in arranging different types of Zoo Maps. I dedicate this Master Plan to each and every one of my Zoo staff who had contributed directly or indirectly in accomplishing this challenging task.



G. Rama Krishna Rao, S.F.S.,  
M.Sc., L.L.B., PG.DWLM (Hons)  
Curator  
Nehru Zoological Park,  
Hyderabad



## EXECUTIVE SUMMARY

*Hyderabad is the capital city of the Indian state of Telangana. The city is a hub for film industry, world-class public and private hospitals, Central and State Level Research Institutions, Information Technology industry, Biotech and Pharma industry and many public sector entities. The Pearl City, Hyderabad offers a variety of tourist attractions ranging from Heritage monuments, Lakes and Parks, Gardens and Resorts, Museums to delectable cuisine and a delightful shopping experience. Hyderabad city of lights, is one place that offers fascinating panorama of the past, and is a blend of rich cultural and historical traditions spanning a history of 400 years. The city has an average temperature of 22-34 degree Celsius and the best time to visit is from September to March.*

*The present Zoological Park was started in 1963, as part of relocation of erstwhile animal enclosures in Public Gardens, Hyderabad and set up over 380 ac. Of land and Inaugurated by General Sri Nagesh the then Governor of Andhra Pradesh and after the demise of Pandit Jawaharlal Nehru the Zoo Park was rechristened as Nehru Zoological Park. The Zoo is more unique with natural ambience abutting the Miralam Tank on the southern side, a unique engineering monument, it is the world's first multi-arch masonry dam, which is now about 190 years old of an area of 600 acres having healthy animals in ecosystem based naturalistic enclosures gives the animals a feeling of living close to their natural habitat. This Zoo located in the Deccan plateau area, hence the objectives of the zoo are Conservation Breeding of endangered species and rehabilitation in the wild aiming at the fauna of Deccan peninsula, promoting education and creating awareness among the public towards conservation, Conducting research on animal behavior and breeding and taking up animal rescue and rehabilitation activities in the entire state of Telangana. Today the Zoo houses over 160 species of animals, birds, reptiles and closer to 1450 specimens. This is the first Zoo in India, to have the animals displayed open moat enclosures make the animals 'feel at home', simulating the natural forests which helps in their easy breeding. It also aids in observation or study of the animal behavior closely by the visitors and by the Zoo management in effective up keep of animals. This Zoological Park is also known for innovative practices such as introduction of Battery operated vehicles, By-cycles, Nocturnal house and Safari's of Tiger & Lion.*

*The revenue of Zoo has been consistently increasing to attain the stage of self sufficient. The revenue includes adoption, Ticket money for various places such as entry, Battery operated vehicles, train and other sources include parking and restaurants.*

*There is no end for the satisfaction or perfection, Constant in depth analysis of the working of the institution, identification of inadequacies and redressing the same effectively in a planned manner is crucial for the long term survival of the institutions. It is in view of this fact this plan for long term development of the Zoo is being prepared, Considering the availability of land and the difficulties being faced in getting the wild animals for pairing the mono sex animals /*




single animals of several species, this plan envisages the acquisition of animals to pair the single animals and also for acquiring some new species to add an attraction as a part of Management. To increase the new blood in the species and to continue the breeding programme of Carnivore species and required housing facilities would be provided and special efforts will be made to breed the species using the biological and behavioral information.

Master Plan also proposes to upgrade the health care facilities by way of the provision of separate quarantine facilities, providing the inpatient Block, expansion of Zoo hospital, and other necessary veterinary equipment. The Zoo veterinarian and the biologists would be required to collect scientific data for facilitating prompt diagnosis of disease and facilitation successful reproduction.

To improve the sanitation which in turn improves the hygiene of the Zoo a sewage treatment plant has been proposed which can cater the needs of water requirement of Gardens and reduce the drainage water into the Zoo Park. Efforts would also be made to provide the visitors to the Zoo an safe and congenial environment and to make their visit to the Zoo more rewarding through provision of earmarked visitor route. Appropriate direction signage and innovative interpretation facilities. The civic amenities i.e., toilets, drinking water points, Cafeterias, visitor sheds and the animal viewing points would be suitably upgraded, without impacting the natural ambivalence of the area. Provision of qualified Zoo guides would also be made.

The Zoo has been successfully breeding many endangered species over the years. The Mugger which is almost locally extinct has been revived by breeding and releasing the Crocodiles in wild. The herbivore population of Tiger reserves are assisted by the translocation. The breeding will improve with the implementation of Master Plan.

Cleanliness of the Zoo premises, Visitor amenities and controlling the vandalism, indecent behavior of the visitors towards animals and pollution of ambience of the Zoo by throwing the food, plastic and waste in the zoo are the main Challenges in the Nehru Zoological Park. The quality of a Zoo is an indicator of the citizen's attitude towards the animals. Efforts have been made to educate the people of Hyderabad for the cleanliness and littering in the Zoo Park. The methodologies adopted by the Zoo management in preparation of the current Master Plan would definitely help in meeting the expectation of the people.



G. Rama Krishna Rao, S.F.S.,

M.Sc., L.L.B., PG.DWLM (Hons)

Curator

Nehru Zoological Park,

Hyderabad

## List of Contents

<i>Sl. No.</i>	<i>Contents</i>	<i>Page No.</i>
	<b>PART – I</b>	
	<b>Chapter - I</b>	
<b>1</b>	<b>Introduction</b>	
	a. History of the Zoo	1
	b. Vision of the Zoo	2
	c. Mission of the Zoo	2
	d. Strategy of the Zoo	2
	e. Objectives	2
	f. Physical features like the topography of the area	2
	g. Geology	3
	h. Rock & Soil	3
	i. Flora and Fauna in Zoo premises	3
	j. Climate	4
	k. Rainfall	4
	l. Season	4
	m. Approach	4
	n. Demography of the surrounding area	5
	o. Legal Status of the Land	5
	p. Sources of pollution, if any	5
	q. (For an existing Zoo, the introduction section may also include, the present ground situation, layout, description of different facilities, difficulties faced in the management in the past and achievements)	
	<b>CHAPTER – 2</b>	
<b>2</b>	<b>Appraisal of the present arrangement and constraints</b>	
	a. Animal section, Veterinary section, store and feed supply section, sanitation section, maintenance section, security section, water supply section, disposal of solid waste – sewerage, visitors amenities, lawns and gardens –Landscape section and any other section peculiar to the zoo	8-20
	b. Animal Collection Plan (Existing)	21-24
	c. General Zoo administration section	24-28
	d. Research	28
	e. Conservation Breeding	29
	f. Education and awareness	30-34
	g. Appraisal of the present arrangement and constraints	35-41
	<b>PART – II</b>	
	<b>Chapter III</b>	
<b>3</b>	Future objective including vision, mission statement/theme and strategy	42-43

## CHAPTER – IV

- |   |                    |   |       |
|---|--------------------|---|-------|
| 4 | Future Action Plan |   |       |
|   | i.                 | Proposed/recommended animal collection plan including population size ( in tabular form, showing the existing no. of animals) and justification of keeping the endangered species | 44-52 |
|   | ii.                | Description of the layout plan of the Zoo   | 53-58 |
|   | iii.               | Approved Master Lay out Plan  | 59    |
|   | iv.                | Proposal to address the inadequacies and shortcoming identified in the appraisal report (as appraised in para-I, 2a). New activities if any, intended to be taken up.             | 60-67 |
|   | v.                 | Depending on the local condition of the Zoo, other items may also be added – peculiar problems of the zoo like off display conservation breeding centre and rescue centre.        | 68-69 |

## Chapter – V

- |   |                    |  |       |
|---|--------------------|--|-------|
| 5 | Personnel Planning |  | 70-71 |
|---|--------------------|--|-------|

## Chapter – VI

- |   |                     |  |       |
|---|---------------------|--|-------|
| 6 | Disaster Management |  | 72-76 |
|---|---------------------|--|-------|

## Chapter – VII

- |   |                  |  |       |
|---|------------------|--|-------|
| 7 | Contingency Plan |  | 77-80 |
|---|------------------|--|-------|

## Chapter – VIII

- |   |                   |  |       |
|---|-------------------|--|-------|
| 8 | Capacity Building |  | 81-82 |
|---|-------------------|--|-------|

## Chapter – IX

- |   |              |  |       |
|---|--------------|--|-------|
| 9 | E-governance |  | 83-86 |
|---|--------------|--|-------|

## Chapter – X

- |    |  |  |       |
|----|--|--|-------|
| 10 | a. Broad Budget analysis for implementing the plan<br>b. Construction and development<br>c. Day to Day maintenance |  | 87-92 |
|----|--|--|-------|

## PART - III

### Chapter - XI

- |    |                 |  |       |
|----|-----------------|--|-------|
| 11 | Management Plan |  | 93-94 |
|----|-----------------|--|-------|



**PART -IV**  
**Annexure to the Master Plan**

95

- 1 G.O.Ms.No.2347, dated 07.10.59 for setting up Zoo Park.
- 2 List of Important Flora of NZP area
- 3 List of Fauna in the NZP
- 4 Enhancement of Entry Fee into the Nehru Zoological Park
- 5 Statements showing sanctioned strength and present in NZP.
- 6 Plans / Designs of important enclosures
- 7 Prophylactic dis-infection chart of NZP
- 8 List of Single and Mono – Sex animals in NZP
- 9 Statement showing the Carrying Capacity and Existing of Animals of NZP.
- 10 Inventory of wildlife in NZP
- 11 Collection / Exchange of Animals among Zoos
- 12 Maps of various components Nehru Zoological Park
  - (i) Base Map of Park
  - (ii) Base Map with Contours
  - (iii) Vegetation Map
  - (iv) Existing enclosures
  - (v) Existing and proposed Enclosures
  - (vi) Drainage Net work
  - (vii) Water supply
  - (viii) Power supply
  - (ix) Road net work
  - (x) Visitor Circulation

# **PART-I**

## **CHAPTER-I**

### **INTRODUCTION**

#### **a. History of the Zoo**

The Nehru Zoological Park, Hyderabad was established in the year 1963 in pursuance of recommendations of Indian Board for Wildlife, Govt. of India, to set up facility for educating public about wildlife. At Hyderabad, there used to be a mini zoo exhibiting some birds and animals in small cages at Public Gardens, Hyderabad. This was under the control of Department of Horticulture & Gardens. After formation of Andhra Pradesh in 1956, it was decided to establish a modern Zoo in the State capital on the outskirts. Accordingly, a government order was issued vide G. O. Ms.No.247, Dated:26-10-1959. The task of setting up Zoo was given to the Forest department. After verifying many areas, the present site adjacent to the Mir-Alam Lake was selected to take advantage of the large water source.

This was originally a revenue land under agriculture. An area of 280 Acres was initially earmarked for this purpose. Subsequently about 100 Acres were added to the Zoo Park for setting up the more natural Safari Parks. The total area is 380 Acres. Constructions of enclosures began over small area to house some herbivores like Cheetal, Sambar and some birds.

On 6<sup>th</sup> October, 1963, General Sri Nagesh, the then Governor of Andhra Pradesh inaugurated this Zoological Park named as Hyderabad Zoological Park. After the demise of first Prime Minister of India, Pandit Jawaharlal Nehru the Zoo Park was rechristened as Nehru Zoological Park to memories the initiatives taken by him. The Zoo began expanding slowly with addition of new enclosures every year. A toy train was set up in 1962 for taking visitors round the sprawling Zoo Park.

Nehru Zoological Park has successfully bred several endangered wild animals both indigenous and exotic, like Asiatic Lion, Royal Bengal Tiger (both Normal and White), Indian Gaur, Black Buck, Thamin Deer, Swamp Deer, Sloth Bear, Malayan Sun Bear, Hippopotamus, Jaguar, Nilgiri Langur, Rhinoceros, Baboons, Crocodiles, Green Iguana and birds like Painted Stork, White Ibis, Grey Pelican, Rosy Pelican, diff. species of Pheasants, Peafowl, Crane, Emu etc.,



- b. **Vision:** Educating the visitors to see the Zoo as scientific institution engaged in welfare and conservation of wildlife. Also to view the Zoo and knowledge centers for wildlife education, maintaining healthy ambience and pollution free environment.
- c. **Mission:** Conservation of Wildlife through planned breeding of endangered species of the Deccan plateau and collaborative research aiming at attaining management schemes for in-situ population.
- d. **Strategy:** The strategy of the Nehru Zoological Gardens is to achieve the distinction of an outstanding Zoo with efforts in Conservation, Education, Research and maximum visitor satisfaction by connecting people to wildlife and Conservation without compromising the existing policies and rules, to enable with a goal of a Zoo with highest number of collection of species in the India.

**e. Objectives**

- (i) Conservation education
- (ii) Conservation Breeding
- (iii) To rehabilitate the birds and animals kept in the Public Gardens.
- (iv) To exhibit the fauna in a more naturalistic surroundings.
- (v) To acquire wide spectrum of species of both indigenous and exotic animals and exhibit them in spacious nature simulated enclosures.
- (vi) Research, documentation and study.
- (vii) Rescue & Rehabilitation of wild animals and birds
- (viii) Recreation and education for general visitors, tourists and students.

**f. Physical features like the Topography of the area**

The topography of the park is gentle slope. With highest point located in tiger Safari and the lowest point located at the point where natural drain leaves the premises on North -western side through culvert into Musi River. Generally, aspect is western and North-west. On its southern side the Mir-Alam lake is located and it spreads over an area of 600 Acres. The presence of the lake has given rise to many water bodies down below the bund like Singoji Tank, Flamingo Pond and Dingy Pond etc.

**g. Geology:** Hyderabad is centrally located on the top of the Deccan Plateau, presently is one of the fastest growing cities of India. The Hyderabad Urban Agglomeration (HUA) is the sixth largest in India and is spread over an area of 778 sq. kms. The area has undulating topography with elevation ranging from 460 to 560 m amsl. The main geomorphic units are residual Hills, pediment inselbergs, pediplains and valley fills. Hyderabad forms part of the Pre-Cambrian peninsular shield and is underlain by the Archaean crystalline complex, comprising of granites intruded by dolerite dykes. A thin veneer of alluvium of recent age occurs along the Musi River. Granites exhibit structural features such as fractures, joints, faults and fissures. In case of Soils, most of the soils are of red lateritic, yellow sandy-clay loams and alluvial black soils. The thickness of the soil cover ranges from 0.5 m to 2.0 m.

#### **h. Rock & Soil:**

The rock type is Archean system comprising of Dharwars and the peninsular granite complex. The soil is of two types the Red soil and black cotton soils.

#### **i. Flora & Fauna in Zoo premises**

**Flora:** This area was originally under paddy fields and barren hillocks. Whatever tree growth is available now is either planted or has come up naturally in all these 50 years. The composition of the crop corresponds to Champion's type **5 C/ B2 Deccan Dry deciduous Forests**.

The tree growth consists of *Azhadirachta indica*, *Tamarindus indicus*, *Ficus religiosa*, *Ficus bengalensis*, *Ficus glomerata*, *Albizia lebbek*, *Acacias*, *Santalum album*, *Wrightia tinctoria* etc.

**Fauna:** Original barren hillocks in the Zoo Park are now clad with vegetation and the fauna of the area consists of common Mongoose, Palm Civet, Black naped hare, Palm Squirrel etc. Besides mammals, there is colourful variety of Deccan dry deciduous forest avifauna like Peafowl, Partridges, Quails, Storks, Herons, Doves, Bee eaters, Rollers, Sun birds, Flower peckers, Hoopoe, Wagtail, Magpie Robin, Bulbuls, Babblers etc.



In the Singhoji pond and Flamingo pond water fowl like Cormorants, Painted storks, Spot bill ducks, Purple Moorhen, White breasted water hen, Red Wattled Lapwing, Black winged stilts, Jacana, Teals, Brahminy Ducks are seen.

Reptiles include variety of snakes like Cobra, Python, Russell's Viper, Kraits, Rat Snake, Sand Boa, Checkered Keelback, Monitor lizard and Indian Chameleon, Rock Lizard etc., are also present.

#### **j. Climate**

The climate is generally dry except during the monsoon season and it is characterized by hot summer. The year may be divided into three seasons viz, Summer (February to May), Rainy season (June to September) and Winter season (October to January).

**k. Rainfall :** The mean annual rainfall fluctuates between 600 mm to 850 mm. The maximum rainfall is received from South-West monsoon i.e., from July to September. July being the wettest month. On an average there are 40 rainy days in year.

**l. Season :** The seasons in Hyderabad: Summer (March – June), Monsoon (July – October) and Winter (November - February). Hyderabad primarily observes warm climate, since monsoon showers appear behind schedule. The temperature goes down with the arrival of winter season. The temperature doesn't change much with the change in season, thus providing a moderate temperature in the city

**Temperature:** During summer months the maximum temperature ranges 39° - 48°C. In winter, the minimum temperature ranges 12°-16° C.

#### **m. Approach**

The zoo is located on the National Highway No.44, situated 5 Kms from Mahatma Gandhi (Imli-ban) Bus Station, 9 Kms. from Nampally & Kachiguda Railway Stations and can be easily approached by road and Rail. There are regular bus services from these places to the zoo. Hyderabad has got Rajiv Gandhi International Air Port which is just 15 Kms from the zoo on the national highway itself.

#### n. Demography of Surrounding Area

Initially when the zoo park was established it was on the outskirts of the city with very sparse population. However with the expansion of the city, the habitation increased several fold and some industries have also been established causing some pollution issues. The human habitation around the Mir-Alam Tank also had its toll on the pollution of the lake. The habitation on the boundary of the Safari Park and the Zoo made the department to increase the height of the compound wall and reinforcing the same with concertina steel wire besides other safety measures.

#### o. Legal status of the Land

The entire area of the zoo park, i.e., 380 acres is the government land under the control of Forest Department, bounded by compound wall on three sides and Miralam lake dam on the fourth side.

Sl. No	Name of the village	Survey No.	Area in Acre	Remarks
1	Bahadurpura	1, 3,4,5,7,89-96,97,98,99,101,37 to 43,45 to 50,65 to 67, 6,10,8,64	380	i) G.O Ms. No. 1237/Agri, dt: 24.6.1958. ii) G.O. Ms. No.600, Agri, dt: 27.3.1959.
2	Attapur	171 to 175, 177 to 179, 180 to 184,186,189 to 192,196,198 to 200, 202, 204, 206, 207 to 209, 225, 212, 213, 241 to 244, 216, 218, 219, 223 to 236, 271 to 273, 238 to 240, 274 to 283, 245, 266, 267, 187, 215, 237, 217, 203, 206, 214, 210, 211, 233, 224, 246, 247, 197, 180, 290/1, 288/1, 287/2, 286		

#### p. Source of Pollution if any

With increased habitation and setting up of industries around the zoo had their toll on the pollution in the Zoo Park. The Air pollution, sound pollution, the increased traffic, water pollution of Mir – Alam Tank and the pollution caused by the vehicular traffic inside the zoo are the other sources of pollution. Measures to control the same are under progress with the intervention of the Pollution Control Board.

#### q. Source of Water

The zoo is receiving filter water from the Greater Hyderabad Municipal Corporation. This water is utilized for drinking needs of both animals and visitors. Animal Night Houses and enclosures are cleaned with this water. Unfiltered Miralam Tank water is utilized for maintenance of lawns, gardens and plants. There are couple of borewells whose water is also used for animal section needs.



#### r. Location

Geographically Hyderabad lies between 17.355011<sup>0</sup> North latitude 78.449706<sup>0</sup> East Longitude and situated at 5.9 M altitude. It is located almost in the centre of the city abutting Miralam Tank. The Zoo park area falls in territorial jurisdiction of two Mandals' i.e. Bahadurpura Mandal of Hyderabad District, Rajendranagar mandal of Rangareddy District. It is bounded on the East by the National High Way No.44, on the South by Miralamlake and MiralamEdgah, on the West by Kondareddyguda and on the North by Bahdurpura-Kishanbagh road.

#### s. BiogeographyLocation

Ecologically and Biogeographically the Indian Sub-continent is one of the most fascinating regions of world. As per Biogeography classification, it is located in biotic province of 6D Central plateau of Deccan peninsula region. The region supports Deccan Dry deciduous Forests with characteristic grass land ecosystems locally known as "Kanchas". These lands support varieties of herbs, shrubs and many tree species along with variety of fauna.

#### t. Past Achievements:

##### i. Visitors & Gate Revenue for the last 10 years:

Before 2009 no. of visitors visiting was near 1.7 million. But, now the no. is reaching 3 million because of the popularity of the zoo. Management of visitors is a big challenge to Managers and zoo staff. Zoo is registering increased annual visitation year after year. This shows the popularity of the Zoo in the country. The no. of visitors and gate revenue realized for the last 10 years is as follows:

SLNo	Year	No. of Visitors in lakhs	Revenue Realized Rs. in lakhs
1	2004-05	15.12	225.14
2	2005-06	13.93	272.58
3	2006-07	16.31	320.80
4	2007-08	16.94	336.77
5	2008-09	18.05	372.32
6	2009-10	17.85	391.75
7	2010-11	19.75	457.63
8	2011-12	22.97	541.72
9	2012-13	27.51	654.05
10	2013-14	30.04	696.90

ii. **Revenue & Expenditure for the last 10 years**

The amount of revenue realized in the current years shows its foot steps towards self sustains.

Year	Revenue	EXPENDITURE		Total Exp.
		Plan	Non - Plan	
2002-03	191.82	4.57	429.15	433.72
2003-04	191.18	17.93	434.99	452.92
2004-05	270.92	18.30	450.38	468.68
2005-06	327.16	14.06	487.3	501.36
2006-07	374.09	19.14	381.31	400.45
2007-08	418.56	44.86	437.71	482.57
2008- 09	486.80	27.92	470.15	498.07
2009 - 10	545.30	36.04	594.93	630.97
2010 - 11	642.259	34.61	728.35	762.96
2011 - 12	801.11	121.87	766.96	888.83
2012-13	1068.051	183.38	1118.68	1302.06
2013 - 14	1273.795	143.56	1988.75	2132.31



## CHAPTER – II

### APPRAISAL OF PRESENT ARRANGEMENT

The Zoo was established in 1963 and completed 50 years recently and celebrated its Golden Jubilee. Every enclosure which has been constructed during the last several years confirm to the principles of modern zoo concepts of open-moated enclosures and the display enclosures placed with Zoological Classification theme. Till date this zoo is recognized for its innovative ideas like Safari Parks, Nocturnal animals display, walk through Aviaries and Conservation breeding enclosures etc.

#### a. Animal Section

Asst. Curator-I (F.R.O), is over all in-charge of animal section, who is assisted by one F.S.O, Park Supervisor, Head Animal Keepers(3 Nos)& Animal Keepers (58). The Asst. Curator-I is responsible for maintenance, enrichment, up gradation of various animal enclosures for Primates, Carnivores, Herbivores, Birds & Reptiles.

Animal enclosures are divided into three regions which are headed by Head Animal Keepers.

Region I: Primate Park, Parrot World, Otter Complex, Nocturnal Animal House& Reptile Row.

Region II: Carnivore Plaza, Lion Junction, Bears Bay & Deer Land.

Region III: Safari Complex & Elephant Odyssey.

The regions are regularly supervised by Park Supervisor& Forest Section Officer. They also monitor hygiene of animal enclosures, feeding of animals time to time, animal health, breeding and behavior issues.

Park Supervisor & Head Animal Keepers take attendance of Animal Keepers and allot the duties to the keepers.

Nehru Zoological Park, Hyderabad has taken up the work of enrichment of animal enclosures and by now more than 50% of enclosures were enriched according to the need of animals concerned and the work is in progress in other animal enclosures.

## **Veterinary Section**

This section works with two full time working vets. They look after the animal health management of the zoo. The Zoo Hospital is headed by Asst. Director (Vet.), supported by a Vety. Asst. Surgeon, Para Vets., Lab Asst., Two Animal Keepers & Three attendants.

### **Zoo Hospital Activities**

- Routine observation for health, hygiene and breeding management.
- Prophylactic measures to control viral bacterial and other parasitic diseases among all animals.
- Periodic supplementation of mineral, essential amino acids and vitamins to promote good health and to reduce stress on the animals.
- Treatment of sick and injured wild animals in captive situation.
- Chemical restraining of wild animals for treatment, crating and shifting purposes.
- Hand rearing of rescued wild animals, rejected young ones and young one separated from the parents to avoid cannibalistic behavior.
- Population control of prolific breeders like Spotted deer, Sambar deer, Nilgai and Black Buck by adopting birth control measures.
- Census of all the mammals, birds and reptiles to prepare inventory report for submission to Central Zoo Authority, New Delhi, which is duly completed by 31<sup>st</sup> of March every year.
- The zoo veterinarians actively involved in the zoo education program meant for youth, students and trainees. Internship program for final year B.V.Sc., students is being conducted for the veterinary graduates of the veterinary college of Bidar, Bangalore and Pondicherry.
- All the data documentation of zoo hospital is made as per the guidelines of Central Zoo Authority, New Delhi and maintained for reference.
- Animal Record Keeping System software of ISIS is used for animal history recording and uploaded to ISIS website.



- **Internship Training** is imparted to the BVSc Graduate students and Veterinary Diploma students from the Veterinary University. The practical knowledge to these students is gained in the zoological park. The Veterinary Officers conduct this education programme.
- **Immobilizing Equipment Training** The wildlife divisions in the Andhra Pradesh Forest Department are possessing wildlife rescue vans which are equipped with immobilizing equipment and drugs. The staff working in wildlife divisions is being trained in handling the immobilizing equipment from time to time. They even get hands on experience in the field.

**Facilities:** The veterinary team is supported by following facilities for better health care and emergency health needs of captive animals.

- 1) **In-patient Treatment Ward:** Zoo hospital provided with inpatient facility to house sick wild animals, necessary treatment is given with close observation and monitoring.
- 2) **Pharmacy:** Day to day required medicines, food supplements besides emergency and trauma care medicines are readily available. Drugs include anesthetics, anti-venom, antibiotics, anti histamines, anthelmintics, First Aid items, Vaccines and nutritional supplements and dietary items are dispensed everyday to the concerned animals as per requirement.
- 3) **Laboratory:** Laboratory technician is employed in the zoo to collect different samples like feces, blood, urine etc for processing & analyzing. Lab is equipped with autoclave, centrifuge, binocular microscope etc to conduct routine tests on daily basis.
- 4) **Operation Theatre:** Operation theatre equipped with operation table, shadow-less lamp, Boyle's apparatus, and wide range of surgical equipment. This is an important facility to attend emergency cases like infighting injuries, tear wounds, abdominal injuries, severe contusion nature of wounds, fracture of bones/legs, abnormal tissue growths, Abscess & vasectomy of different captive wild animals.
- 5) **Immobilizing Equipment:** Restraining is very important aspect in Wild Animal Management in captive conditions. Chemical restraining is the vital activity in Zoo Hospital. Since 1980s this Zoo Hospital is equipped with Immobilizing Equipment.
- 6) **X-ray Facility:** X-ray unit is available in Zoo Hospital for diagnosing fractures, dislocations & other musculo-skeletal problems in captive wild animals.

- 7) **Quarantine Block:** There is a separate quarantine facility on the east side of the zoo away from all the animal enclosures. In this newly acquired / rescued animals are kept for observation for a scheduled quarantine period.
- 8) **Small / Young Animal Care Facility:** In this orphaned animals are kept under hand rearing. Experienced animal keepers and assistants under the supervision of vets will take care of the animals in this facility.
- 9) **Documentation Center:** Records, Registers and other relevant documents pertaining to animal record keeping are kept here. Also maintains information related to the zoo animals in the specified formats given by CZA. At present 2 Computers are available for data entry and record keeping.
- 10) **Modern Incubator Facility:** An Incubator with 500-egg capacity with auto power back up is available. Mainly Pheasants, Peafowl, Duck and Swan eggs are incubated for better hatchability.
- 11) **Post-Mortem Examination Room:** A separate building away from all animal related facilities is made available for post-mortem examination. This has got examination platform, facilities for weighing of carcass, hot water system.
- 12) **Incinerator:** A modern incinerator is available near the post-mortem room to dispose of the carcasses.

### **Store and Feed supply section**

A separate feed store building is available near Zoo hospital. The Dy. Range Officer with the help of assistant and 9 employees maintains the store. This unit will take care of supply of clean, safe and specified quantity food to all animals. There are two buildings for this unit. In one building the dry feed items are stored; the other houses the kitchen and preparation room. Here cooking, preparation and cleaning of beef are done. Everyday mixing of different items, according to the feed formulations is done in the feed store. Fruits and vegetables are received one day in advance, stored in cold storage and distributed to different enclosures next day morning. The feed store is having the following equipment

- 1) Cold Storage –10000 BTU/hour
- 2) Simple weigh equipment –500Kgs capacity.
- 3) Electronic weighing machine – 1 No – 200Kgscapacity



- 4) Electronic weighing machine – 1 No – 150Kgs capacity
- 5) Deep Freezer – 2 Nos.
- 6) Solar Heater – 1 No.
- 7) LPG Gas stove – 2 Nos.
- 8) Feed distribution vehicle (Tata Ace) – 1No.
- 9) Grass distribution vehicle – 1 No.

As per the feed schedule the feed is procured and prepared in the dry kitchen and supplied to the animals. Feed schedule charts are available for each species indicating quantity of feed items required for animals each day. Care is taken to provide balanced diet for all animals and special diet is provided for sick and breeding animals. The feed items required for the zoo animals are procured on tender basis for a period of one year. All the items are divided into thirteen units.

Unit – I	–	Grains and Grocery
Unit – II	–	Fruits and Vegetables
Unit – III	–	Chicken, Chicks & Eggs
Unit – IV	–	Beef and Mutton
Unit – V	–	Liver and Bones
Unit – VI	–	Fish (Live and Dead)
Unit – VII	–	Live Goat/Sheep
Unit – VIII	–	Meal Worms
Unit – IX	–	Green Grass and others
Unit – X	–	Bread
Unit – XI	–	Bleaching Powder, Phenyl, Lime Powder, etc.
Unit – XII	–	Milk
Unit – XIII	–	Cattle Feed

Item XI and XII are procured from Vijaya Dairy (Andhra Pradesh Dairy Development Corporation Ltd.) Govt. under taking agency.

## **Sanitation Section:**

### **Sanitation**

Zoo is a place where lot of waste is generated by the wild animals in the form of fecal matter and left over feed. Hygiene of the enclosures and surroundings is very important to keep the zoo animals in good health. For this, proper mechanism of disposal of waste is essential.

### **Segregation of Waste Water**

At present the water used for enclosure washing is allowed to drain into the water channels. This results in the sheer wastage of precious fresh water only after a single use. The enclosures specially of the carnivorous mammals require substantial amount of water for flood washing. The water once used, if collected and given some treatment, can be reused for lawn watering.

## **Maintenance Section**

The Maintenance Section is one of the important sections in Nehru Zoological Park, Hyderabad which looks after Sanitation, Maintenance, Water distribution, Maintenance of electrical fittings, Developmental works etc.,

The Maintenance section is supposed to be headed by an Assistant Engineer due to vacant the system is running on outsourcing personal and is supported by work shop staff such as Plumber, Electrician, Mason, Carpenter, Welders, etc. There are 15 personnel taking care of this section. The personnel are totally skilled and they have been trained to meet the exigencies and combating emergent situations.

- i. **Civil works:** The Assistant Engineer is overall responsible for the civil works, preparation of estimates, supervision and execution of works pertaining to construction of new animal enclosures according to animal habitats, for comfortable housing and to cater their needs. Besides this, this section also looks after the regular maintenance of all the animal enclosures to ensure safety for both the zoo animals, staff and the visitors.

## **ii. Transportation of Animals**

Preparation of crates, translocation of animals is a routine affair. Transportation of animals takes place, whenever exchange of animals between Zoos takes place, which is to be exercised carefully by ensuring all safety measures and cautiously to avoid injury to the animals as well as untoward incident.

## **iii. Crisis Management**

Zoo Management is a crisis management for which the zoo should be always prepared to combat the exigencies. Fire fighting, mobilizing men and materials, by assessing the situation is an important task, which has to be managed efficiently for preventing major mishaps. Nehru Zoological Park has imparted necessary training to its staff and security personnel to deal with emergency situations.

## **iv. Safety Measures**

Regular vigil and routine checking of animals fence, visitors barricading, zoo boundary wall, is ensured for the safety of animals and visitors. Periodical inspection of electrical fittings, pump sets and allied accessories and vehicles are being carried out as a part of safety measure.

## **Security Section**

The Zoo has a high and strong compound wall all around, except along Mir-Alam tank. But the existing compound wall is ineffective in some areas where the wall is either collapsed or the effective height is reduced due to increase in level of ground on the other side. Recently, the wall height has been increased and the Punched type concertina Coil was fixed on the compound wall to protect Wildlife, and valuable Sandal wood tree growth in the Zoo. However, this coil is getting disturbed / dislocated due to strong gales, or wear and tear.

Prior to killing of 'Sakhi' tigress during October, 2000, only departmental watch and ward staff used to protect the properties day and night. The watch & ward wing is presently under the control of Asst. curator-III, who is assisted by the Forester and Zoo Sargeant and 24 Watchmen and 2 gate keepers.

After the Sakhi incident, as per the recommendations of the "One man commission" protection system was upgraded and the night time protection was entrusted to Private Security Agency, in two shifts of 8 hours each, i.e. 4-30 PM to 8-30 AM. At present (from 2007-08 onwards) three shifts are being put into place for round the clock security.



During night time along with the private security, permanent watchmen are posted at the main gate and service gate for effective security management. In spite of all these arrangements, still some illicit cutting of Sandal wood trees is noticed. Therefore, there is need for constant vigil in this regard.

To facilitate the inspection of Zoo premises the proposed an internal road from Camp Office of the Curator to the corner of the Tiger Safari, enroute Curator bungalow, Main gate, Zoo Hospital and proposed conservation breeding centre. There are some links to be attended to make a existing jeepable pathway to make the pathway as continuous all along the compound wall.

### **Water Supply Section**

The main water resource to Nehru Zoological Park, Hyderabad is Miralam Tank from which the raw water is drawn by gravity and overflow. The water bodies in the zoo park are filled with this water. Lawns, Gardens and new plantations are maintained by the same water.

Drinking water is drawn from Municipal pipe line. This filter, purified water is supplied to all animal enclosures and drinking water units for visitors. The animal enclosures are cleaned and animals drinking needs are met with this water.

There are 5 bore wells and 5 open wells in different locations. From this water is used mainly for lawns and gardens. From the bore well in safari, the water used for safari area animal enclosures.

In addition to the above, the overall rain water storage capacity of the existing water bodies can also be increased by de-silting the water bodies, constructing check dams and weirs over water channels, increasing the channel sizes at certain strategic points, etc. This would result in availability of more water throughout the year for filling moats, washing enclosures, watering green patches etc.

### **Disposal of solid waste and liquid waste -sewerage**

Inside the zoo many number of dust bins are placed for the visitor convenience. Also two types of bins are provided near the animal night houses for the convenience of animal keepers. Feed waste, left over feed is disposed into one type and fecal matter is disposed into another type. The waste is separated as bio-degradable and non-bio degradable at the source

point. The collection and disposal of non-bio degradable waste is outsourced. The bio-degradable is sent to bio-gas unit, fecal waste is sent to vermi-compost unit.

Waste water from all the animal enclosures is directed into drainage system. This is connected to municipal drainage system.

It is proposed to form the Habitation committees with the colony members which are abutting the Zoo Park and motivate the people regarding the garbage. The sanitation and the garbage clearance in the habitation areas will be undertaken by the Zoo Authorities with the help of Greater Hyderabad Municipal Corporation.

To control the sewage flowing into the zoo from the Mir-Alam Tank a sewerage treatment plant of a capacity of 0.5 MGD is proposed with the coordination of Hyderabad Metro Water Supply and Sewerage Board, Hyderabad. The sewerage treatment plant will solve all the drainage problems.

### **Vermi-composting of Zoo Waste**

This unit receives leaf litter and fecal waste from different areas and animal enclosures. As this zoo has got huge number of plants and wide spread lawns and gardens, this requires lot of manure. Rich manure produced from vermin-compost unit is useful for the zoo vegetation.

### **Visitor's amenities**

To facilitate the visitors in the Zoo park to avoid the confuse of the roads and loops increase of signage' swill be done. To facilitate the visit of exhibits in the loop areas and to come back to the main path of the zoo, the sufficient number of signanges will be made. In addition to the signage's plantations will be undertaken to reduce the number of loops, blockage of unused paths and conversion into service paths.

Popularity of the zoo is increasing day by day. To keep this going, the visitors have to be provided with minimum facilities. With the facilities provided right from the entry point to the exit point visitors should feel comfortable. Existing facilities for the visitors are as follows:

- i. **Toilets:** This facility is outsourced to reputed agency on pay and use basis with conditions to maintain in hygienic condition. Toilets for men and women are available near Main gate, children corner, elephant odyssey, Canine corner, Rhino canteen, Bear Safari, Mouse Deer Enclosure and Nocturnal Animal House.



- ii. **Shelters:** Visitors are provided with shelters to rest for a while during their zoo visit. These are also used to educate the visitors about wildlife. In several places "Rachabandas" are also available to sit and relax for some time.
- iii. **Drinking water:** RO water is available near children corner, hippopotamus, Barking Deer, Reptile House, Barasingha, Giraffe enclosures. Filter water is also made available near Main gate, Nocturnal Animal House, Elephant Odyssey, Lion Safari Park, Hog Deer, Bears Bay, Asst. Curator's Office for visitors.
- iv. **Children Corner:** The children corner is to the Left, immediately after Entry. This is a sprawling area of 5.00 Acres with lawns, and play pen. This is the most intensely used area and hence suffers heavy wear and tear. However, it is proposed to be shifted to the Left, at Mazhar Garden, so as to distribute the visitors' pressure, and reduce stress at Primate Area.
- v. **Battery Operated Vehicles:** As the zoo is spread in an area of 380 acres, zoo management felt the necessity to provide vehicles for visitors to roam around. To prevent pollution caused by visitor vehicles zoo is providing eco-friendly and green ride to the visitors in the pollution free battery vehicles since June, 2013. At present there are 32 battery operated vehicles available for visitors. This ride starts from the main gate and goes into the inner loop and covers many animal enclosures. This trip is for about 45 minutes. For adults Rs.40/- and for children Rs.20/- is being charged.
- vi. **Toy Train:** A children train is also provided in the Zoo, with the starting point near Central fountain. The train takes visitors along the main ring road, over a distance of 2.6 Kms. The track was laid in 1972. BHEL have donated the engine. Till March'2003, it was operated departmentally with the help of senior mechanic. Later, tenders are being called each year for running and maintenance of the train each year. However, the Engine and bogies require periodical repairs and replacements. Several of the wooden sleepers are deteriorated or damaged, and are being gradually replaced.
- vii. **Safari ride:** Four mini buses have been provided for taking visitors into the Safari complex which includes Lion Safari, Tiger Safari, Sloth Bear Safari and Nilgai Safari. Running and maintenance of these Safari Vans is outsourced to a Private Contractor. Initially, when the lease was auctioned in 2004, the contractor offered to Zoo Park 50.5% of the revenue sale of Safari tickets. However, from July, 2006, the entire maintenance including selling of tickets is given away on lease. It is proposed to



continue this system in future also. This saves expenditure on running and maintenance of Safari Vehicles and also relieves staff for more essential services. Other facilities include.

- viii. Parking stand for parking two-wheeler and four-wheeler against the payment of prescribed fee.
- ix. Clock room near ticket counters for keeping luggage against payment.
- x. Wheel Chair at the entrance gate.
- xi. Brochure containing information about zoo.
- xii. Official guide.
- xiii. Zoo volunteers on Sundays and public holidays.
- xiv. Bicycles are made available on contract basis.
- xv. First Aid facility at the zoo hospital.
- xvi. Bio scope centre showing movies on wildlife found inside the zoo.
- xvii. Zoo souvenir shop sells wildlife theme based "T" shirts, Caps, Toys, Posters, Games, Stickers etc.
- xviii. Boating facility is available in the Zoo Park in Mir-Alam lake. It is being run by the Andhra Pradesh Tourism Development Corporation. They pay royalty to the Zoo for the lease.
- xix. To cater to the needs of visitors, one Zoo Restaurant, a Canteen and a Dairy parlour are provided in different locations of the Zoo.

### **Lawns and Gardens - Landscape Section**

As the area was under cultivation prior to setting of the Zoo, it was devoid of any tree growth. Gradually groves of trees were established. At present, the whole area is covered with lush green trees, forming a thick green curtain against all sorts of pollution.

The garden section is headed by Assistant Curator-II, who is assisted by Deputy Range Officer, Two Garden Supervisors, 6 Head Malies and 85 Labourers.

Since there is ban on recruitment, it is felt difficult to maintain the lawns of the Zoo with available staff. Therefore, some of the areas like Camp office area, Jurassic Park, Primates area, Children corner area all-round the Ring Road and formal garden area etc. are being maintained by outsourced employees.

Both protected water, and raw water is supplied by Hyderabad Metro Water Works Limited. A network of pipe lines cover the entire area of the Zoo, supplying protected water to Animal cages, water taps for visitors, etc. Sprinklers and pipes are used for watering the lawns and gardens. In addition, there are (6) open wells and two bore wells to supply water for the lawns and gardens. These open wells get filled with raw water of Mir-Alam lake by gravity channels and percolation.

Over the period, natural vegetation and the planted trees have grown and covered the area. If one observes from the top of a hillock in Tiger Safari, the Zoo area looks like "*an Oasis amidst extensive concrete desert*". During the summer, the temperature in the Zoo would be at least 2 to 3 degrees less than the temperature in the City. Therefore, many people drop into Zoo with family, to relax in the cool and serene surroundings of the Zoo.

For improving the aesthetics of the park and to provide pleasant environment and sitting places to visitors, 13.51 acres of land have been developed into lawns in different localities.

There is a nursery in the Zoo Park, located at Bears Bay to raise different plants on beds and in pots. These are used for the plantation in the zoo wherever and whenever required.

The planting of thorny ornamental hedge plants are proposed to plant between the standoff barrier and the moat walls in the Zoo Park. This will enhance the beauty of the enclosures and prevent the visitors to go near to the Standoff barrier.

### **Plastic Regulation Section**

This Zoo is pioneer in regulating plastic waste. There is a counter at the entrance gate from where plastic regulation starts. The measures adopted in Nehru Zoological Park, Hyderabad are as follow.

- i. Screening of plastic at the entrance to avoid visitors carrying plastic articles inside the zoo. Visitors are given paper covers in place of plastics collected from them.
- ii. Sticker will be pasted to water bottles at entrance by taking Rs.10 as a deposit which will be returned once bottle is returned at the gate, thus preventing throwing water bottles in the zoo.
- iii. Sufficient number of warning boards and signage prohibiting usage of plastics within the zoo premises are provided.

- iv. Canteens and Parlors inside the zoo are prevented from using plastic and also serving food in plastic covers.
- v. Notifications have been published in the News Papers appealing not to use plastics inside the zoo.
- vi. Zoo staff and the security are always alert to pick the plastics littered around by the public.
- vii. Education programs and awareness campaigns are being organized by the zoo and volunteers regarding the dangers of usage of plastics inside the zoo.

### **Transport and Communication**

Nehru Zoological Park, Hyderabad is having the following vehicles.

- 1) Qualis – For the official use of Curator.
- 2) Bolero – For the official use of Asst. Conservator of Forests.
- 3) Indigo –Protocol.
- 4) Scorpio – For official use of Animal Section In-charge officer
- 5) Mahindra Pick – up – Material Transport
- 6) Mahindra Max – for Internal Transport of Animals
- 7) DCM – Garbage Disposal
- 8) Tractor – Green Grass Distribution
- 9) Triller – Ploughing
- 10) TATA Ace – Feed Transport to animal enclosures
- 11) Jeep – Security Patrolling
- 12) Rescue Van – For animal rescue operations
- 13) TVS Fiero(Two Wheeler) – Asst. Director(Vet.)
- 14) Bullet (Two Wheeler) – Vety. Asst. Surgeon
- 15) Hero Honda (Two Wheeler) –Asst. Curator – I
- 16) Hero Honda (Two Wheeler) – Asst. Curator – II
- 17) Hero Honda (Two Wheeler) – Asst. Curator – III
- 18) Bullet (Two Wheeler) – Animal Section, Forest Section Officer
- 19) Luna (Two Wheeler) – Park Supervisor
- 20) Bicycles –46 Nos – for perambulation of the zoo premises by the officers and Supervision staff.



**Wireless Network:** Mobile phones CUG (closed user group) are issued to Curator, Asst. Conservator of Forests, Asst. Director(Vet.), Vety. Asst. Surgeon, Asst. Curator-I, Asst. Curator-II, Asst. Curator-III for better and quick communication. Supervisory staff is provided with walkie-talkies. Zoo office and Hospital are provided with telephone, internet and fax facilities.

## **b. Animal Collection Plan**

The emphasis of the Zoo's, all these years has been on the number of species displayed. This has led to compromise with housing standards. To prevent this the present Collection Plan has been critically reviewed and action to reduce the number has been taken in the proposed collection Plan.

With the present rate of global habitat destruction, climate change and increasing human population, Zoos have a greater role to play in conserving the species from extinction. However, Zoos are not Noah's Arks- they are more like the life boats on Ships; only some vital species need to be saved.

The Nehru Zoological Park, located in South Indian Tropical Zone in moderate climatic conditions, is well suited to breed and exhibit tropical fauna. Keeping this in view it is proposed to give emphasis on Indian fauna in Nehru Zoological Park, with special reference to fauna of the Deccan plateau and peninsular region.

The zoo is established with concept of exhibiting the animals in open moat enclosures. This concept has really suited the wild animals. Other factors like expertise infrastructure, climatic conditions, suitable pairing and proper housing have influenced in successful breeding of the endangered fauna. Also instrumental in breeding of Native Species viz., Asiatic Lion, Royal Bengal Tiger, Sloth Bear and several ungulates. Exotic species like Hippopotamus, Jaguar, Baboons, and Pheasants were successfully bred here. These animals were spared to other zoos in India and abroad on breeding loan or animal exchange basis.

### **Present Stock of Animals**

Over the past 5 decades, the Zoo has acquired variety of species, and exhibited them successfully. The collection of animals initially has been on variety of species, both indigenous and exotic. The largest collection was during 1980's, as follows:

<b>Particulars</b>	<b>No. of Species</b>	<b>No. of Animals</b>
Mammals	65	585
Birds	120	1120

Reptiles	27	243
<b>TOTAL</b>	<b>212</b>	<b>1948</b>

However, in conformation with the guidelines of Central Zoo Authority the number of exotic animals is reduced. At present the Zoo Management is focusing on conservation of indigenous species, which are threatened. Collection of some more species is being done, keeping in view of nature education and awareness to general public. As a result, the following is the collection at present.

Particulars	No. of Species	No. of Animals
Mammals	57	441
Birds	76	770
Reptiles	24	230
<b>TOTAL</b>	<b>157</b>	<b>1441</b>

The present collection of animals is further classified as follows:

Sl. No	Particulars	Endangered Species as per CZA guidelines (Sch 1 & 2 of wildlife Protection Act)	Indigenous Species	Exotic Species	Total
1	Mammals	33	12	12	57
2	Birds	6	34	36	76
3	Reptiles	13	9	2	24
	<b>TOTAL</b>	<b>52</b>	<b>55</b>	<b>50</b>	<b>157</b>

Animals representing different continents are as follows

### 1. Asia

**A) Mammals** Asiatic Elephant, Rhesus Macaque, Bonnet Macaque, Lion-tailed Macaque, Pig – tail Macaque, Slender Loris, Common Langur, NilgiriLangur, Indian Giant Squirrel, Ratel, Jungle Cat, Leopard Cat, Rusty Spotted Cat, Asiatic Lion, Indian Leopard, Bengal Tiger, Common Palm Civet, Small Indian Civet, Golden Jackal, Indian Grey Wolf, Dhole, Sloth Bear, Asiatic Black Bear, Smooth-coated Otter, Mouse Deer, Barasingha, Manipur Brow – antlered Deer, Black Buck, Gaur, Four-horned Antelope, Indian Crested Porcupine, Stripped Hyena, Wild Boar, Spotted Deer, Hog Deer, Indian Muntjac, Sambar, Nilgai.

**B) Birds** Grey Jungle Fowl, Khalij Pheasant, Common Peafowl, Eurasian Spoon Bill, Asian Grey Hornbill, Great Indian Hornbill, Pied Hornbill, Red Spur Fowl, Red



Jungle Fowl, Silver Pheasant, Reeve's Pheasant, Common Ring-necked Pheasant, Southern Green Pheasant, Lady Amherest's Pheasant, Golden Pheasant, Bar-headed Goose, Mustached Parakeet, Plum-headed parakeet, Alexandrine Parakeet, Rose-Ringed parakeet, Indian pond heron, Black-crowned Night Heron, Great white pelican, Spot-billed pelican, White backed vulture, Sarus Crane, Flamingo, Painted Stork, Demoiselle Crane, Brahminy Duck, Black Winged Kite, Pariah Kite, Purple Moor Hen, Barn Owl, Brown Fishing Owl, Great Horned Owl, Mottled Wood Owl, Spotted Owlet, Shikra, Black Neck Stork, White Stork, White neck stork, Egyptian Vulture, Purple Heron.

**C) Reptiles** Indian Soft shell turtle, Monitor Lizard, Reticulated Python, Indian Rock Python, Common Rat Snake, Indian Cobra, King Cobra, Russel's Viper, Mugger Crocodile, Saltwater Crocodile, Gharial, Indian Black Turtle, Star Tortoise, Red Sand Boa, Keel Back Snake, Common Indian Krait, Chameleon.

## **2. Australia**

**A) Birds** Emu, Black Swan, Red Lory, Dusky Lory, Rainbow Lorikeet, Budgerigar, Eclectus Parrot, Nanday Conure, Patagonian Parrot, Goffin's Cockatoo, Saimon Crested Cockatoo, Lesser Sulphur crested cockatoo, Zebra Finch.

## **3. Africa**

**A) Mammals** Hamadryas baboon, Olive Baboon, Chimpanzee, Cheetah, Giraffe.

**B) Birds** Common Ostrich, Love Birds, Masked Love Birds, Peach-faced Love Bird, Grey Parrot, Western Grey Cockatiel.

## **4. North and South America**

**A) Mammals** Common Marmoset, Jaguar, Hippopotamus

**B) Birds** Darwin's Rhea, Black-necked Swan, Blue-and-yellow Macaw, Green Winged Macaw, Scarlet Macaw, Jandaya Conure, Sun Conure, Blue Fronted Amazon, Yellow Fronted Amazon.

**C) Reptiles** Red-eared Slider, Spectacled Caiman.



## **Single Animals**

There are some single animals in the Zoo. When they were acquired they were in pair, but due to natural process of life, their partners have died. It is indeed sad and a sin to keep these animals in forced celibacy. Therefore top priority is to be given to pair up such single animals either by acquisition or by transfer to other Zoos (Single animals list given in Annexure – VIII).

## **Carrying capacity**

In general, captive breeding in the Zoo for conservation purpose has its limits. Every Zoo has its own problems and constraints of financial, physical and human resources. These resources will decide the number of species and the number of individuals in each species that can be supported in the Zoo.

The animal collection plan with the carrying capacity of the zoo, along with existing animals and required animals are mentioned in **Collection Plan**. This plan is prepared keeping in view the norms of CZA for animal holding in Zoos, the already available accommodation for each species in the Zoo, the need to have viable population for conservation breeding to breed certain species for their exchange value, as well as for restocking sanctuaries / national parks, etc.

### **c. General Zoo Administration Section**

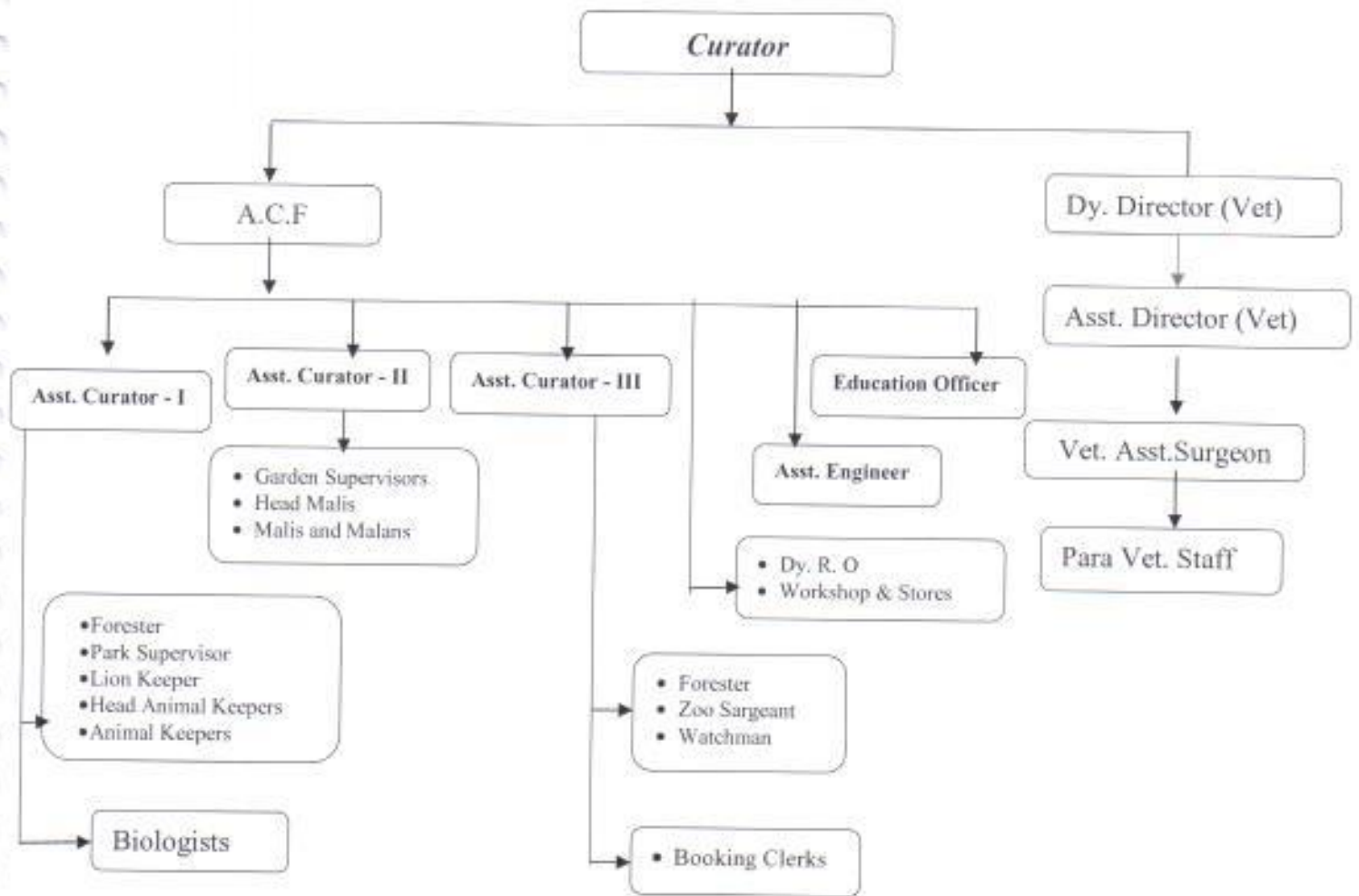
The overall charge of the Zoological Park vests with the Curator (DCF). He is assisted by one Asst. Conservator of Forests, three Forest Range Officers (Asst. Curator) and a few executive and administrative staff. One Accounts Officer is exclusively posted in the Office of the Curator for supervising the Accounts section including remittances etc. and also acts as Drawing and Disbursing Officer for salaries and establishment part. Besides Accounts Officer, One Superintendent, (4) Senior Assistants, (3) Junior Assistants, two Record Assts., One Typist and two Office Subordinates work in the administrative section. (Staff position is enclosed as **Annexure – V**).

The recognition of Zoo rules provide that the Curators job should be exclusively to look after the animal section therefore the in charge of the ZOO in all the Zoo's of the Country are designated as Directors of the Zoo. It will be appropriate to re designate the Curator as the Director of the ZOO, if the state Government wants to have a state level in charge of Zoo's he could be designated as Director General of the Zoo's.

The Zoo does not have the post of Research Biologist and Education Officer. The both the posts are crucial for enhancing the conservation role of the Zoo. Regarding the Veterinary the Zoo has requisite number of posts sanctioned but (5) out of (7) are lying vacant. These have to be filled on priority basis.



## Organization Structure



The zoo has got two main categories of employees. First category includes permanent staff working in the sanctioned posts. Second category includes staff working on contact basis, either engaged through direct contract or through contactors. All together 460 persons are working in zoological park, Hyderabad.

Sl.No	Category of posts	Total No. of Posts sanctioned in G.O.Ms.No.297, Fin (SMPC) dated:08.10.2008	Total No. of Persons actually working in Nehru Zoological Park, Hyderabad
<b>I. Permanent Staff</b>			
1	Curator	1	1
2	Asst. Conservator of Forests	2	1
3	Asst. Director(Vet.)	1	1
4	Veterinary Assistant Surgeon	1	1
5	Assistant Engineer	1	0
6	Assistant Curators	3	3
7	Junior Veterinary Officers	2	1
8	Veterinary Assistants	2	1
9	Deputy Range Forest Officers	2	2
10	Superintendent	1	1
11	Forest Section Officer	2	2
12	Accounts Officer	1	1
13	Senior Assistants	4	4
14	Junior Assistants + 1 Supernumary	4	2
15	Zoo Sergeant	1	1
16	Record Assistant	2	2
17	Booking Clerks	5	1
18	Park Supervisor	1	1
19	Garden Supervisor	2	2
20	Head Animal Keepers	2	2
21	Head Mallies	6	6
22	Electrician	1	1
23	Carpenter	1	1
24	Fitter	2	1
25	Mason	2	1
26	Helpers	2	2
27	Plumbers	1	0



28	Lion Keeper	1	1
29	Gate Keeper	2	2
30	Black Smith	2	0
31	Senior Mechanic	1	0
32	Tram Driver	1	0
33	Traffic Controller	1	1
34	Labourers	67	65
35	Swimming Pool Supervisor	1	0
36	Artist cum Care Taker	1	0
37	Pool Workers	4	4
38	Drivers	5	1
39	Cleaners	1	1
40	Attenders	2	2
41	Animal Keepers	51	54
42	Watchmen	25	24
	<b>TOTAL</b>	<b>220</b>	<b>197</b>
<b>II. Employees on Outsourcing Basis</b>			
1	Main Office		35
2	Private Security Guards		64
3	Animal Keepers		60
4	Garden Section		64
5	A.R.P.F		30
6	Retired Persons		4
7	Battery Operated Vehicle Drivers		20
8	Zoo outreach(Publicity) van		3
9	Auditoriums		7
10	Time Scale Drivers		3
	<b>TOTAL</b>		<b>290</b>
	<b>Grand TOTAL (I+II)</b>		<b>487</b>

### Benefits to Staff

The Zoo Authority of Andhra Pradesh has extended various facilities for the welfare of its officers and staff members. Following are the facilities, which were extended.

- ❖ Providing facilitation charges to field staff.
- ❖ Sanction of Conveyance Allowance, Telephone Allowance to the Officers.

- ❖ Establishment of Benevolent Fund – Coverage of all the officers and officials under Group Insurance Scheme.
- ❖ Honoring of zoo staff on different occasions.
- ❖ Facility of Medical treatment to the employees who met with accidents in the zoo premises while on duty.
- ❖ Accidental Insurance coverage to staff working with wild animals.
- ❖ Medical Check-up of all the employees and their dependants.
- ❖ Uniforms to all the field staff.
- ❖ Providing residential quarters to some of the officers.
- ❖ Providing Bicycle to officers and some of the field staff perambulation inside Zoo.
- ❖ Wireless communication to the field staff as well as security personnel.
- ❖ Computer training to the office staff.
- ❖ Exposure training to staff members.
- ❖ Conducting Zoo Day Celebrations and rewarding the staffs who have contributed meritoriously.
- ❖ Reading room facility to the staff.
- ❖ Promotions to higher ranks.

#### **d. Research**

Nehru Zoological Park, Hyderabad is the first zoo in the country to come forward to work with Laboratory for Conservation of Endangered Species (LaCONES, an ANNEXE of CCMB), to establish and develop various biotechnological approaches towards the monitoring of health and conservation of wild animals. Nehru Zoological Park, Hyderabad is been associated with several technological achievements towards the conservation of wild animals in this country such as semen collection by electro ejaculation method, production of offspring by artificial insemination in spotted deer and blackbuck first time in the country. The role of wild life/zoo veterinarians in the above achievements is highly commendable to establish various new techniques in various wild animals. In addition zoo veterinarians are also playing important role for timely providing biological samples to develop species specific protocols for Assisted

Reproductive Technologies by recovery and cryopreservation of gametes and embryos. For cell line studies samples are collected from dead animals for future studies.

Specific diet charts were prepared for the inmates in the Zoo after many experiments and Research. Species specific diets were tried and succeeded in formulating the alternative diet schedules to Primates, Ratites, Raptors, Small herbivores, Carnivores etc.,

Several Research scholars are associated with this Zoo in studying the breeding - behavior, biology. With the help of scat & urine samples research is done on stress conditions of wild animal, heat symptoms and pregnancy diagnosis.

Basically, the services of CCMB are being utilized for this purpose. The CCMB are studying the breeding habits of Vultures. They are collecting various specimens / samples for DNA finger printing. They have taken up artificial insemination of Spotted Deers successfully and are planning similar work with Black Buck.

A short term research project for breeding of mouse deer is since sanctioned by CZA. Similar project for "Nutritional Deficiency & Disorders in Wildlife" is being taken up in collaboration with National Institute of Nutrition, Hyderabad. In this regard, Veterinary University of Andhra Pradesh has done considerable studies on Domestic cattle. It is proposed to utilize their services also in this project.

#### **e. Conservation Breeding**

India is among the 12 Bio-Diversity countries of the World. 428 Species of Mammals, 1300 of birds, 448 species of reptiles, 197 of amphibians, 3000of fishes, 57548 of insects and 46286 species of plants found in India and accounts for 8% of the World's diversity of life forms.

The country stands out as a treasure trove of the Natural wealth despite countless obstacles to their conservation. Habitat loss has been due to severe biotic pressure, diversion of Forest land for non – forestry purposes or illegal occupation, degradation of habitat, fragmentation of habitat. Problems are manifold. There is urgent need to conserve India's Forests and Wildlife.



The Central Zoo Authority was created by Govt. of India in the year 1992. The main objectives are to oversee the functioning of Zoos in the Country and to enforce the minimum standards and norms for upkeep and health care of Animals in the Indian Zoos. Also to complement and to strengthen the National efforts in conservation of Wild Fauna of the country. This objective can be achieved by supporting the conservation of endangered species by giving species, which have no chance of survival in the wild, a last chance through coordinated breeding under ex-situ conditions and raise stocks for rehabilitating them in the wild as and when it is appropriate and desirable.

Nehru Zoological Park, Hyderabad has successfully taken up different conservation breeding programmes. In the past, this Zoo has bred marsh crocodiles and released them into wild. At present Nehru Zoological Park, Hyderabad as directed by the Central Zoo Authority has taken the responsibility of breeding Mouse Deer and Vultures in ex-situ conditions. For these breeding programmes Nandankanan Zoo, Mysore Zoo and Sakharbagh Zoo are the participatory Zoos. Apart from these, this Zoo has successfully bred many endangered species: Asiatic Lion, Royal Bengal Tiger, Rhinoceros, Elephant, Nilgiri Langur, Lion tailed Macaque, Black Buck, Spotted Deer, Sambar Deer, Nilgai, Pelican, Python, Soft shelled Turtle etc.. Among the exotic animals, Chimpanzee, Jaguar, Baboons, Hippopotamus and Pheasants are on frontline. The Animals which were bred in this Zoo were given to many Zoos in India and abroad under Animal Exchange Programmes.

## **f. Education and Awareness**

The zoo visitors are susceptible to educational information because of the attraction to the living animals. Animal collections are therefore the foundation of the enormous educational value.

Museum cum interpretation centre has lot of trophies of wild animals, exhibits of the parts of animals and signage's explaining the human evolution. It is proposed to update the entire museum cum interpretation centre into Environmental Educational Centre with modern concepts. The redoing of the Museum will be done on the lines of present EEC's of the state covering Conservation of Wildlife and importance of Zoo's and Protected areas with respect to the Telangana State.

One of the prime objectives of the establishment of this Zoo is to educate and create awareness among the visitors about the importance of the wildlife conservation. Accordingly, the Zoo has been taking up programmes with schools and colleges students on Wildlife

conservation. Also, informative interpretation signages are displayed at different enclosures. Brochures and guide books are also given to visitors to educate and bring awareness.

Education of the target groups is easier in zoos, as the main attractions are the animals. Most of the charismatic species like the large cats and large herbivores attract crowds. Exhibit areas are ideal for educating the visitors on Wildlife, conservation and environmental issues.

Many educational institutions comprising of various age groups and various social backgrounds visit this Zoo. There are professional programmes and facilities for zoo education. In the Zoo everyday one education programme is conducted to educate the visitor's.

Tuesday	Tiger Talk	Animal Keeper's Talk on Tigers
Wednesday	Elephant Walk	Awareness Programme on Elephants
Thursday	Canine Class	Information sharing on wild dogs, Wolves & Jackals
Friday	Bird School	Interactive birds feeding and awareness session
Saturday	Crocodile coaching	Interactive session on Crocodiles and reptiles
Sunday	Snake awareness show	Sensitization on snakes conservation

Education is also been imparted to the visitors through sign boards, Signage, Orientation films, Museum and Visitor's Shelters.

Besides the impressive display of wildlife, Nehru Zoological Park is popular for its sprawling lawns and gardens. Visitors relax and children keep playing in several areas of the Zoo. The Zoo is a hub of high activity on all weekends, holidays, vacations of schools. In addition, on several religious functions, people flock to the Zoo for recreation.

For the benefit of visitors, lawns are being maintained regularly. Amenities like benches, drinking water points, restaurants, toilets etc are set up adequately.

There is a Toy Train for taking visitors for a joy ride round the Zoo. Also, boating is available at Mir-Alam Tank. Visitor cabs are also arranged for taking visitors round the Zoo.

With a view to minimize inconvenience to wild animals and visitors musical instruments, radios, play equipment, etc are prohibited inside the Zoo.

At present, there is a children's corner at the entrance in the Zoo. This is proposed to be shifted to Mazhar Garden site, and set up modern playpen for children, with sponsorship of Private Agencies.



- a. **Motivation for Staff:** Truly, “all work and no play” makes the staff dull. To enable them to work in groups and coordinate with each other team games play a great role. Therefore, it is proposed to set up an Amenities Centre with facilities for indoor and outdoor games for motivating the staff.

It is also proposed to organize “Cultural evening” or “talent shows” for encouraging cultural talents and fine arts in them.

In order to make them stay back at their places of work during lunch breaks it is all necessary to provide facilities for dining nearer to their places of duty and relax there itself.

- u. **National Level Trainings:** The supervisory cadre like Asst. Curator, Foresters, Dy. Range Officer and Veterinary Staff need to be trained in wildlife management and animal handling.

Deputing the supervisory staff to different training institutes for workshops and seminars will keep them in good stead. Also help them in keeping touch with latest developments on the wildlife front.

Special training programs have to be organized for supervisory cadre like Park Supervisor, Head Animal keepers, Garden Supervisors and Security Supervisors in the zoo. The Zoo has several competent and experienced staff. It is proposed to organize training sessions with such people for the benefit of youngsters. A group of youngsters is to be attached to such senior staff for some time, so that all the new entrants of the job can be learnt “on job”. Also working in groups fosters team spirit which is the modus operandi of modern corporate work.

Regularly staff working in different levels is sent for educational tours to other zoological parks both inside and outside state. This will go a long way in improving their outlook, as they will be picking up some good practices adopted in other Zoo Parks.

- v. **Zoo Outreach through publicity van,** this zoo reaches out the people especially school children in remote villages. This van is equipped with Audio Visual aids, dioramas, some live animals, pictures and models. Zoo film and wildlife awareness programme films are screened for the villagers, students etc. Concerned Forest Department Staff in rural areas co-ordinates with this publicity van and makes zoo outreach a grand success.

- w. **Zoo In-reach/Bioscope** is an auditorium which is located in the entry gate. Here the visitors especially the school children who come from different schools are oriented



about the zoo. A short film on zoo is screened. Also, the visitors are oriented about the different wild animals housed in zoo, different directions leading to different locations like Safari, Reptile House, Butterfly Park, etc.

- x. Zoo Guide is an important person who links the zoo with the visitors in a better way. Well educated persons are trained about the zoo locations, animals and history of different enclosures and also the zoo. These guides will accompany the visitors group and take them around the zoo. At present this facility is available on request.
- y. Zoo day Celebrations are conducted every year on 6<sup>th</sup> of October. On this occasion several competitions like drawing, singing, essay writing and quiz are held in the zoo park and also in nearby schools. The winners in different competitions are awarded. In 2013 on the eve of Golden Jubilee Celebrations, cash award to the meritorious field staff was launched.
- z. Teachers Training Programme Teachers from different parts of the country come to CCRT Training institute, Hyderabad every year. These teachers are trained about the zoo. In the end of the session doubts of the teachers are cleared.
- aa. Orientation to Officer Trainings Officer Trainees belonging to All India Service, State service Central Service and other services coming from all over the country are being educated about Zoo management and its importance.
- bb. Orientation to Frontline Staff of Forest Department different level trainings are organized to the field staff of Forest Department in the Andhra Pradesh Academy, Dulapally. In all these training programmes zoo education is incorporated. Hence it has become mandatory to the field staff to learn about the zoo. The Asst. Conservator of Forests, Education Officer and Veterinary Officers orient the front line staff of the Forest Department regularly.
- cc. Signage Boards are set up at prominent places, with general information about variety and distribution of various species in a zoological order. Animal pictorial signage boards have been put up benefit of visitors. This signage provides information on animal biology, distribution, food habits, habitat, etc. Also, special programmes of lectures, guided tours, competitions etc., would be arranged for school and college students, so as to foster love for wildlife.

Interested individuals, Institutions are encouraged to take up various activities in the zoo for their employees viz., shramadan in Zoo upkeep, contributions for maintenance of certain amenities, adoption of animals/areas in the Zoo, sponsoring zoo literature, etc.

The local and regional print and electronic media are actively focusing the activities of the Zoo.

- dd.** Promotion of Wildlife Education with a view to enlighten the visitors simple and effective signage boards are set up at each Animal enclosure giving basic information of name of the species, distribution and status of each animal. These are done both in English as well as vernacular languages.
- ee.** Peoples Participation the involvement of the various NGOs, Corporate Staff and others in the activities of the zoo and their contributions in shape of services and material may be enumerated.

### **Appraisal of Present status and Working arrangement of the Zoo (Constraints)**

#### **Animal Section**

- ❖ Most of the Animal species are represented by single pair of animals, unpaired animals, very few species are represented by genetically and biologically viable breeding groups.
- ❖ Zoo does not have full time Biologist to carry out the observations of behavior of various species of the Zoo and facilitate species specific intervention in the enclosures.
- ❖ The animal keepers are mostly uneducated and they are unable to record keeping of the animals in scientific manner. The problem has to be mitigated increasing the educational qualifications of the animal Keepers and this will facilitate the professionalism in animal keeping.
- ❖ The Executive staff of the department do not have any systematic knowledge about Zoo management, they need training at appropriate institutions. Any person either Animal keeper or Forest personal should be trained at least after posting in the Zoo.
- ❖ Lack of adequate space for owls, housed in Nocturnal Animal House. Lack of night shelter facility for some primates. Short of kraals for some Carnivores. Require breeding kraals for herbivores.
- ❖ The present D-bed area is having small enclosures for displaying surplus birds.
- ❖ Certain enclosures do not have withdrawal areas and restraining facilities: Nehru Zoological Park, Hyderabad is having 120 No's of animal enclosures for display of various species. Some of the animal enclosures do not have withdrawal areas and restraining facilities. As some animals are released for display the remaining animals



animals safely away from the dominant animals. This also facilitates keepers to clean the night house and to keep them dry during day time. Especially in summer, withdrawal area is much essential for the rotation of animals in displaying.

- ❖ Lack of uniformity in barricade system: the barricades are very much essential for the animal enclosures for the safeguard of the animals as well as the visitors. Though the animal enclosures in the zoo are provided with barricades, all of them are not uniform due to the terrain.
- ❖ Additional housing facility for animals: Ungulates like Spotted Deer, Nilgai, Hog Deer, and others are breeding very well in Nehru Zoological Park, Hyderabad. This is leading to overcrowding of animals in display enclosures.
- ❖ Population control measures are to be undertaken to the species like Chital, Nilgai, Hog deer and Sambar which are breeding well and in increasing number and plan of translocation is to be worked out for the animals.
- ❖ Asiatic Lion, Royal Bengal Tiger, White Tiger and Jaguar are also breeding well in Nehru Zoological Park, Hyderabad. Housing the surplus Carnivores is also a major problem. Though there is a facility behind summer house area for housing Lion, Tiger and Jaguar/Panther, during delivery time it is becoming difficult for housing these carnivores separately.
- ❖ The cages at Summer house were constructed originally to house the animals brought from Delhi Zoo, in the background of Indo-China war in 1962. These are old, and cramped. These structures are presently being used to house old and surplus animals, not meant for display.
- ❖ The zoo has been receiving large no. of rescued animals particularly primates, bears, hyenas, Leopards and herbivores like black buck and Chousinga. No arrangement for housing such animals exists in the Zoo, there is need well planned Rescue centre.
- ❖ Safari area being less than prescribed norms need to be reorganized. bear and Bison Safari need to be done away with and area utilized for Lion Safari and Tiger Safari.

### **Veterinary Section**

- There is no ambulance to carry injured animal for treatment.
- Inpatient ward is not designed to house different species.
- A modern facility for Small / Young Animal with Neo-natal Care Facility is required.
- Operation Theatre lacks in preparation room, Air Condition facility and certain important equipment such as Pulse Oxy-meter, ECG, Endoscopy and Gas Anesthetics Machine.



- The zoo has been receiving large no. of rescued animals particularly Primates, bears, hyenas, Leopards and Herbivores like Black buck and Chousinga. No arrangement for housing such animal exists in the Zoo, there is need well planned Rescue centre.
- A separate rescue center is required for housing rescued wild animals. Require separate treatment room for rescued animals.
- Laboratory lacks modern equipments like Blood Analyzer,
- Requires Biological waste disposal system.
- Well designed post mortem room is required to conduct post mortem for the animals.

### **Sanitation Section**

- Presently there is no systematic method is followed for the disposal of left over feed and bones from Carnivore enclosure. This attracts vultures, Kites, Crows and other scavenging animals and there is need for proper covered disposal bins for the same. Even the leftover food particularly concentrated dumped in the same dustbins, this will be helpful in keeping the monkeys away.
- Lot of colonies have come around the Zoo, the residents dump their garbage inside the Zoo, a peripheral road to keep a watch on the situation and regular removal of garbage is necessary.
- The underground drainage provided in Nehru Zoological Park, Hyderabad is very old and connected to the Municipal drainage system. Though all the animal enclosures once provided with drainage system built in the earlier years and not adequate, resulting in improper discharge of waste water, creating unhygienic conditions in some of the enclosure surroundings. Especially in primates, summer house, Hyena, Otter enclosures require immediate attention.
- Lack of water purification systems in wet moat enclosures. Draining out the sewage of wet moats is a serious bottleneck which need to be resolved. The strategies may vary from place to place subject to the suitability of the site i.e., some wet moats may be converted into dry moats, providing appropriate outlet from the moat taking the sewage to the treatment plan or trunk drainage.
- If the use of the treated water in moats can reduce the water requirement of the Zoo substantially and the existing water supply will be sufficient for animal enclosures and visitors.
- Some enclosures lacking proper drainage system though Nehru Zoological Park, Hyderabad has provided drainage to all the animal enclosures, some of them were built in the earlier years and the drainage system provided to those enclosure are not adequate, resulting in improper discharge of waste water, creating unhygienic conditions in some of the enclosure surroundings.

### **Store and Feed Supply Section**

- Existing Building has to be renovated and additional Building can be constructed to make facilities required for feed store. Arrangements are to be made the store as Rodent free. Flooring between the Hosiptal and Store should be Pucca.
- The Zoo has adequate space and other facilities for proper storage and distribution of feed to the animals, however some hardware and plumbing material is also kept, separate room is necessary.
- Require elevated platforms and shelves in feed store to facilitate storing the products, spacious wash basin and raised platforms for collection cleaning and disinfection of fruits and vegetables.
- Requirement of one electronic weighing machine of 150Kgs capacity with power back up, one weigh bridge for weighment of huge quantity items like green grass, one simple/mini flour-mill for grinding of grains and Chicken dressing machine and “kheema” machines are required.

### **Maintenance Section**

- The filling of Asst. Engineer post and creation of Work Inspector to work under will facilitate the engineering works in the Zoo premises.
- Lack of sewerage treatment plant in the Zoo premises allows the polluted water in the Zoo which is highly problematic for the animal health.
- The drainage system and water distribution systems are not adequate and proper. The distribution of water must be properly regulated so that not much pressure is exerted on the network. Furthermore, the animal section.
- Visitors must be provided with clean drinking water on top priority. A separate line is proposed for supply of water for drinking to the visitors and animals. ROR plants are to be constructed at appropriate places and interconnected to the entire visitor area of the Zoo premises.
- The storm water drainage system needed to be utilized for the best advantage of the zoo. Presently, lot of water is flowing through the drain outside the zoo as waste into the Musi River.
- Separate store is required to procure and hold the items required for workshop staff to meet day-to-day needs.
- Rusting of iron, discoloration of fence in animal enclosures is very common. This should be attended regularly, round the year with the help of a painter.



## **Security Section**

- The existing compound wall is very old and prone for damages. There is no wall at the end of the Miralam tank area which is abutting to the so many colonies.
- There is no jeep able path on either side of the Zoo compound wall for patrolling from inside and outside. There is no proper supervision on private security personnel during night time and some vulnerable areas which are having Sandal trees patrolling is difficult as the areas are slushy are to be attended.
- There is no proper security along the train track.
- All the security staff is not having wireless system.
- Necessary arrangement to prevent the entry of feral animals including dogs , need to be strengthened.

## **Disposal of Solid waste and liquid waste - sewerage**

The Solid waste from Herbivore enclosure is been routed to Vermi compost unit. A separate vehicle for solid waste disposal is not available. Feed store waste and other biodegradable waste is send to bio-gas plant. Solid waste thrown by the visitors is collected by the tendered contractor and taken out of the zoo premises and dumped in the Municipal Garbage Yard.

This Zoo is receiving water from South-East side as a leakage from Mir-Alam Tank, the other water outlets which are from the different moats will be merging are linked to the Mir-Alam tank overflow channel, this wastage is further going into municipal sewerage channel. The major part of the water which is coming to Zoo from the overflow of the Miralam tank is highly polluted which is entering in to all the water bodies of the Zoological gardens and polluting the wet moats of Zoological garden. During rainy season due to heavy flow all the moats, overflow water are being mixed and creating un- hygienic atmosphere for the animals.

## **Visitor amenities**

- Number of loops are to be reduced and clear ear marked visitor path has to be provided , to make the visitor comfortable. The visitor path should not cross the service path as far as possible.
- The present Toy train is diesel operated and is congenial to the environment of the Zoo. It need to be converted into battery operated.
- The entry of private vehicles in the Zoo has been banned at present, this arrangement will continue throughout entire Master plan period.
- Dustbins need to be upgraded to provide facilities for segregation of metal, plastic and biodegradable wastes.



- Washrooms are of old type with less water storage need replacement. Modern toilet facilities are to be created to cater the need of the visitors.
- There are less drinking water points.
- There are not information kiosks and trained guides to the visitors.
- Digital display of information and happening in Zoo is lacking.
- As the carrying food is regular practice in the Nehru Zoological Park, designated area for visitor taking the food have to be identified and it has to be enforced, nobody consumes food in other areas.

### **Lawns and Gardens -landscape Section**

- In view of landscape immersion kind of display system, lot of greenery has to be improved around the animal enclosures.
- The vegetation at present is dominated by few species.
- The enclosures are not having live hedges at many places.
- Removal of dead and dying trees is not being done regularly.
- The live hedges in several places are looking very old.
- There are free ranging animals of Cheetal in the Zoo which are the basic constraint for the development of the Zoo gardens, which is to be tackled immediately.
- Pipelines supplying filter water and raw water were laid during the establishment of the zoo. There are regular repairs in these pipelines. Open wells size has diminished due to silting. There are no proper rooms for bore wells and water pumping engines.
- Still there are several patches which are open and dry viz., Tiger Safari, Elephant enclosure, Orangutan enclosure, Maidan enclosure etc.
- Most of the Zoo area is infested with Ipomeas creepers which are strangulating well grown trees, neem trees are infested with Ioran thus.
- Lack of Horticulture officer post and lack of maintenance of gardens on a scientific manner.
- Lack of advanced nursery with all infrastructures in the Zoo premises.

### **Transport and Communication**

- Except (3) two wheelers all are very old and causing lot of pollution.
- Because of old age vehicles there is frequent breakdowns and troubling the zoo management during exigencies.

- There is no proper vehicle for zoo hospital staff to go for animal health checkup rounds.

### **Research and Study**

- At present two Biologists are working in Mouse Deer and Vulture Conservation Breeding Centers funded by Central Zoo Authority of India.
- Nehru Zoological Park, Hyderabad is having MOU with LaCONES an ANNEXE of CCMB, Hyderabad. Different kinds of samples viz., fecal, hair, blood, tissue and egg samples are provided for Research and would be continued.
- Collaborative research with Agriculture University, Veterinary College is not happening in a full pledged manner.
- Study on breeding behavior nutrition, enrichment etc., is not happening in scientific manner.

### **Education and awareness**

- Present Interpretation centre has large no. of trophies but no interpretation about the linkages between wildlife Conservation , life supporting system of the nature exists.
- There is not proper education wing in the Zoo Park.
- Zoo extension (out-reach and in-reach) programs are not happening in a systematic way.
- There is no uniformity in signage boards.
- An open air theatre (Amphi – theatre) is not effectively utilized.
- There is no screening of wildlife films.
- There is no trained / educated zoo guides.
- Limited no. of events are organized in a week.
- Limited voluntary groups are working in education / awareness programs.



## **PART – II**

### **CHAPTER–III**

#### **Future Objectives**

- To breed and rear the Endangered species of fauna of India with special emphasis on Deccan peninsular fauna with the object of saving them from extinction, to make available for restocking the other Zoo's in India and to release in wild by way of relocation/ re-introduction of species. (*Conservation Breeding*)
- Conservation Education.
- Rescue and Rehabilitation of abandoned / orphaned and deserted / injured animals in ex-situ and in-situ conservation.
- Exhibit and display of wild animals in a naturalistic conditions.
- To serve the cause of Wildlife conservation by arousing interest and concern for wildlife by organizing exhibitions , seminars and nature camps among public with a special emphasis to the community of students of in and around Hyderabad city.
- Study and documentation of the habits and behavior of animals and birds in the natural surroundings as well as in captivity (*Conservation Research*)

#### **Strategies**

- Promote sound techniques of husbandry that ensure the health of animals and birds in our care with state of art facilities of veterinary care and with specific animal management plan.
- Conservation education through staff, NGO's to the visitors regarding the various species include trainings, conferences, workshops for volunteers and conducting in reach and outreach programmes with attractive and effective signages, interactive displays . Organizing the guided tours with knowledgeable persons and audio visual shows.
- Animal exhibits, plantings, graphics and Zoo programs are to be represented in such a manner to give the visitor a sense of awareness and concern for wildlife and their habitat.
- Applying resources to Conservation Breeding programmes that will assist in the conservation of Asiatic Lion, Indian Gaur, Mouse Deer, White backed Vulture, Jackal and Four horned antelope etc., It is also proposed to takeup breeding of Tigers (both Yellow and White) and Asiatic Lions for genetic diversity.

- Providing satisfying experience ,through modern exhibit design, well run visitor services ( Toilet facilities , Souvenir shop, resting places, Food courts, Cloak rooms, Umbrella, Wheel chairs, Parking etc.) and to maximize the natural and park like atmosphere by scientific land scapping.
- Involving the organizations like Universities, LACONES, CCMB and other Zoological institutions for scientific research.



## Chapter-IV

### Future Action Plan

The Nehru Zoological Park, located in South Indian Tropical Zone with moderate climatic conditions, is well suited to breed and exhibit tropical fauna. The lush green area in the Hyderabad extending 300 Acres plus, with giving emphasis on fauna of Indian peninsula, with special reference to fauna of the Deccan plateau. It is proposed to pair the (26) single animals and acquire (10) new species which include Zebra, Apes, Flawless Otter and other bird species belonging to Deccan peninsular region. The other important activities under this plan or correction of enclosures by reducing the Apes enclosures, establishment of inpatient block, removal of Safari's of Bear and Indian Gaur, improvement of Deer land by relocating the Deer and Antelope enclosures.

The major objective of the Zoo authorities is translocation the free ranging animals i.e., basically Chital (*Axis axis*) and Crocodiles and to improve the Landscaping of the area with modern concepts by introducing the indigenous flora of Deccan region. The planting of the host plants in the Butterfly garden also increases the flora of the Zoo Park.

## **Proposed Collection Plan**

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

1. The Nehru Zoological Park, located in South Indian Tropical Zone in moderate climatic conditions, is well suited to breed and exhibit tropical fauna. Keeping this in view, it is proposed to give emphasis to Indian fauna in Nehru Zoological Park, with special reference to fauna of the Deccan plateau and peninsular region.
2. Communicating a 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 Characteristic 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 objectives has to be made keeping due regard to the past performance of the zoo with 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 surroundings as per rules and guidelines of the Central Zoo Authority. The National Zoo Policy envisages that number of species native to the region, other indigenous species and the exotic should be 70%, 20% and 10% respectively. Taking into account of the unique collection of exotic species to be around 25%. The commoner exotic species are proposed to be kept out of the collection plan of the Zoo. The same is proposed to be moved to the upcoming Mini Zoo in Warangal.

## Nehru Zoological Park, Hyderabad Proposed Animal Collection

Sub:- Master (Layout Plan) of the Nehru Zoological Park, Hyderabad.

Ref:- 1) Curator, N.Z.P, Hyderabad Ref. No. 1018/2011/T.O/N.Z.P, Hyd,  
dated: 21.11.2013.

2) C.Z.A, New Delhi F. No. 19-40/92-CZA(11)(Vol.V)(M)/4369, dated: 19.2.2014.

S. No	Species	Present Stock in the zoo as on 31.01.2014				Proposed Collection				Animals to be acquired/Removed				Remarks
		M	F	U	Tot	M	F	U	Tot	M	F	U	Tot	
	<b>MAMMALS</b>													
1	African Cheetah	2	2	0	4	2	3	0	5	0	1	0	1	
2	African Lion	1	1	0	2	2	3	0	5	1	2	0	3	
3	Asiatic Lion	9	8	0	17	6	10	0	16	-3	2	0	-1	To be sent in exchange
4	Baboon Olive	2	2	0	4	2	3	0	5	0	1	0	1	
5	Sacred Baboon	3	2	0	5	2	3	0	5	-1	1	0	0	
6	Himalayan Black Bear	1	3	0	4	2	3	0	5	1	0	0	1	
7	Sloth Bear	5	3	0	8	4	6	0	10	-1	3	0	2	
8	Black Buck	11	7	0	18	8	12	0	20	-3	5	0	2	
9	Chimpanzee	0	1	0	1	2	3	0	5	2	2	0	4	
10	Common Palm Civet	4	3	0	7	2	4	0	6	-2	1	0	-1	To be sent in exchange
11	Common Langur	3	0	0	3	2	3	0	5	-1	3	0	2	
12	Common Marmoset	1	2	0	3	2	3	0	5	1	1	0	2	
13	Barking Deer	2	3	1	6	8	12	0	20	6	9	-1	14	
14	Brow Antlered Deer	3	5	0	8	8	12	0	20	5	7	0	12	
15	Hog Deer	1	2	0	3	8	12	0	20	7	10	0	17	
16	Mouse Deer	19	28	10	57	8	12	0	12	11	16	10	37	
17	Sambar Deer	6	3	1	10	8	12	0	20	2	9	-1	10	
18	Spotted Deer	98	72	21	191	8	12	0	20	-90	-60	0	-150	To be released into wild
19	Swamp Deer	2	4	0	6	8	12	0	20	6	8	0	14	
20	Indian Elephant	1	4	0	5	3	5	0	8	2	1	0	3	
21	Fishing Cat	1	0	0	1	2	3	0	5	1	3	0	4	To be deleted
22	Four horned antelope	0	1	0	1	4	8	0	8	4	7	0	11	
23	Common Fox	1	1	0	2	2	3	0	5	1	2	0	3	
24	Flying Fox	12	7	0	19	4	6	0	10	-8	-1	0	-9	



25	Gaint Squirrel	0	0	1	1	0	0	0	0	0	0	-1	-1	D
26	Gaur - Indian Bison	2	4	0	6	4	6	0	10	2	2	0	4	
27	Geofry'sMormose t	2	1	0	3	2	2	0	4	0	2	0	2	
28	Giraffe	1	0	0	1	2	3	0	5	1	3	0	4	
29	Hippopotamus	1	2	1	4	2	3	0	5	1	1	-1	1	
30	Hyena	1	1	0	2	2	3	0	5	1	2	0	3	
31	Jackal	1	4	2	7	4	6	0	10	3	2	-2	3	
32	Jaguar	4	2	0	6	2	3	0	5	-2	3	0	1	
33	Jungle Cat	1	1	2	4	2	3	0	5	1	2	0	3	
34	Leopard Cat	0	1	0	1	2	3	0	5	2	2	0	4	
35	Leopard	5	4	0	9	4	6	0	10	-1	2	0	1	
36	Pig Tail Macaque	0	1	0	1	0	0	0	0	-1	0	0	-1	D
37	Lion-Tailed Macaque	1	0	0	1	2	3	0	5	1	3	0	4	
38	Rhesus Macaque	0	2	0	2	0	0	0	0	0	-2	0	-2	D
39	Malayan Sun Bear	1	2	0	3	2	3	0	5	1	1	0	2	
40	Mandrill	2	0	0	2	2	3	0	5	0	3	0	3	
41	Monkey African Green	0	1	0	1	0	0	0	0	0	-1	0	-1	To be deleted
42	Red Patas Monkey	0	1	0	1	0	0	0	0	0	-1	0	-1	To be deleted
43	Nilgai	2	4	0	6	8	12	0	20	6	8	0	14	
44	NilgiriLangur	1	0	0	1	2	3	0	5	1	3	0	4	
45	Otter	1	0	0	1	1	1	0	1	0	1	0	1	
46	Indian Porcupine	3	2	2	7	4	6	0	10	1	4	-2	3	
47	Ratel	0	1	0	1	1	1	0	2	1	1	0	2	To be deleted
48	Rhinoceros	2	1	0	3	2	3	0	5	0	2	0	2	
49	Royal Bengal Tiger	4	7	3	14	4	6	0	10	0	-1	-3	-4	To be sent in exchange
50	Royal Bengal Tiger (White)	3	1	5	9	2	4	0	6	-1	3	-5	-3	To be sent in exchange
51	Rusty Spotted Cat	0	1	0	1	1	1	0	1	1	0	0	1	To be deleted
52	Slender Loris	1	1	0	2	2	3	0	5	1	2	0	3	
53	Small Indian Civet	1	0	0	1	2	3	0	5	1	3	0	4	
54	Squirrel Monkey	1	1	0	2	2	3	0	5	1	2	0	3	
55	Wild Boar	3	6	0	9	2	3	0	5	-1	-3	0	-4	
56	Wild Dog	0	1	0	1	4	6	0	10	4	5	0	9	
57	Indian Wolf	2	1	0	3	2	4	0	6	0	3	0	3	
58	Zebra	0	0	0	0	2	2	0	4	2	2	0	4	

59	APES	0	0	0	0	1	1	0	2	1	1	0	2	
	<b>TOTAL MAMMALS</b>	<b>234</b>	<b>218</b>	<b>49</b>	<b>501</b>	<b>167</b>	<b>274</b>	<b>0</b>	<b>441</b>	<b>-32</b>	<b>93</b>	<b>-6</b>	<b>55</b>	
	<b>BIRDS</b>													
60	African Grey Parrot	2	2	0	4	2	2	0	4	0	0	0	0	
61	Alexander Parakeet	13	2	0	15	4	6	0	10	-9	4	0	-5	
62	Blue Fronted Amazon	0	1	0	1	0	0	0	0	0	-1	0	-1	D
63	Yellow Fronted Amazon	1	1	1	3	2	3	0	5	1	2	-1	2	
64	Bar Headed Goose	1	0	0	1	2	3	0	5	1	3	0	4	
65	Barn Owl	3	5	0	8	3	5	0	8	0	0	0	0	
66	Black Neck-Stork	1	1	0	2	0	0	0	0	-1	-1	0	-2	D
67	Black Swan	2	2	1	5	4	6	0	10	2	4	-1	5	
68	Black Winged Kite	1	1	0	2	2	3	0	5	1	2	0	3	
69	Blossom Head Parakeet	5	8	2	15	4	6	0	10	-1	-2	0	-3	
70	Blue Ringed Parrot	1	1	0	2	0	0	0	0	-1	-1	0	-2	D
71	Blue Yellow Macaw	1	1	1	3	4	6	0	10	3	5	-1	7	
72	Brahminy Duck	2	2	0	4	4	6	0	10	2	4	0	6	
73	Brahminy Kite	0	0	0	0	2	3	0	5	2	3	0	3	
74	Black Kite	0	0	0	0	5	5	0	10	5	5	0	10	
75	Brown Fishing Owl	2	0	0	2	2	3	0	5	0	3	0	3	
76	Budgriger	0	0	20	20	0	0	0	0	0	0	-20	-20	D
77	Cattle Egret	0	0	0	0	4	6	0	10	4	6	0	6	
78	Cockatoo	2	1	0	3	2	3	0	5	0	2	0	2	D
79	Comb Duck	0	0	0	0	2	3	0	5	2	3	0	3	
80	Crested Hawk Eagle	0	0	0	0	2	3	0	5	2	3	0	3	
81	Demoiselle Crane	0	0	1	1	0	0	0	0	0	0	-1	-1	D
82	Dusky Lory	1	1	0	2	0	0	0	0	-1	-1	0	-2	D
83	Eastern Rosella	1	1	0	2	0	0	0	0	-1	-1	0	-2	D
84	Eclectus Parrot	1	1	0	2	0	0	0	0	-1	-1	0	-2	D
85	Emu	1	4	16	21	4	6	0	10	3	2	-16	-11	To be sent in animal exchange
86	Golden Pheasant	3	1	0	4	6	12	0	18	3	11	0	14	
87	Great Horned Owl	2	1	0	3	2	3	0	5	0	2	0	2	
88	Greater Flamingo	2	0	0	2	2	3	0	5	0	3	0	3	To be deleted
89	Green Pheasant	1	1	0	2	0	0	0	0	-1	-1	0	-2	To be deleted

90	Green Winged Macaw	1	1	0	2	4	6	0	10	3	5	0	8	
91	Grey Bhutan Pheasant	1	0	0	1	2	2	0	4	1	2	0	3	
92	Cockatiel	27	29	0	56	20	20	0	40	-7	-9	0	-16	To be sent in animal exchange
93	Grey Heron	2	4	0	6	2	4	0	6	0	0	0	0	
94	Grey Jungle Fowl	3	4	0	7	4	6	0	10	1	2	0	3	
95	Grey Partridge	1	2	0	3	4	6	0	10	3	4	0	7	
96	Grey Pelican	5	5	0	10	5	5	0	10	0	0	0	0	
97	Harrier	1	0	0	1	0	0	0	0	-1	0	0	-1	To be deleted
98	Great Indian Hornbill	1	1	0	2	1	1	0	2	0	0	0	0	
99	Indian Pied Hornbill	1	1	0	2	1	1	0	2	0	0	0	0	
100	Indian Grey Horn Bill	0	0	0	0	2	3	0	5	2	3	0	3	
101	Jandya Connure	2	2	0	4	2	3	0	5	0	1	0	1	
102	Khalij Pheasant	4	2	0	6	2	4	0	6	-2	2	0	0	
103	Lady Amherest Pheasant	3	3	0	6	6	12	0	18	3	9	0	12	
104	Little Cormorant	0	0	0	0	2	3	0	5	2	3	0	5	
105	Little Egret	0	0	0	0	4	6	0	10	1	2	0	2	
106	Love Birds	0	0	169	169	40	40	0	80	0	0	-89	-89	To be sent in exchange
107	Malabar Parakeet	3	2	0	5	4	6	0	10	1	4	0	5	
108	Moor Hen Purple	2	0	0	2	0	0	0	0	-2	0	0	-2	D
109	Mottled Wood Owl	1	1	0	2	2	3	0	5	1	2	0	3	
110	Mute swan	1	1	0	2	2	2	0	4	1	1	0	2	
111	Ostrich	2	2	0	4	2	3	0	5	0	1	0	1	
112	Painted Stork	12	9	4	25	8	12	0	20	-4	3	-4	-5	
113	Pariah Kite	2	3	0	5	2	3	0	5	0	0	0	0	
114	Grey Timmneh Parrot	1	1	0	2	0	0	0	0	-1	-1	0	-2	D
115	Patagonian Connure	0	1	0	1	0	0	0	0	0	-1	0	-1	D
116	Peafowl (Common & Normal)	17	19	5	41	8	12	0	20	-9	-7	-5	-21	To be released into wild
117	Pond Heron	0	0	0	0	4	6	0	10	4	6	0	6	
118	Purple Heron	4	4	0	8	4	6	0	10	0	2	0	2	
119	Rainbow Lory	2	1	0	3	2	3	0	5	0	2	0	2	
120	Red Belly Macaw	1	1	0	2	4	6	0	10	3	5	0	8	



121	Red Jungle Fowl	7	8	0	15	8	12	0	20	1	4	0	5	
122	Red Lory	0	0	1	1	0	0	0	0	0	0	-1	-1	D
123	Red Spur Fowl	1	2	0	3	0	0	0	0	-1	-2	0	-3	D
124	Reeves Pheasant	0	1	0	1	0	0	0	0	0	-1	0	-1	D
125	Rhea	1	1	1	3	2	3	0	5	1	2	-1	2	
126	Ring Necked-Pheasant	3	3	0	6	0	0	0	0	-3	-3	0	-6	D
127	Rose Ring Parakeet	19	11	6	36	4	6	0	10	-15	-5	0	-20	To be released
128	Rosy Pelican	2	2	2	6	5	5	0	10	3	3	-2	4	
129	Sand Grouse	4	4	0	8	0	0	0	0	-4	-4	0	-8	D
130	Sarus Crane	1	2	2	5	4	6	0	10	3	4	-2	5	
131	Scarlet Macaw	1	1	0	2	4	6	0	10	3	5	0	8	
132	Scavenger-Vulture	1	1	0	2	0	0	0	0	-1	-1	0	-2	D
133	Shikra	3	0	0	3	2	3	0	5	-1	3	0	2	
134	Silver Pheasant	15	29	0	44	8	12	0	20	-7	-17	0	-24	
135	white Spoon Bill	3	4	0	7	4	6	0	10	1	2	0	3	
136	Spot Bill Duck	2	4	0	6	4	6	0	10	2	2	0	4	
137	Spotted Owlett	6	5	0	11	4	6	0	10	-2	1	0	-1	
138	Spotted Whistling Teal	0	0	0	0	4	6	0	10	4	6	0	10	
139	SulpherCristered Cockatoo	0	0	0	0	2	3	0	5				0	
140	Sun Connure	1	2	1	4	2	3	0	5	1	1	-1	1	
141	Tawny Eagle	0	0	0	0	2	3	0	5	2	3	0	3	
142	White Back Vulture	3	2	0	5	10	10	0	20	7	8	0	15	
143	White Ibis	33	29	6	68	10	20	0	30	-23	-9	-6	-38	
144	White Neck-Stork	1	1	0	2	0	0	0	0	-1	-1	0	-2	D
145	White-Stork	2	0	0	2	0	0	0	0	-2	0	0	-2	D
146	Zebra Finch	7	5	0	12	0	0	0	0	-7	-5	0	-12	D
147	Zebra Finch White	7	5	0	12	0	0	0	0	-7	-5	0	-12	D
	<b>TOTAL BIRDS</b>	<b>272</b>	<b>259</b>	<b>239</b>	<b>770</b>	<b>286</b>	<b>396</b>	<b>0</b>	<b>682</b>	<b>-50</b>	<b>90</b>	<b>-151</b>	<b>-111</b>	
	<b>REPTILES</b>													
148	Chameleon Indian	1	2	0	3	2	3	0	5	1	1	0	2	
149	Indian Cobra	2	8	0	10	4	6	0	10	2	-2	0	0	
150	King Cobra	1	1	0	2	2	3	0	5	1	2	0	3	
151	Crocodile Long Snouted - Gharial	0	7	0	7	2	4	0	6	2	-3	0	-1	
152	Marsh Crocodile (Mugger)	20	16	0	36	4	6	0	10	-16	-10	0	-26	
153	Salt Water Crocodile	1	0	0	1	2	3	0	5	1	3	0	4	
154	Chaimen	0	0	2	2	0	0	2	2	0	0	0	0	

155	Monitor Lizard/ Common Indian	1	2	0	3	2	3	0	5	1	1	0	2	
156	Indian Python - Rock Python	1	2	0	3	2	3	0	5	1	1	0	2	
157	Rat Snake / Dhaman	4	2	0	6	4	6	0	10	0	4	0	4	
158	Viper Russel's	1	1	0	2	2	3	0	5	1	2	0	3	
159	Common Krai	3	2	0	5	2	3	0	5	-1	1	0	0	
160	Sand Boa	1	1	6	8	0	0	0	0	-1	-1	-6	-8	D
161	Whittaker's Boa	0	1	0	1	0	0	0	0	0	-1	0	-1	D
162	Green Whip Snake	5	4	0	9	2	3	0	5	-3	-1	0	-4	
163	Striped Keel Back Snake	10	10	0	20	0	0	0	0	-10	-10	0	-20	D
164	Water Snake	10	2	0	12	4	6	0	10	-6	4	0	-2	
165	Green Iguana	2	2	2	6	2	3	0	5	0	1	-2	-1	
166	Reticulated Python	1	0	0	1	2	3	0	5	1	3	0	4	
167	Giant Tortoise	2	0	0	2	2	0	0	2	0	0	0	0	
168	Indian Star Tortoise	0	0	5	5	8	12	0	20	8	12	-5	15	
169	Fresh Water Turtle /Indian Soft - Shelled	45	25	0	70	8	12	0	20	-37	-13	0	-50	
170	Red Eared Turtle	0	0	6	6	0	0	0	0	0	0	-6	-6	D
171	Melanochelys trijuga (Turtle)	5	5	0	10	8	12	0	20	3	7	0	10	
	<b>TOTAL REPTILES</b>	<b>116</b>	<b>93</b>	<b>21</b>	<b>230</b>	<b>64</b>	<b>94</b>	<b>2</b>	<b>160</b>	<b>-52</b>	<b>1</b>	<b>-19</b>	<b>-70</b>	
	<b>Amphibians</b>													
	Common Indian Toad	0	0	0	0	10	10	0	20	10	10	0	20	
	Indian Burrowing Frog	0	0	0	0	10	10	0	20	10	10	0	20	
	Indian Tree Frog	0	0	0	0	10	10	0	20	10	10	0	20	
	<b>Total Amphibians</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>30</b>	<b>0</b>	<b>60</b>	<b>30</b>	<b>30</b>	<b>0</b>	<b>60</b>	
	<b>TOTAL ANIMALS</b>	<b>622</b>	<b>570</b>	<b>309</b>	<b>1501</b>	<b>547</b>	<b>794</b>	<b>2</b>	<b>1343</b>	<b>-104</b>	<b>214</b>	<b>-176</b>	<b>-66</b>	

### Total Species – Theme wise

Sl. No	Particulars	Birds	Mammals	Reptiles	Total
I	Primate Park	0	11	1	12
II	Carnivore Plaza	0	8	0	8
III	Lion Junction	0	6	0	6
IV	Bears Bay	19	3	0	22
V	Deer Land	11	14	0	25
VI	Reptile Row	0	0	19	19
VII	Nocturnal Animal House	5	7	0	12
VIII	Parrot World	17	1	0	18
IX	Elephant Odyssey	11	1	0	12
	<b>TOTAL</b>	<b>63</b>	<b>51</b>	<b>20</b>	<b>134</b>

### Statement of Indigenous , Exotic and Endangered species proposed for future.

Sl. No	Particulars	Endangered Species as per CZA guidelines (Sch 1 & 2 of wildlife Protection Act)	Indigenous Species	Exotic Species	Total
1	Mammals	30	12	9	51
2	Birds	6	36	21	63
3	Reptiles	11	8	1	20
	<b>TOTAL</b>	<b>47</b>	<b>56</b>	<b>31</b>	<b>134</b>
	<b>Percentage</b>	<b>35%</b>	<b>42%</b>	<b>22%</b>	



## ii) Description of Layout plan

The Zoo has been following taxonomic theme for display. No separate areas are allocated for species from different zoo geographic zones. It has proposed to follow the same theme in future also. Approved Master Lay out Plan of the Zoo is on the page below and the divides the Zoo in to the following Zones.

### Primates

- a. Mega Carnivores ( Tigers, Lions, Jaguars etc)
- b. Lesser Carnivores
- c. Large mammal (Hippo, Rhino, etc.)
- d. Ungulates
- e. Bears
- f. Reptiles
- g. Nocturnal animals
- h. Water Birds
- i. Storks
- j. Hornbills
- k. Flightless birds
- l. Pheasants
- m. Parrots
- n. Amphibians
- o. Birds of Prey
- p. Safari Parks

The animals are displayed according to the above classification.

The arrangement of enclosures is basically along a main ring road, with a core area of birds which is convenient to the visitors.

### **Zone I – Primate Park**

Comprises Primates (Native Primates - 3 Nos., Exotic Primates – 8 Nos.) and Giant Tortoise. Each primate has got separate spacious enclosures. Existing enclosures are designed to suit the species which are proposed to be displayed. As per the approved layout plan a new enclosure for Apes and new Enclosures for small primates will be constructed.

Sl.No	Species	Sl.No	Species
<b>Native</b>			
1	Common Langur	3	Lion-Tailed Macaque
2	Nilgiri Langur		
<b>Exotic</b>			
1	Common Marmoset	5	Sacred Baboon
2	Geoffrey's Marmoset	6	Olive Baboon
3	Mandrill	7	Chimpanzee
4	Apes	8	Small Primates
<b>Reptile</b>			
1	Giant Tortoise		

### Zone II – Carnivore Plaza

In this Zone, mega and lesser carnivores are displayed (7 species of Carnivores of Deccan Plateau region and African Cheetah). All the enclosures in this zone suit the species which are proposed to be displayed. Tiger enclosures require kraals beside the night houses.

Sl. No	Species	Sl. No	Species
<b>Native</b>			
1	Royal Bengal Tiger	5	Wild Dog
2	Royal Bengal Tiger (White)	6	Jackal
3	Hyena	7	Common Fox
4	Indian Wolf		
<b>Exotic</b>			
1	African Cheetah		

### Zone III – Lion Junction

Both the species of Lions (African and Asiatic), Leopard, Jaguar and large mammals are displayed in this zone. For Leopard and lion enclosures kraals are to be provided to the existing night house. A new enclosure for Jaguar will be constructed as per the approved layout plan.

Sl.No	Species	Sl.No	Species
<b>Native</b>			
<b>Mammals</b>			
1	Rhinoceros	3	Asiatic Lion
2	Leopard		
<b>Exotic</b>			
<b>Mammals</b>			
1	African Lion	2	Hippopotamus
3	Jaguar		

### Zone IV – Bears Bay

Three important species of Bears are being displayed in the zoo. Birds of Deccan Plateau region, water birds, Hornbills and Flightless birds are displayed in different aviaries and suitable enclosures.

Sl.No	Species	Sl.No	Species
<b>Native</b>			
<b>Mammals</b>			
1	Sloth Bear	3	Himalayan Black Bear
2	Malayan Sun Bear		
<b>Birds</b>			
1	Great Indian Horn Bill	10	Grey Heron
2	Indian Pied Horn Bill	11	White Ibis
3	Grey Horn Bill	12	Purple Heron
4	White Spoon Bill	13	Cattle Egret
5	Grey Pelican	14	Little Egret
6	Rosy Pelican	15	Pond Heron
7	Sarus Crane	16	Spot Bill Duck
8	Bar Headed Goose	17	Brahminy Duck
<b>Exotic</b>			
1	Ostrich	3	Rhea
2	Emu		

### Zone V – Deer Land

All the Ungulates species (12) of the zoo, Storks, Birds of Prey are displayed in this zone. Raptor birds are displayed in two different aviaries. Couple of enclosures has to be modified to accommodate Gaur, Ungulates and a new enclosure will be constructed for Wild boar as per the approved layout plan.

Sl.No	Species	Sl.No	Species
<b>Native</b>			
<b>Mammals</b>			
1	Hog Deer	7	BrowAntlered Deer
2	Gaur	8	Swamp Deer
3	Four Horned Antelope	9	Barking Deer
4	Black Buck	10	Mouse Deer
5	Sambar Deer	11	Wild Boar
6	Nilgai	12	Ungulates



Exotic			
1	Giraffe	2	Zebra
<b>Birds (Stork Enclosure)</b>			
1	Comb Duck	3	Little Cormorant
2	Spotted Whistling Teal	4	Painted Stork
<b>Birds of Prey (Raptors)</b>			
1	Black Shouldered Kite	5	Tawny Eagle
2	Shikra	6	White Back Vulture
3	Black Winged Kite	7	Crested Hawk Eagle
4	Pariah Kite	8	Brahminy Kite

### Zone VI – Reptile Row

Three species of crocodiles, 3 species of Turtles and 16 species of Snakes and Lizards are being displayed in this zone. Enclosure for Caiman will be constructed in the others area and a new enclosure for small cats will be constructed between Reptile and Nocturnal House to accommodate the small cats as per the approved layout plan.

Sl.No	Species	Sl.No	Species
<b>Native</b>			
<b>Snakes &amp; Lizards</b>			
1	Sand Boa	8	Checkered Keel Back Snake
2	Reticulated Python	9	Green Whip Snake
3	Indian Rock Python	10	Snake Rat / Dhaman
4	Indian Chameleon	11	Russel's Viper
5	Indian Cobra	12	Common Krait
6	King Cobra	13	Monitor Lizard
7	Whitakers Boa	14	Water Monitor Lizard
<b>Exotic</b>			
1	Green Iguana		
<b>Turtles &amp; Tortoise</b>			
1	Indian Flap Shell Turtle	3	Indian Star Tortoise
2	Indian Black Turtle		
<b>Exotic</b>			
1	Red Eared Turtle		
<b>Crocodiles</b>			
1	Marsh Crocodile	3	Salt Water Crocodile
2	Gharial		
<b>Exotic</b>			
1	Caiman		

### Zone VII – Amphibian House

As per the approved layout plan a new Amphibian House will be constructed in the others area to accommodate the following amphibians.

Sl. No	Native Species
1	Common Indian Toad ( <i>Duttaphrynusmelanostictus</i> )
2	Indian Burrowing Frog ( <i>Sphaerothecabreviceps</i> )
3	Indian Tree Frog ( <i>Polypedates maculates</i> )

### Zone VIII – Nocturnal Animal House

13 Nocturnal species, both Birds and Mammals of Nocturnal nature are being displayed in this specially designed house.

Sl.No	Species	Sl.No	Species
<b>Native</b>			
<b>Mammals</b>			
1	Slender Loris	4	Common Palm Civet
2	Indian Porcupine	5	Small Indian Civet
3	Honey Badger (Ratel)	6	Flying Fox
<b>Birds</b>			
1	Barn Owl	4	Mottled Wood Owl
2	Brown Fishing Owl	5	Spotted Owlet
3	Great Horned Owl		

### Zone IX – Parrot World

12 Species of exotic Birds (parrots, parakeets, and lorikeets, Macaws, Love Birds and Cockatiel) and 4 species of Indian Parakeets are being displayed in this zone. In the specially designed enclosures 2 species of Otters are being displayed

Sl.No	Species	Sl.No	Species
<b>Native</b>			
1	Alexandrine Parakeet	3	Malabar Parakeet
2	Blossom Head Parakeet	4	Rose Ring Parakeet
<b>Mammals</b>			
1	Smooth Indian Otter	2	Clawless Otter

<b>Exotic</b>			
<b>Birds</b>			
1	Yellow front Amazon	8	Green Winged Macaw
2	Cockatoo	9	Blue and Yellow Macaw
3	Sun Connure	10	Scarlet Macaw
4	Jandiya Connure	11	African Grey Parrot
5	Red Belly Macaw	12	Cockatiel
6	Sulphur Crested Cockatoo	13	Love Birds
7	Rainbow Lori		

### **Zone X – Elephant Odyssey**

Indian Elephant is being displayed in this zone. Also pheasant species along with Black and Mute Swan are displayed here.

<b>Sl.No</b>	<b>Species</b>	<b>Sl.No</b>	<b>Species</b>
<b>Native</b>			
<b>Mammals</b>			
1	Indian Elephant		
<b>Birds</b>			
1	Common Peafowl	4	Peacock Pheasant
2	Grey Jungle Fowl	5	Khalij Pheasant
3	Red Jungle Fowl	6	Grey Partridge
<b>Exotic</b>			
<b>Birds</b>			
1	Golden Pheasant	4	Mute Swan
2	Lady Ahmerest Pheasant	5	Black Swan
3	Silver Pheasant		

### **Zone XI – Safari Complex**

The Safari Park comprising of Lion, Tiger, Sloth Bear and the Indian Gaur species have been modified into Lion and Tiger Safari and the Indian Gaur and Sloth Bear are being shifted to separate enclosures as per the approved Lay out plan.



## **APPROVED MASTER LAYOUT PLAN**

The Master Lay out Plan is on the opposite page shows the existing features like water bodies, forest patches, various categories of roads & paths, adjoining areas, parking arrangement, gates and barriers, administrative buildings, Zoo office, ticket counter, veterinary hospital and the about the animal enclosures existing, proposed to removed, proposed to be modified and new enclosure proposals in a nut shell about the Zoo activities and gives a fair location of future alterations.

The other maps which may facilitate about the Zoo administration are enclosed as Annexures like Base map with contours and without contours, Vegetation map, Drainage network, Water supply, Power supply and Road network.

### **(iii) Proposals to address the inadequacies and short comings identified in the appraisal report**

#### **Animal Section**

The inadequacies have been listed and planned for attending in the phased manner of the Master Plan period. The works proposed in priority manner during the period are , Pairing of single animals shall be undertaken on war footing basis to eliminate all the inadequacy. A Biologist post shall be created and work of observations on behaviours of species and attention to the species specific enrichment of moats will be under taken.

The animal keepers are mostly uneducated and they are unable to record keeping of the animals in scientific manner. The problem shall be mitigated by increasing the educational qualifications of the animal Keepers and increase the inservice trainings to the staff working in the Animal Section to upgrade the skill with the cooperation of Central Zoo Authority to increase the professionalism in animal keeping. The Executive staff of the department do not have any systematic knowledge about Zoo management, they need training at appropriate institutions. Planning shall be made in such a way that trained personal will be posted if not Animal keeper or Forest personal should be trained at least after posting in the Zoo.

Improvement of enclosures planned in such a way that by providing withdrawal areas, restraining facilities, breeding kraals and uniform barricade system in a phased manner. The provision of withdrawal areas will increase the activeness of the animals and we can separate the animal from the dominant animals and rotate the animals for display. Inbuilt squeeze cages shall be provided to all the Carnivores. The Barricade system shall be revamped with a view to safety of animal and visitor uniformly in the Zoo.

Additional housing facility shall be made to the Carnivore species especially Asiatic Lion, Royal Bengal tiger, White tiger and Jaguar which are breeding well. Extension of hospital with a facility of Cub rearing Centre is provided in the plan to prevent infanticide in the Carnivores and needy species where mother cannot take care of the offspring. Renovation of Summer house proposed in the plan to provide spacious kraals facilitate adequate exercise to the animals. Population control measures planned for ungulates of Chital, Nilgai, Hog deer and others to prevent overcrowding. Provision has made in the plan to relocate the excess herbivores.

The present D-bed area is having small enclosures for displaying surplus birds. The D-Bed area aviaries shall be totally revamped to display some species of birds in spacious enclosures, where they will have pleasant provision has been made in phased manner.



### **Veterinary Section:**

The Veterinary wing has been strengthened in the plan by providing need requirement for the wing to function in a better manner. The inpatient Block shall be constructed to cater the species wise needs independently with all the facilities, The improvement of Quarantine facilities by improving the quarantine ward with tiled walls, proper flooring and roofing of Kraals, provision of Cub rearing or hand rearing section in the extension of hospital with the facilities like Air Condition, Pulse Oxy-meter, ECG, Endoscopy, Blood analyzer and Gas Anesthetics Machine shall be take Neo-natal care and small/ young animals. This will prevent the killings or infanticide in the Carnivores. The Operation theatre will be modernized with having a examination room, preparatory room while extending the Hospital which has been provided. The more number of squeeze cages shall be provided to treat the animals in a better manner.

Post Mortem room shall be upgraded with required norms and a proper ambulance with all the facilities to transport the animals with in zoo or outside the Zoo when exigencies arises to save the animal.

### **Store and Feed supply Section:**

The existing Feed store shall be renovated keeping the entire Hospital premises with tiled flooring outside and making the Hospital and Feed store as totally rodent proof. The Feed store renovation includes elevated flat forms, elevated shelves, Air Conditioning to the part of the store, provision of electronic Weighing machine of 200kg capacity with autopower back up, high power washing equipment, modernized food crates with the lids, feed sample preserving system, simple/mini flour-mill for grinding of grains and Chicken dressing machine and "kheema" machines . The extension shall be designed to meet all the modern requirement of feed store including all the above requirement and with Rodent Proof.

New Tata Ace and Battery operated vehicles shall be provided for the transportation of feed items to the animal enclosures from the feed stores.

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 alternated food regime for the species specific requirements. CFTRI and DFRL shall be contacted for working



out improved scientific diet chart and intervention of feeding cubicles and water troughs for the animals to improvise the present status.

**Security Section:**

The compound wall has to be replaced with CRS Masonry wall for the entire area with 4.0 mt Ht above the ground and with due fencing with solar power or by reinforcing the Punched type concertina Coil with 'Y' or 'E' shape fencing to safe guard the Property, Wildlife and Forest produce. Attempts to be made to acquire the land outside of the for regular patrolling which is ideal one, as it is the herculean task, alternate arrangements shall be made to make a jeepable path from inside all along the zoo boundary wall covering existing tracks to make comfortable patrolling to visualize the entire boundary wall from inside leaving the water body and elephant enclosures. Regular cleaning has to be done all along the compound wall and maintenance of jeepable path to be undertaken regularly.

One exclusive officer shall be posted to look after the Security arrangement during the night hours or after the working hours of the park till the regular staff starts working to supervise the the private security staff from the permanent staff. More video-Surveillance system (CCTV Cameras) to be installed at important locations to improve the effectiveness of security system. Watch towers with spot lights should be established at vulnerable points like back side of Deer Land, Summer House, Mir-Alam bund, Fodder Plot etc. to avoid possibility of entry through the wall. Wireless system shall be provided to all the personal of security and monitored.

**Sanitation Section :**

The underground drainage provided in Nehru Zoological Park, Hyderabad is very old and connected to the Municipal drainage system. Though all the animal enclosures are provided with drainage system which were built in the earlier years and not adequate, resulting in improper discharge of waste water, creating unhygienic conditions in some of the enclosure surroundings. Lack of water purification systems in wet moat enclosures. Draining out the sewage of wet moats is a serious bottleneck which need to be resolved. The strategies may vary from place to place subject to the suitability of the site i.e., some wet moats may be converted into dry moats, providing appropriate outlet from the moat taking the sewage to the treatment plan or trunk drainage.

The major problem in the Zoo is the seepage water of Mir Alam tank in to the Zoo premises. The proposal of Sewerage Treatment Plant in the plan will solve the problem of

the drainage or wet moats and as well as the drinking water requirement of the visitors and animals. As the treated water can be used for the moats and Gardening reducing the quantity of drinking water presently.

Presently there is no systematic method is followed for the disposal of left over feed and bones from Carnivore enclosure. This attracts vultures, Kites, Crows and other scavenging animals and there is need for proper covered disposal bins for the same. Even the leftover food particularly concentrated dumped in the same dustbins, this will be helpful in keeping the monkeys away. Lot of colonies have come around the Zoo, the residents dump their garbage inside the Zoo, a peripheral road to keep a watch on the situation and regular removal of garbage is necessary. A mini incinerator is required near postmortem room area for the disposal of Bio-Medical waste. Solar or electric disposal unit is required for proper disposal of Carnivore fecal and left over feed waste. Necessary transport arrangements shall be made transfer all types of garbage separately.

### **Water Supply Section**

Pure portable drinking water facility shall be provided in each enclosure. Once the sewerage treatment plant is completed the shortcomings of water will be tackled, in the mean time if the shortage of water supply shall be tackled by providing another connection of water.

### **Maintenance Section:**

The provision of creation of post of Work inspector work under the Asst. Engineer will cater the needs of maintenance of plumbing, water and other engineering works. The separate store room shall be provided to cater the all the required engineering needs of the Zoo park in the work shop to attend all the exigencies.

Visitors must be provided with clean drinking water on top priority. A separate line is proposed for supply of water for drinking to the visitors and animals. ROR plants are to be constructed at appropriate places and interconnected to the entire visitor area of the Zoo premises. The storm water drainage system needed to be utilized for the best advantage of the zoo. Presently, lot of water is flowing through the drain outside the zoo as waste into the Musi



River. The diversion of the storm water to the Sewerage treatment plant has to be worked out during the plan period.

Painting of the zoo premises, barricades shall be undertaken by provision of all the equipment to the painter with due assistance in the Zoo as Rusting of iron, discoloration of fence in animal enclosures is very common. This should be attended regularly, round the year with the help of a painter.

### **Lawns and gardens – landscape section**

Horticulture officer shall be posted or drafted from the Horticultural wing of the State for proper maintenance of lawns and gardens -landscape Section.

The Zoo park , the basic problem is the free ranging animals and planning has been done an permission have been obtained and during the year all the free ranging animals particulary Chital and Crocodiles shall be transported to the sanctuaries and Tiger Reserves. This will reduce the huge maintenance of the Lawns and gardens.

After the completion of free ranging animals. the Land scape section will re do the existing lawns with better look up and introduce the indigenous horticultural and important forest species which will be adding the list of flora in the Zoo park. The entire garden area will be redesigned with landscaping, to give it a fresh and new look. Undulating large lawns shall be related with good quality of grass. The Garden would be enriched with attractive fountains and with cascades, with a pool of water with aquatic plants

The present Butterfly Park shall be added with host plant to Increase the species and attract more number of species.

The Open wells need shall be de-silted and steaming to be constructed. Engine rooms are also to be reconstructed. There is a need to plant suitable new native and exotic species with importance in dry and vacant areas. Live hedges need to be planted with young plants and gaps also should be covered. Creepers / weeds need to be eradicated, to enable natural vegetation to come up. An advanced nursery with improved facilities is required to grow the plants inside the Zoo premises to meet the requirement. Proper green house of sufficient dimension shall be added in the nursery. It is proposed to take up planting hardy species so as to improve the ambience. Preferably hardy species of Deccan plateau region viz: *Albizzia*, *Lagaestromea*,



*Boswellia, Anogeissus, Dalbergia, Terminalia, Butea spp.* More plantations are also required to be taken up in Elephant, Tiger and Bear Safari area.

Solid Waste Disposal area shall be more scientifically managed and Vermicomposting to be still upgraded (Separate chapter on Solid Waste Management). Battery operated vehicle to be used for the transportation of material for maintenance and lifting of garbage or waste after due planting and maintenance in Garden section.

### **Education Programs**

Appointment of an Education Officer with experience of teaching and knowledge of life sciences, to head the education and conduct activities related to Education is a priority. He shall be supported by a Junior Assistant and a Junior Attender and a team of Volunteers.

1. Emphasis shall be given to Zoo extension programs (out-reach and In-reach programmes) on weekdays, involving different target groups. A good presentation about the role of Zoos/Public in Conservation shall be made to educate the target audience.
2. The existing signage boards shall be made more attractive, interactive and informative and technical help of organization like Centre for Environment Education shall be taken to improve the signage's.
3. An open-Air Theatre (Amphi-theatre) is in operation near reptile row. This can be effectively used by education officer to conduct classes for visitors, on regular basis, at fixed time. Here the Education Officer/Zoo Guides can interact with the visitors, about Zoo activities and conservation aspects, in an interesting way, in a natural set up.
4. Regular screening of wildlife films shall be done in the Zoo Auditorium to educate visitors.
5. Brochures/ Booklets/ Cd's containing more information on wildlife should be prepared and made available to the visitors at nominal rate.
6. The insectarium in Butterfly Park has to be further improved to educate the visitors on insects and other relative subjects.
7. Exhibitions of Insects, Photography, Painting and various such themes shall help, at least once in a quarter.

8. Information centre would be opened outside of the entry gate which would give basic information about the zoo to the incoming visitors.
9. Information centre has to be extended, in continuation to the Natural History Museum with interactive interpretation equipment on wildlife and Library. Information Desks (Kiosk) are proposed to be set up in important locations to visitors to educate them.
10. Atleast (10) Zoo Guides would be trained and pressed into service, free to go around with the visitors, especially in the group and shall interact with the visitors during their stay in the Zoo. They would play very important role in educating the visitors. Taking services of volunteer guides from conservation groups is to be tapped.
11. Number of daily events would be increased to reach the target groups to impart conservation education.
12. Zoo volunteers group shall be strengthened to organize effective programmes.

### **Transport and Communication**

The vehicles over hauling to be done in the Zoo, to reduce the pollution new vehicles are to be procured by disposing all the old condemned vehicles. Usage of battery operated vehicles to be increased. The Asst. Curators and other Officers also should utilize only battery operated vehicles in the Zoo premises. As already mentioned in the Veterinary section an ambulance has to be acquired with state of art facility.

Wireless network is functioning well. However, some more sets could be added and the location of the repeater station could be changed. More Mobile phones are to be supplied to the Staff Members. High Speed Internet Connection should be taken for the Library, Hospital and Office. Noise pollution would be assessed and remedies chalked out with the help of speech and hearing Institute, with regard to moving vehicles around the Zoo. Shipment yard is to be constructed for loading and unloading the transportation crates of animals.

### **Visitor Facilities**

Signage shall be improved to facilitate visitor by removing most of the loops and clear cut visitor circulation map will be provided to the visitors. The visitors will be guided in a flow of direction. Ten trained Zoo Guides would be pressed into service, as paid facility to visitors to educate visitors. The existing display/signage boards giving information about animals shall be improved with more of ecological information. They shall be designed more attractively to



catch visitors' attention. Booklets and CD's on Animal of Zoo and on conservation aspects should be made available for visitors. The Public Relation Officer would cater the needs of the visitors, get feed-back, receive suggestions and complaints and also provide information to the visitors. Modern digital display information on happenings in zoo along with conservation message would enhance the quality of visit.

Toilets shall be modernized, 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. All the existing drinking water points shall be renovated.

### **Visitor Management**

Regulating of visitors on weekends and public holidays is a very tough job. Security Staff and Volunteers number shall be increased on these days for effective management. (10) no.s guides are to be trained initially to facilitate the visitors in conservation education .Modern information kiosk and digital display information on happening in zoo along with conservation message would enhance the quality of visit.

Providing tickets for all entries like Aquarium, Toy Train Ride, Safari and Nocturnal Animal House along with entry ticket may help the visitors which will prevent the standing in queues everywhere.



(vi) Depending on the local condition of the Zoo, other items may also be added – peculiar problem of the Zoo – like off display conservation breeding centre and rescue centre

**(i) Off display Conservation Breeding Centre of Mouse Deer & Vulture**

Nehru Zoological Park, Hyderabad has been designated as coordinating zoo for Mouse Deer and Vultures by Central Zoo Authority. The present population of Mouse Deer is 70. This is having A & B blocks which can hold up to eighty numbers. Requires one more block to house more than hundred Mouse Deer. Plans are also underway to identify soft release and wild release programs.

A separate area is identified for conservation breeding programs as approved in the Master (layout) Plan and the present breeding area will be shifted to the new area.

Vulture Conservation Breeding Centre is located as per the Master (Layout) Plan. At present five numbers 2:3 birds are available in the centre. Efforts are undergoing to bring more number of breeding pairs to improve vulture breeding.

**(ii) Rescue and Rehabilitation Centre**

The Veterinary wing not only take care of the and same wing take care of the entire state and the zoo has been receiving large no. of rescued animals particularly Primates, bears, hyenas, Leopards and Herbivores like Black buck and Chousinga. No arrangement for housing such animal exists in the Zoo, there is need well planned Rescue centre .Nehru Zoological Park, Hyderabad does not have any additional facility to accommodate rescued wild animals within its premises and presently we are accommodating such rescued animals in the inpatient wards in the Zoo Hospital or in the cages in summer house area. This is causing lot of inconvenience and there is a risk of transmission of diseases from rescued animals to inpatient, captive wild animals and vice versa.

Wild animals, such as Gaur, Leopard, Spotted Deer, Bonnet Macaques, Bear, Snakes, Starred Tortoise, Terrapins and many species of terrestrial and aquatic birds are being rescued. Apart from the above, lot of birds and reptiles are also being rescued from the city and other parts of the State.

A separate rescue center shall be provided for housing rescued wild animals. The Rescue Centre shall be designed on par with the Gir Lion Sanctuary with state of art facilities to solve any type of exigencies of any animal. The center shall have all the infrastructure facilities, which includes enclosures with holding rooms, small aviary, water pools for reptiles and aquatic birds, enclosures for snakes and small primates for accommodating different species. The rescue center may have veterinary dispensary attached with working lab and small operation theatre. The rescue center shall have the facility of under-ground drainage system, 24 hour water supply, keeper's room and a kitchen.

## Chapter-V

### PERSONNEL PLANNING

In Nehru Zoological Park, Hyderabad 145 frontline staff, 19 officers (Four officials on deputation), 56 ministerial, supervisory and workshop staff working. About 290 contracts and out sourced laborer are engaged for carrying out various works related to animal, garden, security sections, running of battery operated vehicles etc. Most of the permanent staff working in various sections is aged and about to retire in a span of 10 years. This would create gap of experienced hands in zoo management to fill up the gap of the experience staff the recruitment has to take place regularly by obtaining necessary permission from the Government.

Sl. No	Name of the post	Post sanctioned	Post filled up	proposed
1	Curator	1	1	
2	Asst. Conservator of Forests	1	1	
3	Asst. Director (Vet.)	1	1	
4	Veterinary Assistant Surgeon	1	1	
5	Assistant Engineer	1	-	1
6	Assistant Curators	3	1	2
7	Junior Veterinary Officers	2	1	1
8	Veterinary Assistants	2	1	1
9	Deputy Range Forest Officers	2	2	
10	Superintendent	1	1	
11	Forest Section Officer	2	2	
12	Accounts Officer	1	1	
13	Senior Assistants	4	4	
14	Junior Assistants + 1 Supernumerary	4	2	2
15	Zoo Sergeant	1	1	
16	Record Assistant	2	2	
17	Booking Clerks	5	1	4
18	Park Supervisor	1	1	
19	Garden Supervisor	2	2	
20	Head Animal Keepers	2	2	
21	Head Malies	6	6	
22	Electrician	1	1	
23	Carpenter	1	1	
24	Fitter	2	1	1



25	Mason	2	1	1
26	Helpers	2	2	
27	Plumbers	1	-	1
28	Lion Keeper	1	1	
29	Gate Keeper	2	1	1
30	Black Smith	2	-	2
31	Senior Mechanic	1	-	1
32	Tram Driver	1	-	1
33	Traffic Controller	1	1	
34	Laborers	67	64	
35	Swimming Pool Supervisor	1	-	1
36	Artist cum Care Taker	1	-	1
37	Pool Workers	4	4	
38	Drivers	5	3	2
39	Cleaners	1	1	
40	Attenders	2	2	
41	Animal Keepers	51	54	
42	Watchmen	25	22	3
	<b>TOTAL</b>	<b>219</b>	<b>193</b>	<b>26</b>

**NOTE:** The existing vacancies have been filled up through outsourcing personnel.

**Outsourcing personnel working in existing vacancies and requirement**

Sl. No	Name of the post	Outsourcing personnel Nos.
1	Main Office	35
2	Private Security Guards	64
3	Assistant Animal Keepers	52
4	Garden Section	57
5	Biologists	2
6	Retired Persons	4
7	Battery Operated Vehicle Drivers	27
8	Zoo outreach(Publicity) van	3
9	Zoo Rescue Van Team	3
10	Auditorium Assistants	7
11	Time Scale Drivers	3
	<b>TOTAL</b>	<b>257</b>

**NOTE:**A.R.P.F:- Voluntary organization comprising 50 people from various Spectrum working on weekends.

## Chapter – VI

### DISASTER MANAGEMENT

Nehru Zoological Park is a large zoo, with an area of 380 acres. Past experience shows that the types of calamities that can hit the zoo are floods during monsoon season, likelihood of breakdown in law and order, affecting the supply of essentials to the park and fire hazard.

Right from the inception of the zoo i.e. 1963 it has not experienced any major disaster problems. However the zoo should be always ready to meet any eventualities. Disaster often strikes without any notice or in very short notice. The major disasters are mostly of natural calamities, which are identified hereunder:

- Floods
- Massive fire
- Cyclone
- Law and Order break down
- Earthquake
- Aerial attack
- Tsunami
- Epidemics
- Others

Whichever may be the disaster, it may cause serious trouble to the zoo management and the inmates. To tackle such kind of situations, the zoo should be in preparedness to combat, in the interest of animals, visitors and staff members.

In such an event, the zoo should be in a position to assess the damages and immediate steps to be taken.

- Assessment of risk
- Likely impact and damage to be caused. Falling of trees, flooding of enclosures, snapping of power lines, breaking of water supply, breaking of enclosures, barriers and escape of animals. In most cases it may affect animals, visitors and causes damage of property.
- The guidance and command for facing such exigencies and also alternative command if the first command fails.
- Equipment needed to speed up restoration measures.

- Training to the staff to meet such exigencies and operate such equipment.
- Fire tracing need to be done.
- Security personnel to be alerted and mobilized by wireless communication.
- Power chain saws need to be kept ready.
- Suitable vehicles to be kept ready to meet any eventualities.
- Tranquilizing equipments and chemicals to be kept ready.
- Ambulance van should be requisitioned.
- First Aid arrangements to be ensured.
- Volunteers, Police personnel and other helping hands to be utilized.
- Periodic mock drills to stimulate preparedness among staff and to test the working conditions of equipments which shall be kept maintained at all times.
- Visitors should be evacuated from the area.
- Medical Doctors and Hospitals need to be informed and the phone, fax mail to be kept in access.

### **Equipments required**

- Axes / Spades / Crowbars
- Diesel operated Saw
- Ropes (Steel / Nylon)
- Diesel Pumping sets
- HAM Radio
- Guns with ammunitions
- Water tankers and hose pipes
- Kerosene / Gas lights / Candles and match box
- Training equipments
- First Aid kits
- Generator sets
- Torches and Batteries
- Rope / Iron ladders
- Spare Chain linked mesh, angular iron poles, nut and bolts with tools.
- Consumables like Diesel, Petrol, Batteries, LPG, etc.
- Water jets to drive the animals.



**Support from outside agencies** we may have to seek support from the outside agencies since all the disasters cannot be handled with the zoo personnel. It is absolutely essential to maintain good rapport with Government and Non Government agencies. Their contact numbers, address, Fax or E-mail ID should be kept ready for pressing their service.

- Deputy Commissioner of the District
- City Police Commissioner
- Jurisdictional Police Officer
- Police Control Room
- Fire Brigade
- Disaster Management Unit of the State
- DISCOM (Electricity supply company)
- Hospitals
- Ambulance
- Official superior authorities
- Voluntary Doctors
- College of Veterinary Science.
- Veterinary Biological Research Institute.
- Department of Animal Husbandry.
- Corporation Authorities.
- Indian Institute of Wood Technology
- Contract agencies
- Previous experienced personnel

**Disaster handling manual** A manual has to be prepared based on the past experience, from the staff worked in the zoo and other senior members and the same may be made available to all the connected staff members working in the zoo for reference and it will serve as a ready reckon and guide manual for handling the situation.

### **Flood Control Measures**

In view of the past experience, the flood water has to be drained out from the wet moat enclosures on war footing basis with the help of heavy motors which can dewater the moats in less time. Structural designs may be altered in such a way that the flood water should be drained up without accumulating. This may also avoid water logging conditions.

**Fire** fighting extinguishers are installed in key locations. Generally speaking, fire is not a problem in the zoo park. Most of the area has green canopy and the ground is covered with green grass elsewhere. However, there are some patches in Safari area, especially Tiger Safari where the area is open scrub gets dried up in Summer and becomes a fire hazard. In such areas as a precaution fire tracing need to be done.

**Floods and Cyclone** As the zoo park is down Stream of Mir Alam Lake, which is 200 year old. The famous arch dam has developed leakages and poses threat of breach to the bund. During the monsoon season of 2005, HUDA Maintenance authorities, responded to kept appeal and took up some minor repairs in some areas. However, as the entire zoo area in under the shadow of lake, permanent repairs to the dam is a must to prevent any disaster.

Besides the above, during Monsoons, the lake gets filled up quickly, and surplus water gets released through Tiger Safari, into the Zoo. In turn, several ponds, and nalas in the Zoo overflow and submerge low lying areas. Some animal houses in Primate area, viz: Capped Langur, Yellow Baboon, Wolf Monkey, etc, get affected badly. To reduce such damages, all drains would be cleared of debris, and widened before onset of Monsoon. **Also, it is proposed to revamp drainage system in the Zoo. The CZA have already provided funds for this work.**

The Zoo area is thickly vegetated area, with lot of trees, both natural and planted. During rainy season, several dried branches and trees keep falling off due to wind/gale. Often, this may injure visitors, or damage the enclosures / cages. Either animals may die, or escape from broken cages. To avoid such mishaps, all dry branches / trees need to be removed in summer season. As emergency, at least (3) power chain saws need to be kept handy.

**Law and Order Breakdown** Nehru Zoological Park is located in the old city area of Hyderabad. The area is prone for communal disturbances, posing break down in law and order.

During such situations, supply of feed items beef, chicken, fish, fruits and vegetable may be affected. One cold storage room and 3 numbers of deep freezers are available in the feed store to store feed items for few days.

Similarly, during such disturbances, essential Zoo staff especially animal keepers and veterinary staff may be provided with transportation facility with the help of Police Department to reach the zoo to attend the emergency duties in animal enclosures.

If any law and order problem crops up with in the Zoo Security personnel will be alerted and mobilized by wireless communication to deal with situation and bring the situation under control and also assistance of local Police will be taken.

In addition, it is proposed to provide Alarm Siren System in the Zoo, so as to alert the Zoo Staff and also warn the visitors about an emergency to facilitate early evacuation if necessary.



## CHAPTER – VII

### CONTINGENCY PLAN

The Nehru Zoological Park, Hyderabad is spread in an area of 380 acres and is housing more than 1600 animals. The zoo is opened daily for the visitors except on Monday, which is called as Maintenance day. Average daily visitation is about 10,000; Zoo management has to take care of safety and protection measures of visitors as well as animals in the Zoo. This requires a detailed contingency plan to tackle the unexpected events.

The plan must have details of personnel and their responsibilities fixed. The required precautionary measures should be taken in advance to prevent any untoward events like fire, floods, accidents, animals escape, falling of dried and weak tree branches, attack of animals, infighting of animals, injury to the visitors, attack by stray animals, lighting, electric short circuit and such others.

Fire hazard, Animal escape (There has been any escape of animals or injury by animals to the visitors of the Zoo, however Zoo safeguards.) visitor falling in to the Moats, Animal keepers getting injured, Snake bite, strike of the staff , failure of the food supply, Law and Problem like Curfew in the city which makes problematic in procuring food and other emergencies . Some of the incidents occurred in Nehru Zoological Park, Hyderabad contingency plan has been prepared and enclosed.

### Rescue of Wild Animals.

Hyderabad is a premier Zoo in the Country. Whenever any wild animal strays from the wild and enters human habitation or any wild animal becomes a nuisance by attacking human beings or cattle, invariably Nehru Zoological Park, help is sought in rescuing such animal. The zoo has been receiving large no. of rescued animals particularly Primates, bears, hyenas, Leopards and Herbivores like Black buck and Chousinga. This master plan envisages the New rescue centre which will cater the needs of the entire state of Telanagana and facilitates housing of rescued animals.

The usual animals, which stray are Panther, Wolf, Bears, Hyenas, Langurs and Monkeys. Reptiles include Cobra, Rat Snake, Sand Boa, Viper and even sometimes Crocodiles. Among Herbivores, Black Buck, Nilgai and Chowsingha are posing problems. Further, Wildlife – SOS organization has become instrumental in seizing good number of Sloth bears from local Madaris.

### **Trap Cages**

For capturing animals like, Panthers and Bears, trap cages are needed and considering the demand in the state, atleast six trap cages should be ready at any point of time. This number is important, because trapping sometimes becomes time consuming, which may take days to capture one. Even smaller size trap cages are required for capturing small animals like monkeys.

### **Vehicles**

For rescuing the animals, the speed with which the zoo management responds is important. A rescue van with immobilizing drugs and rescue equipments is always kept ready in the zoo premises to tackle any kind of conflict situations. A speed moving LMV is also required for local and small animal rescue.

### **Some precautionary measures in to be taken for meeting contingencies**

1. Round the clock security.
2. Non supply of feed – alternative arrangement.
3. Disruption in power supply/water supply – alternative arrangement.
4. Anti snake venom drugs.
5. Siren.
6. Life saving medicines for animals.
7. Fire fighting equipments.
8. A simple plan to meet all contingencies.
9. A guide book shall be prepared for both disaster management and contingency plan.
10. Periodic mock drills shall be carried out.
11. Working out a plan for controlling rodent menace.
12. Taking of injured people to the Zoo clinic for first aid.



### CONTINGENCY PLAN CHART

Sl. No	Nature of Crisis	Attending officers / Officials
<b>Fire Accidents</b>		
1	The present fire fighting system installed inside the zoo premises is okay. But care should be taken for refilling the cylinders in time and water and sand in the buckets should always be filled with.	Asst. Curator III
2	To prevent fire occurrence at the Garbage dump yard inside the zoo premises, need to clean and dried cut branches and to shift the accumulated garbage to Municipal Garbage yards	Asst. Curator II
3	To give attention to office sections also where lot of records are preserved. To provide fire protection with available fire fighting equipments.	Asst. Curator III
4	To have regular check of electronic installations, grounding, appliances and to take up repairs, replacements, leaning and servicing in time to avoid accidents and to keep them in good working condition	Asst. Curator III
5(a)	Phone to Fire services, Ambulance, Police, Guards, etc., whenever there is a fire	Asst. Curator III
5(b)	To provide hydrant jet points near all strategic locations inside the zoo	Asst. Curator III
<b>Escape of animals</b>		
6	To keep personnel safety equipments for the persons attending crisis situations, such as helmets, gloves, chest guards, etc (minimum 5 sets)	Asst. Curator I
7	To check periodically and prune over grown tree branches, remove weak and dried branches inside enclosures of animals which are prone to jump out from trees or escape with the help of fallen branches	Asst. Curator I
8	To check regularly the existing barricades, moat walls, mesh and to provide necessary repairs, replacements and to provide weld mesh barricade wherever necessary	Asst. Curator I
9	To check regularly the existing biological barricades, particularly around animal enclosures and to provide necessary required replanting so as to keep the barricade wherever necessary, in consultation with higher officers	Asst. Curator II
10	To procure equipments to protect persons in danger, such as portable mechanical lifts to stretch into enclosures from outside (which can also be used for other works), human size cylindrical cage with bottom open, rope ladders, light weight metal ladders, etc.	Asst. Curator I
11	To procure equipments to control animals creating danger/havoc. such as nylon nets, nylon ropes, chain linked mesh easy to unfurl and furl, water jets, tarpaulins, gunny bags.	Asst. Curator I
12	Other equipments such as road dividers to control visitors and for other purposes, crackers to scare animals, movable crates, mesh cutter, forceps with long hand to catch big and small animals, device like Mango Plucker with long hand for trapping big and small animals, etc.	Asst. Curator III



13	To explore the possibilities of making use of suitable equipments and devices used in adventure sports by obtaining more details, pictorial brochures and rate list.	Asst. Curator III
14	To close main gate to avoid visitors, to cover the animal by holding / wearing safety equipments, etc., whenever there is any escape.	Staff members and Asst. Curator III
<b>Snake Hazard</b>		
15	To check burrows daily in all enclosures and in garden section and to fill them with sand and put water on it.	Asst. Curator I & Asst. Curator II
16	To provide one set of suitable device for catching snakes	Forest Section Officer (A.S)
17	During rainy season, all underground drainages inside the zoo premises and open drains should be checked for easy flow of water	Assistant Engineer
18	To clean and desilt the Wet-moats	Assistant Engineer
19	During rainy season, to keep the available portable pump sets in working condition for dewatering enclosure moats, if required	Dy. Range Officer (Stores)
<b>To control heavy vehicles and four wheelers entry at main gate</b>		
20	Both Main gate and service gate	Asst. Curator III
<b>Law and Order problems like Curfew or any problems regarding Bandhs which hinders the food and fodder supply</b>		
21	Contacting the Police and arranging escort to the procurement vehicles, standard protocol to be approved with the Police authorities	Asst. Curator -I and A.D ( vet)
22	Preparation of alternate arrangement for any non supply of fodder , feed to the animals and phone numbers, contacts etc., to be made clearly in case of non supply of the fodder or feed or beef etc.,	Asst. Curator -I and AD ( Vet)
<b>Visitor falling in the Dry Moats or Wet moats or Animal Keeper or employee injured by the animal</b>		
23	Summoning the 108 vehicle	Asst. Curator -III and Asst. Curator -I or any other officer incharge of the particular incident.
24	Informing the resident doctor for the first aid	Asst. Curator-I
25	In case person falling in to the moat prior to attack. Immobilising the animal by the AD Vet or concerned Vet staff as quick as possible	AD Vet
26	The Concerned Head animal keeper or animal keeper concerned will inform the AD Vet, AC-I and Curator simultaneously. AD vet will immediately immobilize the animal in saving the visitor falling in the moats.	AD vet, AC-I and AC-III
27	If any attack has been done and severe injuries , Resident doctor treat and admit in appropriate Hospital.	AC-I will arrange vehicle and staff immediately

## **CHAPTER – VIII**

### **CAPACITY BUILDING**

Regular trainings is a *sin qua non* for keeping the staff and officers fit and better equipped in Zoo Management. Significant improvements and innovations are taking place in Zoo Management elsewhere in India and abroad. There is need to equip the staff with these trends. With this end in view the following types of trainings are proposed at Nehru Zoological Park, Hyderabad.

#### **In house Training**

The Zoo has several competent and experienced staff. It is proposed to organize training sessions with such people for the benefit of youngsters. A group of youngsters is to be attached to such senior staff for sometimes, so that all the new entrants of the job can be learnt "on job". Also, working in groups fosters team spirit, which is the *modus operandi* of modern corporate work. The involvement of the Central Zoo Authority by conducting more training to staff at all levels and from various zoos is very essential.

#### **To Encourage Specializations**

If staff is assigned jobs which they like and love then the results can be significant. Therefore it is desirable to elicit the preferences of each person and allot jobs accordingly. This helps in specialization in the field.

#### **Interaction with Retired Staff**

Several of the present staff are children of retired / deceased employees, taken on compassionate grounds. It is indeed a sort of family tradition. To make such traditions effective, it is also desirable to conduct interactive sessions of select staff with notable retired staff in Animal Keeping, Gardening, Security, Workshop and Veterinary care.

#### **Formation of Quality Circles**

With a view to assess each situation at ground level and suggest cost effective reliefs, there is need to form Quality Circles in each section viz: Animal Keeping, Gardening, Security, Workshop, Veterinary care. These circles shall discuss emerging problems, and suggest solutions. This will enable participation approach and ingenious in management.



### **Annual Rewards**

With a view to recognize the services of industrious staff, giving cash award to the outstanding staff memorial award is being given on 'zoo day' i.e. 6<sup>th</sup> October. Some more may be proposed to institute awards in each of the fields viz: Gardening, Animal Keeping, Security, Workshop, Office and Outsourcing Staff.

Monthly list of best staff in each of the above categories will be displayed. At the end of the year, Rewards /Awards would be given.

### **Recreation / Relaxation**

Truly, "all work and no play" makes the staff dull. To enable them to work in groups, and coordinate with each other, team games play a great role. Therefore, it is proposed to set up an Amenities Centre with facilities for indoor and outdoor games.

Also, it is proposed to organize "Cultural evening" or "talent shows" for encouraging cultural talents and fine arts in them.

In order to make them stay back at their places of work, during lunch breaks, it is all necessary to provide facilities for dining nearer to their places of duty and relax there itself.

### **National Level Trainings**

The supervisory cadre like Asst. Curator, Foresters, Dy. Range Officer, Park Supervisor, Head Animal Keepers etc., needs to be trained in wildlife management and animal handling.

Deputing the supervisory staff to different training institutes for workshops and seminars is proposed. This will keep the supervisory staff in good condition as it will help them in keeping touch with latest developments on the wildlife front.

Efforts are being made to send Asst. Curator, (F.R.O), Asst. Conservator of Forests, and Veterinary Officers for short term courses; organized by the W.I.I., Dehradun. Special training programs have to be organized for supervisory cadre like head animal keepers and park supervisors in the zoo park itself or other zoological parks in the State. Sometimes a tour of other zoological parks outside state by Head animal keepers will go a long way in improving their outlook, as they will be picking up some good practices adopted in other Zoo Parks.

### **Training abroad**

Deputation of Veterinary and supervisory staff to outside the country will equip them with latest animal handling techniques, Animal and visitor management techniques as well.



## CHAPTER – IX

### e-GOVERNANCE

Along with Andhra Pradesh in general, Forest Department also had made significant strides in I.T. Sector.

The Forest Department had developed very good and useful G.I.S database with the satellite imagery of NRSA. Information system of "on line" accounting also is being adopted successfully. All plantations, structures are being recorded with GPS, and geo referenced. All staff upto Range levels are connected by Mobile, under CUG (Closed User Group).

Application of information and communication technology for dissemination of accurate information, exchange of information and interaction with other zoos and organizations, maintenance of records and data in digital format would help the zoo to reach out the stake holders and clients. This Zoo is also making use of significant advances in Information Technology sector and has put in lot of efforts to computerize in all aspects to make fast, accurate and paperless office and to store the required data for better management. Conservation education is one of the important objectives of zoo. The available technologies such as internet, website hosting, E-mail, digital photography, all helped the zoo to reach out to many print and electronic mass media agencies with little expense in real time.

#### **Entrance Gate**

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

Nehru Zoological Park has registered record foot falls in recent years with annual growth 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. Through CCTV's, movement of unauthorized persons, vandalism and thefts are

noticed and the security system is alarmed. At present the monitoring unit in the chamber of Curator and Asst. Conservator of Forests, Close Circuit Cameras installed at different strategic points viz.

Main Gate	-	2 Nos
Booking Counter	-	1 No
Visitor Van Counter	-	1 No
Train Station	-	1 No
Aquarium	-	1 No
Nocturnal Animal House	-	1 No

it is proposed to install some more cameras at sensitive points such as

Service Gate	-	2 Nos
Office Gate	-	2 Nos
Safari Complex	-	4 Nos
Reptile House	-	2 Nos
Carnivore Plaza	-	2 Nos
Giraffe	-	1 No.

### **Wireless Network**

There is an effective wireless network system with 46 handsets, which are provided to the Supervising Officers. This is working efficiently to prevent major mishaps and to take corrective steps. The security is in constant touch with Asst. Curator - III and reports immediately any accident of significance.

### **Media Management**

Photography of new born animals, press release of new acquisition, training camps and any other development related to Zoo is now 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 helps 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.



**Zoo Official Website** A new official website has been 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 is designed and hosted at [www.hydzoo.in](http://www.hydzoo.in) with the assistance of Sri Amitesh, Managing Director, M/s Emobitise Technologies, Hyderabad. The website is user friendly and covers all the sections. The website is constantly updated with the latest information, happenings, animal acquisitions and any issue related to zoo.

### **Computerization of Office Work**

Presently there are sufficient computers installed in the zoo in various sections and they 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. The details of computers installed are as follows.

Administrative Office		6 (1 Laptop)
Curator Chamber		2 (1 Laptop)
Asst. Conservator of Forests	1	
Maintenance Section		1
Asst. Curators	2	
Hospital		2
Conservation Breeding Centre		2
Public Relation Officer		1

Realizing the need for exposure and training, many of the staff members have been trained at various Institutions and they are capable of utilizing the advanced software.

### **Maintenance of Accounts and Office Records:**

The Govt. of Andhra Pradesh in G.O Ms. No. 105, EFS&T (For.II) Dept., dt: 10.10.2005 issued orders to constitute "Zoo Authority of Andhra Pradesh" for all the three Zoo Parks in the State and Under "Andhra Pradesh Societies Registration, Act 2001" for better management and to have flexibility in development and maintenance of all the three Zoo parks in the state. The Government also have permission to register the society with the name of "Zoo Authority of Andhra Pradesh" under the provision of Andhra Pradesh societies Registration Act, 2001. Accordingly, Society was registered on 28.11.2005 with Registration No. 1768/2005. Nehru Zoological Park, Hyderabad has opened saving bank sweep-in and sweep out account having no. 31421400014 in Syndicate Bank, Bahadurpura Branch, Hyderabad, with the instructions of Govt. Memo No. 1681, For. II.2/06, dt: 16.5.2006.



Every month a statement is obtained from the Bank showing the remittances and this statement is reconciled with office cash book. The Accounts of Zoo Authority of Andhra Pradesh (ZAAP) are audited every year by authorized Chartered Accountants and the balances are tallied with the banks and the Zoo accounting system.

### **Hospital Computerization**

Separate computers are provided to all doctors apart from general computer, wherein all reports pertain to animal inventory, data entry on ISIS and reports are generated. Internet facility is provided to all doctors to keep in touch with other counter parts world over for exchange of information and recent advances in animal health management. The following activities are computerization.

1. Data documentation with regard to mortality, natality, acquisition and disposals.
2. ISIS (International Species Information System) & ARKS (Animal Record Keeping System): online record keeping to have global access in the ZIMS software developed by ISIS is being adopted for better record keeping in zoos and it is user friendly. ZIMS can be used through internet. Required training to the concerned staff has been ensured.

## CHAPTER - X

### BROAD BUDGET ANALYSIS FOR IMPLEMENTING THE PLAN

Nehru Zoological Park, Hyderabad is a large Zoo, setup 5 decades ago. The day to day maintenance is getting heavy. Several facilities & enclosures have become worn out or outdated and need to be replaced promptly. Therefore the non recurring expenditure is also sizeable.

The Zoo primarily receives funds from State Govt., under Plan & Non Plan programmes.

The annual expenditure on staff salaries and allowances, amounting Rs. 225.00 lakhs, is being provided by State Govt. under "Non – Plan 110 wild life reservation". Similarly, about Rs.90.00 lakhs is being provided for "Diet Charges" under "Non- Plan - 111 Zoological Parks". In addition some limited funds are given for works under "Plan- 111 Zoological Parks", as a matching grant for CZA funds.

From 2006-07, Govt. have permitted Zoo Authority of Andhra Pradesh to retain all the Zoo revenues with itself. The average annual receipt of such revenue is about Rs. 325.00 lakhs. As may be seen all these amounts would suffice staff salaries and Diet Charges only.

Therefore, major contribution for "Construction and Development" works of Zoo has to be from CZA only. Even for "Day to Day Maintenance" of vital Zoo functions/ services have to be met from CZA.

#### **I. Construction & Development:**

As per the proposed layout plan some of the enclosures 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.

**Modification of enclosures:** The following enclosures require modifications as per the proposed layout plan.

Sl. No.	Particulars	Line estimate amount Rs.in lakhs
1	Existing aviaries	80.00
2	Gaur enclosure	60.00
3	Giraffe enclosure	60.00
4	Wild Boar	50.00
5	Ungulates	90.00
6	Bears	80.00
7	White Tiger	90.00
8	Jaguar	80.00
9	Nilgai	60.00
10	Tiger Safari & Animal House	150.00
11	Elephant Rescue Centre	60.00
12	Primate Enclosures	90.00
13	Amphibian House	60.00
	<b>TOTAL</b>	<b>1010.00</b>

**Construction of New Enclosures:** As per the proposed layout plan the following enclosures require to be built.

Sl. No.	Particulars	Line estimate amount Rs.in lakhs
1	Carnivore Rescue centre	150.00
2	Herbivore & Primate Rescue Centre	120.00
3	Carnivore Breeding Centre	90.00
4	Small Cats Enclosure	80.00
	Amphibian House	30.00
5	Small primates enclosure	100.00
6	Apes	120.00
7	Zebra	80.00
8	Day - Kraal for White Tiger	90.00
9	Day- Kraal for Bengal Tiger	90.00
10	Day- Kraal for Leopard	90.00
11	Day- Kraal for Asiatic Lion	100.00
12	Day- Kraal for African Lion	100.00
13	Zoo Shop	50.00
14	Cub rearing facility	80.00
15	Library	50.00
	<b>TOTAL</b>	<b>1390.00</b>



**Construction of Inspection path:** All along the boundary line from inside the compound wall an inspection path has to be laid. The line estimate for a total length of 3 Km. requires about Rs. 20.00 Lakhs.

**Construction of Compound wall:** The existing compound wall (approx. 6000 mt.) is very old and there a new to construct RCC compound wall for protecting the Zoo Animals and property. This requires about Rs. 700.00 lakhs.

**Water Supply up-gradation:** Remodeling of existing water supply system, construction of OHT / Sumps for storing of Municipal water requires about Rs. 100 .00 lakhs.

**Remodeling of existing Electricity system:** A separate transformer is required for the entire Zoo to supply power and lining of U.G cables and meters etc. requires about Rs. 20.00 lakhs

**Construction of staff quarters:** Staff quarters for frontline staff is required. The existing old staff quarters also requires renovation. This requires about Rs. 800.00 lakhs.

**Procurement of Modern Equipment:** To improve the cleaning, maintenance of hygienic of night houses, feed store and improvement of hospital, inpatient etc. requires modern equipments. This requires about Rs. 80.00 lakhs.

**Installation of CCTV:** To improve the existing CCTV monitoring system requires about Rs. 20.00 lakhs for installation of High Definition cameras for providing security to the Animals and Visitors.

**Construction of Sewarage plant :** To protect the animals from Water pollution and to maintain hygienic conditions in wet moats, there should be a sewerage plant to treat the polluted water. This requires about Rs. 200.00 lakhs.

**Addition to the Feed store and increase the capacity of Cold storage:** Cold storage unit and storage capacity of the feed store has to be improved to meet the exigencies, this requires about Rs. 150.00 lakhs.

**Upliftment of nursery:** The existing nursery is not propagating enough saplings to meet the Zoo requirement. To improve the greenery in the Zoo Park and to improve the immersion concept of display system huge number of plants is required. This requires about Rs. 150.00 lakhs.

**Purchase of new vehicles-** battery operated for transport of feed, garbage, nursery works and movement of staff and officers. This requires about Rs. 300.00 lakhs.

**Research, Education & Training:** To undertake these activities in collaboration with renewed institutions such as LaCONEs, VBRI, Veterinary University, BNHS & Wildlife Institute of India may require about Rs. 200.00 lakhs for (20) years.

**Construction of squeeze cages and delivery rooms in Carnivore Enclosures:** To facilitate regular checkups and for better health management squeeze cages are required in all carnivore enclosures. For encouraging normal delivery and parental care to the new born carnivores delivery rooms are required in all Carnivore night houses. This requires about Rs. 200.00 lakhs.

**Improvement of Landscaping and Gardens:** The existing lawns, gardens and landscaping requires improvement. Replacing and restoration of live hedge species is to be done. Improvement of gardens at stork pond, Rhino Dairy Parlour, Singhoji tank shore, Children play area, World of Parrot, behind Food Court and in staff quarter's area has to be done. Also, the present visitation and trees have over grown and fully covered the canopy. For better maintenance of lawns and in animal management point of view closed canopy has to be opened. Heavily propagated Loranthes (weed species) has to be urgently removed to save the well grown trees. This may required an amount of Rs. 100.00 lakhs.

**Translocation of physically and genetically healthy animals from the Zoo to Protected Areas:** in the Zoo there are 400 plus free ranging spotted deer. All these animals has to be thoroughly checked for their health status and genetically healthy animals has to be translocated to the protected areas in a phased manner. For the preparation of crates, hiring of men & material for capturing the Deer and towards transportation charges budget is required Rs 30.00 lakhs.



**Miscellaneous:** For animal collection improvement, and other maintenance and repair works requires Rs. 200.00 lakhs.

**Day to Day Maintenance: (Recurring):** (For each year on an average)

Rs. in lakhs

Sl. No	Item of Work	Average Annual Requirement
1	Salaries & allowance to staff	675.00
2	Feed & Fodder supplies, maintenance of Fodder Plot, Kitchen, Feed store etc.	230.00
3	Maintenance of Animal Enclosures, seasonal arrangements etc.	250.00
4	Maintenance of visitors facilities, roads/ paths, landscapes etc.	100.00
5	Maintenance of Water pipelines, pumps, sumps, cost of water charges etc.	150.00
6	Maintenance of Drains, filters etc.	10.00
7	Maintenance of Electric lines, consumption charges etc.	100.00
8	Maintenance of Toy Train	10.00
9	Maintenance of Zoo Vehicles	20.00
10	Maintenance of Hospital Facilities, Medicines etc.	20.00
11	Maintenance of buildings quarters etc.	20.00
12	Maintenance of main gate complex service charges etc.	60.00
13	Maintenance of service stores, workshop etc.	20.00
14	Maintenance of Concertina Coil, Solar fencing, CCTV, Security Services etc.	150.00
15	Procurements/Transfer of Animals	20.00
16	Conservation Education, including guide facilities.	20.00
17	H.R. Development	20.00
18	Research services, including services of Biologists	10.00
19	Repairs to Signages, Brochures, Annual Reports	15.00
20	Maintenance of Zoo office, including miscellaneous contract services	60.00
21	Training Physical and Chemical Immobilization of Animals.	10.00
22	Eradication of weeds and climbers in the Zoo	30.00
	<b>Total</b>	<b>2000.00</b>



### Approximate Budget Plan

Sl. No.	Particulars	Approx. amount (Rs. in lakhs)
<b>I</b>	<b>Construction and Development</b>	
1	Modernization of Enclosures	960.00
2	Construction of New Enclosures	1390.00
3	Compound wall and Inspection path	720.00
4	Water and Electricity supply	120.00
5	Construction of Staff quarters	800.00
6	Modern Equipment & CCTV cameras	100.00
7	Sewerage plant	200.00
8	Feed Store and Workshop	150.00
9	Upliftment of Nursery	150.00
10	New Vehicles	300.00
11	Research & Conservation Education	200.00
12	Construction of squeeze cages and delivery rooms in Carnivore Enclosures	200.00
13	Improvement of Landscaping and Gardens	100.00
14	Translocation of animals from the Zoo to Protected Areas	30.00
15	Miscellaneous	200.00
	<b>Sub TOTAL</b>	<b>5620.00</b>
<b>II</b>	<b>Day to Day Maintenance (Annual Recurring)</b>	<b>2000.00</b>

## **PART – III**

### **CHAPTER – XI**

#### **MANAGEMENT PLAN**

The approved layout Master Plan includes the new animal enclosures which are Apes enclosure, Amphibian House, Small Cats enclosure, Zebra enclosure, Carnivore Rescue Centre, Carnivore Breeding Centre and new Mouse Deer Breeding Centre. The Conservation Breeding Centre area will be demarcated and present activity will be shifted to the new area. The new enclosures will be constructed as per the Central Zoo Authority, New Delhi guidelines. The enclosures which are to be modified as per the approved layout of Master Plan also will be attended in a priority manner. Present enclosures, to be modified enclosures and new enclosures will be designed as per the norms of Central Zoo Authority, New Delhi and all needy enrichment of the enclosures will be attended with species specific habitat. The provision of withdrawal area will facilitate the animals which are not in the display has been worked out at appropriate places.

As per the approved Master plan lay out, the both the Safaris of Bear and the Indian Gaur will be shifted to appropriate place and Lion and Tiger Safari area will be maintained separately.

Zoo Hospital will be provided with sophisticated equipment to that the sick animals and species specific indoor patient wards have been provided in the plan. In feed supply – Store section new weigh bridge and electronic machines will be provided to maintain accuracy in receiving & distributing of different feed items.

To treat the Mir Alam tank sewerage water flowing through Zoo, a 0.5GMD STP will be erected in consultancy with Hyderabad Metro Water Supply & Sewerage Board, Hyderabad. The waste water from different animal enclosure will be connected to the main drainage system with underground drainage system.

Regular trainings will be given to the security personnel, updating of equipments like Walky-Talky and more video-surveillance system will be installed to improve the effectiveness of security system.

The vacant lands, enrichment of enclosures and other areas will be refurbished with the indigenous species of Deccan plateau. With specific species like *Anogeissus latifolia*, *Lagerstromea parviflora*, *Boswellia serrata*, *Butea* species, Indigenous palms, flowering trees,

Terminalia species, Ficus species planting will be undertaken in particularly in the surroundings of Elephant enclosure and Safari areas.

Butterfly Park is proposed to be extended and developed more instantly to attract more species and also to facilitate further breeding. Arboretum will be developed in the area near the gate which is known as Mazar Garden. Nursery will be redesigned with all infrastructure to augment the maintenance of Gardens in the Zoo.



## PART – IV

### ANNEXURE TO THE MASTER PLAN

Annexure I	G.O.Ms.No.2347, dated 07.10.59 for setting up Zoo Park.
Annexure II	List of Tree Species available in NZP area
Annexure III	List of Natural Fauna in the NZP
Annexure IV	Entry Fee G.O.Ms.Rt.No.2011
Annexure V	Statements showing sanctioned strength and present in NZP.
Annexure VI	List of Buildings other than animal enclosures
Annexure VII	Disinfection schedule Model Proforma
Annexure VIII	List of Single animals in NZP
Annexure IX	Carrying capacity in NZP
Annexure X	Inventory of Live Stock in NZP
Annexure XI	Exchange proposal with other Zoos
Annexure XII	Maps of various components Nehru Zoological Park
	(i) Base Map of Park
	(ii) Base Map with Contours
	(iii) Vegetation Map
	(iv) Existing Enclosures
	(v) Existing and Proposed Enclosures
	(vi) Drainage Net Work
	(vii) Water Supply
	(viii) Power Supply
	(ix) Road net work
	(x) Visitor Circulation

## FOREWORD

Zoological parks are playing important role in conservation breeding, environment education, rescue and rehabilitation of wild animals and animal research. Nehru Zoological Park, Hyderabad stands in the forefront in this regard. This Zoo has recently completed 50 years of its existence as one of the best Zoos in the country with several unique features such as good animal display, naturalistic ambience, and successful conservation breeding and effective environment education activities.

This Zoo is receiving more number of visitors during the last 3-4 years because of the improvement in the animal collection, construction of new enclosures, improvement of visitor amenities and introduction of new conservation education activities. The annual foot fall of the visitors has crossed 3 million during 2014-15.

I am delighted to note that Central Zoo Authority has approved the Master Plan (Lay out) of Nehru Zoological Park, Hyderabad for the period of 20 years starting from 2014-15 to 2034-35. This plan contains details regarding the appraisal of the current situation of the Zoo and the plan for future development to meet the global standards. This plan covers important interventions such as water treatment, drainage and sewerage management, pollution control, animal housing improvement, modern veterinary facilities, animal collection improvement, disaster and crisis management, animal rescue and rehabilitation facilities and others which are essential for overall improvement and sustainable development of the Zoo.



**Sri N. Syam Prasad, I.F.S.,**  
Addl. Prl. Chief Conservator Forests  
Wildlife Management Circle  
Hyderabad