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from the Chief Wildlife Warden, Meghalaya

MASTERPLAN

of

NEHRU PARK CUM MINI ZOO

DANAKGRE, TURA

2015-2025



Published by:

Divisional Forest Officer
East & West Garo Hills Wildlife Division, Tura



GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT & FORESTS
Central Zoo Authority



हे हरिगली।
हे खुशहाली।।

F. No. 19-168/93-CZA(188)(M)/5638

DATE: 28.08.2014

To

The Additional Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden
Government of Meghalaya,
Shillong.

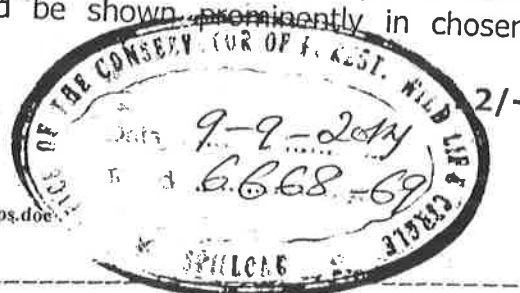
Sub:- Master Plan of the Nehru Park Mini Zoo, Tura, Meghalaya.

Sir,

Reference is invited to your letter No. FWC/G/232/987 dated 21st July, 2014. Pg-285^c

The Master Plan submitted for the long-term development of Nehru Park Mini Zoo, Tura was scrutinized by the members of the Expert Group on Zoo Designing of the Central Zoo Authority. The following observations were made:-

1. The Master (layout) Plan needs to be enlarged in scale on a bigger sheet (at least twice in size) to make it easily readable. Many locations are not traceable due to small size of the map.
2. Entrance gate and booking office etc. neither marked nor even written on the map (through in legend main gate has been shown) with the result it is not possible to trace them out on the layout map.
3. Dispensary, though shown in legend is not traceable on the layout map. Post-mortem room and incinerator should be marked clearly to examine their proper placing. All these shortcomings could have been avoided by assigning serial nos. beginning from entrance gate to the last structure (including enclosures) proposed in sequence like the system followed for enclosures.
4. Enclosures no. 20, 21 & 22 need to be spaced out, as they appear in continuity.
5. Although separate layout plans for showing power, water distribution, sewage and storm water outlets have been prepared but they all appear repetition of each other because in those maps structures should have been shown only by outer lines (without colouring) and only power lines, water distribution lines etc. should be shown prominently in chosen colours.



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22/1/13



GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT & FORESTS
Central Zoo Authority



F. No. 19-168/93-CZA(188)(M)/2007

DATE: 09.01.2013

To

The Additional Principal Chief Conservator of Forests
& Chief Wildlife Warden
Government of Meghalaya,
Shillong (Meghalaya)

Sub:- Master Plan of the Nehru Park Zoo, Tura, Meghalaya.

Sir,

Reference is invited to your letter No. FWC/3/15/Pt/99 dated 6th August 2012.

The Master Plan submitted for the long-term development of the Nehru Park Zoo, Tura was scrutinized by the members of the Expert Group on Zoo Designing of the Central Zoo Authority and following comments were made:-

1. Layout Plan

- (a) The animal houses have been shown inside the enclosure boundary which in fact should be juttied out of fencing line of the enclosure.
- (b) In hill zoo as far as possible, the visitor should have upside view of the exhibit standing on the lower side of the enclosure. From this point of view the positions of enclosure Nos. 19,21, 24 and 28 need to be re-examined.
- (c) Some abbreviations like GB, CC, CS, W and T, written on the layout sheet are unclear as not defined. All symbols and abbreviated writings should be defined in the legend.

2. Rescue Centre - Though described in the plan but has not been marked in the layout plan which also needs to be separated from the zoo area.

3. Collection Plan - only existing number of animals (species-wise) have been shown and that too without mentioning sex ratio. In fact besides existing no with sex ration, proposed acquisition with numbers and sex ratio should also be shown in the same table.

...2/-

A. J. Mansah. ACE.

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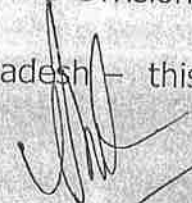
4. Staffing – Though it is recognized as Mini Zoo but with proposed expansion (31 enclosures) the zoo will qualify for upgraded status of small or medium zoo. In view of this it would be advisable to appoint as Assistant Conservator of Forests as whole time Director and RFO as Curator. Other staff is quite adequate but to reduce establishment expenditure, if deemed proper, the services of security staff, sweepers and malis, may be out sourced.
5. Interpretation centre – should be set up somewhere near the entrance gate so that visitor may be sensitized in the beginning, about what he is going to see in the zoo with some knowledge of the exhibits.

Yours faithfully,

↑
(B. S. Bonal)
Member Secretary

Copy for favour of information to:-

1. The Divisional Forest Officer, East and West Garo Hills, Wildlife Division, Tura, Meghalaya.
2. Sh. R. S. Bhadauria, B-116, Indira Nagar, Lucknow, Uttar Pradesh – this refers to his report dated 24.12.2012.


(B. S. Bonal)
Member Secretary

MASTERPLAN

1.Name of Zoo

Nehru Park cum Mini Zoo, Danakgre, Tura

2. Operator

East & West Garo Hills Wildlife Division, Tura

3. Duration of the Masterplan

Ten years (2015-2025)

4.Year of Submission

2016-17

**Department of Forest & Environment
Government of Meghalaya**

TO WHOM IT MAY CONCERN:

This is to certify that the masterplan of the Nehru park cum Mini Zoo, Danakgre, Tura in West Garo Hills , Meghalaya has been prepared by the following persons:

1. Smt N.R.D.Marak

Divisional Forest Officer, East & West Garo Hills Wildlife Division, Tura

2. Shri H.G.Momin

Assistant Conservator of Forest, East & West Garo Hills Wildlife Division, Tura ~~iven below~~

In consultation with Dr Jikom Panor, District Veterinary Officer, Department of AH&V, Government of Arunachal Pradesh. Their signatures are given below:

1. Smt N.R.D.Marak _____


2. Dr Jikom Panor _____

3. Shri H.G.Momin _____

Countersigned by

Master Plan of Nehru Park cum Mini Zoo, Danakgre, Tura, Meghalaya for 2015 to 2025 is approved by the Technical Committee of the Central Zoo Authority in its 79th meeting held on 24th August, 2016 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 Meghalaya.

Dr. D. N. SINGH, IFS
Member Secretary
Central Zoo Authority
Ministry of Environment, Forest & Climate Change
Govt. of India, New Delhi-110003


Member Secretary
Central Zoo Authority

Preface

The State of Meghalaya is endowed with rich wild floral and faunal components and forms one of the hot spots of biological diversity. But recent years has seen many of the indigenous species disappearing at an alarming rate. The importance of establishing Zoological Parks to educate the masses on wildlife can not be over emphasized. The role of Zoological Parks in conservation of many rare, endangered and threatened forms of wildlife gets prominence in a state like ours. In the absence of any zoological park in the whole of Garo Hills the people fail to appreciate the oft repeated slogan/appeal of the Government to preserve the vanishing wildlife of the state. Hence the zoo plays an important role to provide an in expressive, educative, efficient, thrilling and refreshing pastime to both rural and urban population.

The Indian Board of Wildlife recommended that establishment of zoo, Botanical Gardens, Safari Parks etc. are to be considered as part and parcel of our wildlife management programmes. These zoos are expected to play a vital role for protection and multiplication of some of the rare and endangered species of wildlife. In the past, many species become victim of some predators or miscreants and rescued by the innocent villagers who with bonafide intention approached the forest officers to take charge of the same to be reared in captivity or to be released in the natural habitats. Therefore zoos play an important role not just to give shelter to the rescued animals, birds etc. but also to rear them in captivity so that the population of the endangered and near extinct species can be protected and after attaining success in the conservation breeding programmes some of them can be released in suitable natural environment like Sanctuaries and National Parks where provisions are being made in various protected areas to manage them under scientific principles.

Zoos also play an important role in educating the public about wildlife. Any modern zoo, in the present context presents itself to the public as a living museum. The zoo can enlighten the public that animals are equally important and interesting and are essential for the life support system.

Therefore, the Nehru Park Mini Zoo plays an important role in educating the masses, rehabilitation of threatened and endangered species, promote scientific study and research, recreation and accommodate and provide health care to rescued and seized animals and birds.

Zoos have diverse purposes and the period for the development of a zoo is open ended with the goals being long term. These make it crucial that appropriate decisions be made today to ensure success in the future. A master plan creates a vision of the future zoo that guides its development and evolution over time. Keeping these in mind, the Master Plan for Nehru Park Mini Zoo has been drafted and formulated based on the guidelines prescribed by the Central Zoo Authority (CZA) and prepared as per the given format of the CZA.

It is expected that this Master Plan would act as a document over the entire Plan period and help in the growth and development of the Nehru Park Mini Zoo.

N.R.D Marak, MFS
Divisional Forest Officer.

Acknowledgement

We would like to thank Shri. C.Budnah, IFS, PCCF (HOFF), Meghalaya, and Shri. C.P Marak, IFS, PCCF (T) for always being the guiding force behind our endeavors and for their constant encouragements and support.

We would also like to thank Shri. Y.Shullai, IFS, Additional Principal Chief Conservator of Forests(Wildlife) & Chief Wildlife Warden, Meghalaya and Shri.G.W Kharmujai, IFS, Chief Conservator of Forest (Wildife) Shillong, Meghalaya for always taking interest and for giving us valuable guidance and providing us with the necessary funds that has lead to the completion of this Master Plan.

Our thanks also goes to Shri. K.S.Lyngdoh , IFS, Chief Conservator of Forests (T) , for lending his help and support during his tenure as Conservator of Forests (Wl&T), Garo Hills Region and Shri. P.R Marak, IFS, Conservator of Forests, (WL&T), Garo Hills Region for his valuable guidance.

We would also like to sincerely thank Shri. B.K Lyngwa, IFS, APCCF (Adm), who was present with us during the initial stages and whose initiative and support led to fruition of the Master Plan for The Nehru Park Mini Zoo, Danakgre.

We are greatly indebted to Dr. Jikom Panor, District Veterinary Officer, Government of Arunachal Pradesh, who played a very vital role in the formulation and preparation of this Master Plan. Without his valuable guidance and technical support this Master Plan would not have been possible.

We would also like to offer my sincere thanks to Shri. B.K Lohar, Range Officer, Park Range and also to Shri. W. D Sangma, Fr-I for their assistance and compilation of various data regarding the Nehru Park Mini Zoo.

Finally we would like to thank everyone who was directly or indirectly associated and responsible for the preparation and successful completion of the Master Plan for the Nehru Park Mini Zoo, Danakgre.

N.R.D Marak, MFS
Divisional Forest Officer
&
H.G Momin, MFS
Assistant Conservator of Forests.

FOREWORD

Meghalaya has a unique array of flora and fauna due to its varied diversity in topography, climate and rainfall. It represents one of the richest spots of flora and fauna in the country.

Human exploitation of the forest for timber, shifting cultivation, agriculture, development of towns and villages has tremendously affected the natural resources of the State. There is shrinkage of habitats for wild animals and loss of valuable flora. Most wildlife habitats have become fragmented in the State. The faunal life existed in mostly protected forest and efforts were made to conserve and preserve the wild animals in other places as well.

Initially the Nehru Park cum Mini Zoo, Danakgre was started by the District Magistrate of Tura during the early sixties at Tura Park. It was then handed over to the Department of Forest & Environment during the year 1967. Since then the Park functioned as a rescue centre cum recreation for the visitors. Subsequently it took the shape of a mini zoo during the year 2001 at the present location. Like any other Zoological Parks around the world, it was established for the purpose of recreation, education and entertainment.

The concept of development of the Zoo with all infrastructural facilities on a holistic basis was referred to the Central Zoo Authority which approved the same and directed that a detailed master plan should be prepared to accommodate all the ingredients of a modern Zoo. The master plan was prepared by Smt Nazia Rossy D Marak , Divisional Forest Officer, Wildlife Division Tura , Shri H.G.Momin Assistant Conservator of Forest Wildlife Division Tura in consultation with Dr Jikom Panor District Veterinary Officer, Arunachal Pradesh .

Shri C.Budnah IFS Principal Chief Conservator of Forest & HoFF and Shri K.S.Lyngdoh IFS Chief Conservator of Forest (T) were the key persons who gave important suggestions from time to time in all matters pertaining to the establishment of the Zoo. It is expected that the Masterplan document will meet the requirements and norms as expected by the Central Zoo Authority of India and culminate in the form of a formal approval.


*Additional Principal Chief
Conservator of Forests, Wildlife
&
Chief Wildlife Warden
Meghalaya, Shillong*

**MASTER PLAN
NEHRU PARK MINI ZOO, TURA
2015 TO 2025
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**MASTER PLAN
NEHRUPARK MINI ZOO, TURA
2015 – 2025**

**PART- I
CHAPTER - I**

INTRODUCTION:

A. History:

Nehru Park cum Mini Zoo, Danakgre was initially started by District Administration at Tura Park. Few rescued animal were kept in the park for amusement and entertainment for visitors. During the year 1967 it was handed over to the Divisional Forest Officer, Garo Hills (T) Division, Tura. Later it became a small rescue centre and started dealing with the problem of displaces and injured animals. This small rescue facility gradually became the epicenter for displaced and orphan animals coming from all parts of Garo hills. Having realized the importance of a permanent holding facility particularly for those animals unfit to release in the wild due to one other reason, the department decided to upgrade the rescue centre to a Mini Zoo. But the park area was too small for a zoo; therefore during 2004 it was decided to shift the animals to the existing Nehru Park which was established by the Social Forestry Division over an area of 13.4 hectare. The zoo at the current location has been recognized as Mini Zoo under section 38th of the Wildlife (Protection) Act, 1972 by the CZA vide letter no. **F No. 19-168/93-CZA/188 dated 10/10/2005.**

B. Vision of the Zoo:

Tura Mini Zoo was basically started for recreation purposes only however, with the advancement of time, the need to protect and conserve global biodiversity and wildlife was realized, therefore it was shifted to present location with the following vision:

1. A scientific institution engaged in Animal Welfare, Research, Conservation, Education and Sustainability.
2. Best business practice, being efficient, focused and productive, with close attention paid to planning, ecologically sound design and pollution free environmental.
3. Outstanding "Value for Money" for all who visit the zoo. Providing fun, entertainment and learning.

C. Mission of the Zoo:

- (a) To act as Rescue Centre by receiving and keeping orphaned, seized, rescued and injured wild animals.
- (b) Develop amongst the visitors an understanding about the ecological linkages with the life supporting processes of nature and the need for keeping them intact by adopting sustainable life styles and living in harmony with nature.
- (c) Develop amongst visitor's empathy for wildlife and motivate them to support the cause of conservation of wildlife.
- (d) Compliment the national effort in conservation of wildlife through planned coordinated conservation breeding of endangered wild animal species of the region.
- (e) Enhancing the role of the zoo in conservation of wildlife through collaborated research aiming at attaining management skilled for in-situ population and carrying out advocacy for protecting the wild animals and their natural habitat

D. Strategy of the Zoo:

Following strategies will be followed to fulfill the mission/ objective of the zoo:

- i) Conservation:** To focus resources on securing sustainable populations of indigenous endangered species of the state and their habitats through conservation breeding and integrated zoological programmes.
- ii) Animal Welfare and Husbandry:** To further advance best practice animal husbandry and welfare that ensures physical and psychological well being of the animal collection.
- iii) Research:** To be a recognized and credible resource for the wildlife research community and enable significant contributions in the field of conservation of wildlife.
- iv) Recreation:** To provide unique botanical, wildlife and cultural experiences that delights visitor(s).
- v) Education:** To provide exemplary learning opportunities that positively influences people's understanding, values, and impact on the natural world.
- vi) Sustainability:** To promote sustainable practices in all aspects of the Zoo's operations

E. Objectives:

The Nehru Park cum Mini zoo, Danakgre was established with the following objectives:-

1. Rescue and rehabilitation of wild animals in distress.
2. Providing recreation to Zoo visitors.
3. Education and research.
4. Conservation breeding of endangered faunal species of the state.

F Physical features and Site selection:

Main criteria for selection of the site for the park, was the ecological parameters including topography, forest coverage, acoustic, natural perennial streams, and pollution free atmosphere which are suitable for different species of animals and birds. Besides, the area belongs to the Forest Department, initially developed by the Social Forestry Division, Tura as park and then handed over to the Wildlife Division, Tura on 1st August, 2001. The whole area is gentle to stiff slope, undulating crisscross with natural perennial streams. The major portion of the area is covered with evergreen forest. There is low lying plain area covered with marshy land on the lower part of the zoo.

G. Geology:

The entire area is hilly broken and undulating crisscrossed with perennial streams. The beauty of the park is due to its tropical evergreen forest, marshy land and natural streams. The area lies between 23.454 to 101.00 meter elevations. The zoo is located at the height of 23.454 – 101.01 metres, latitude 25° 30' N & longitude is 90° 16' E.

H. Rock and Soil:

The soil type of the area is loamy hard red with scattered granite boulder type of rock. In some places there are black loose soils which are prone to landslide.

I. Flora and fauna:

Nehru Park cum Mini Zoo is rich in wide variety of forest types. The natural vegetation of the area consists of dense evergreen patches and moist deciduous forest towards hilly slopes and moist valleys semi evergreen type elsewhere. The area is rich in flora and avifauna. The details are given in Annexure - II.

J. Climate and Season:

The area falls under semi temperate zone with four seasons, July-August being the hottest month and the December- January the coldest. The spring and autumn are pleasant. The ambient temperature varies from 62-82° F.

K. Rainfall and Humidity:

It falls under heavy rainfall area. The average annual rainfall is about 2500-3000 mm. Maximum rainfall is recorded during the month of July and August. The average relative humidity ranges from 69- 87%.

L. Approach:

The Zoo is well connected by road and is 6 km away in the Western most outskirts of Tura, the District Head Quarter of West Garo Hill. The nearest Airport is L.G. Bordoloi Airport Guwahati and railway station is at Guwahati which is 190 Km away from Zoo.

M. Demography of the surrounding area:

The Zoo is 5 Km away from town of Tura and is quite away from human habitation although, there is a small village opposite to entrance of the zoo and is separated by Tura - Garobada Road. The area is thinly populated and the living conditions of the people are very clean and hygienic. The epidemiological study, birth and death record of infant is not available, however the incidence of occurrence of infectious diseases among human population is very rare. There is no animal population around the zoo at present.

N. Legal status and area:

The area belongs to the East & West Garo Hills Wildlife Division, Department of Forest & Environment, Government of Meghalaya and therefore any legal action is within the ambit of Wildlife (Protection) Act. 1972.

O. Source of Pollution:

The area is free from industry and any other source of pollution. It is in the outskirts of the District capital and is covered with tropical semi-evergreen forest and thus free from any source of pollution. The climate, weather and atmosphere are very healthy, clear and congenial for zoo inmates.

P. Achievements:

There is no particular achievement in respect of animal collection, housing, conservation breeding etc. However there has been quantitative development over the years, in infrastructure, in construction of footpath, in staff as well as in preservation of natural floral species in the zoo. There was no specific collection plan for the zoo. All the animals displayed are either rescued or seized. The development in infrastructure like staff quarter, boundary fencing, visitor's circular path, Range office, Interpretation centre, Veterinary Dispensary etc. have been satisfactory.

Q. Problems and difficulties:

Despite the progress and achievement made during the last three decades, there have been lots of difficulties and problems. The main problem of the zoo is capacity building of human resources. Only few staffs and the animal keepers are trained in zoo management. It needs to be address on priority basis. The officers and staff should be encouraged to undergo training conducted by CZA and other organization from time to time.

Besides the zoo being in the District Head Quarter, some people get them self posted in the Zoo, specially the lower staff. Some of them are not concerned with the development of Zoo. Only devoted and interested staff needs to be posted in the Zoo.

Security is another area of concern, since it is located at the out skirt of the city. Sometimes miscreants tries to enter the zoo at night for stealing of property and zoo inmates. There is no security staff at present. It is being looked after by animal keeper and casual staff on rotational basis.

R. Layoutplan:

No layout plan has ever been made for the Mini zoo. The structures like staff quarter, footpath etc. have come up haphazardly. The area selected for display is at the lowest elevation whereas the entrance is at highest elevation which make difficult for the visitors. These deficiencies have been rectified in this plan. Main stress in plan was given on species wise arrangement of enclosure as per taxonomic and habitat requirement. It also provides separate staff colony, rescue Centre, quarantine area, veterinary dispensary, incinerator and burial ground. Lots of modification and addition are also made in the layout plan. Some of them are:-

- i) Visitor's circulation,
- ii) Visitor's amenities,
- iii) Conservation breeding center in non display area,
- iv) Parking area
- v) Orchidarium
- vi) Creation of water body for display of fish and amphibian
- vii) Canteen/ catering area etc.

The details have been indicated in the proposed **Master plan layout**.

S. Use of the zoo area for different purpose:

The Mini zoo covers an area of 13.4 ha. Out of this the display area is only 0.61 hectare and 2.079 hectare is covered for office, residential and other structure. The rest area of 10.71 hectare is under forest cover. This has been change in the proposed Layout Plan and the details are given in **Chapter IV (description of layout plan)**.

The present area coverage is as follows:

Road and foot Paths	---- 1.0 km.
Residential area and office	---- 1.7 hact
ChildrenPark	---- 0.12 hact.
View point	---- 0.02 hact
Water supply	---- 0.020 hact
Zoo office, feed store and kitchen	---- 0.239 hact Animal
Enclosure (including display area)	---- 0.61 hact.
Forest area	----- 10.71 hact.

CHAPTER – II

Appraisal of present arrangement and constrain:

A. Animal section:

There are only few small enclosures which have come up haphazardly without any planning and do not meet the requirement of modern zoo concept. These enclosures were constructed as makeshift enclosure in order to accommodate rescued animals. This display area lay between 33.00 to 44.72 meter elevations, whereas the entry gate is at the height of 99.653 meter thereby making inconvenient for the visitors, especially children and old age group of visitors. They have to come down all along to the lowest point of the zoo and then come back from the same footpath up to the highest point. Therefore new display area has been marked along the existing footpath and the present display area will be converted into off display conservation centre. Most of this enclosure will be modified for conservation breeding centre.

At present there are total of 12 enclosures. The total animals displayed in the enclosures are as follows:-

Mammals	--	6 species	16 Nos
Birds	--	3 species	7 Nos
Reptiles	---	2 species	4 Nos
Total.			27 Nos

The enclosures are under the supervision of the following staff.

Range Forest Officer	1
Forester	1
Forest guard	1
Animal keeper	12
Chowkidar	1

Veterinary section.

The modern concept of zoo management visualizes veterinary medicine as an integral component of all display and breeding program of captive animals. The Veterinarian of Nokrek National Park is stationed at the zoo and veterinary facilities meant for the National park is established in the zoo itself. Therefore, this section is looked after by the Wildlife Veterinarian posted for Nokrek National Park. It has Veterinary Dispensary with basic infrastructure for blood and fecal test along with medicine and equipment for dressing and minor operation. However there is no tranquilizing drugs and equipment available in the dispensary.

There is no staff attached to the dispensary. The Veterinary Assistant Surgeon is assisted by animal keepers of the zoo.

The man power required in the dispensary are:

- | | |
|-------------------------------|------|
| 1. Veterinary Field Assistant | --1 |
| 2. Animal attendant | -- 1 |
| 3 Sweeper | -- 1 |

The Dispensary building is constructed at the centre of the zoo and therefore not located at the ideal place. It may become the source of infection for other zoo inmates at the time of epidemic outbreak. Therefore it will be converted into security house and one of the present staff quarter as indicated in the layout plan will be modified and converted into Dispensary.

The zoo dispensary does not have any equipment for tranquilization like Air pressurized drug delivery equipment, blow pipe and jab stick. Tranquilizing drugs, required medicines and vaccines also needs to be made available. The up gradation of this unit has been indicated in Part –II of this plan.

A separate area away from exhibit area is proposed for Veterinary dispensary, quarantine house, rescue centre, postmortem house, incinerator and burial ground. This area will be enclosed separately with fencing as indicated in the layout plan.

Rescue Centre: The building meant for interpretation Centre is presently used as rescue Centre. It will be improved and modified for Snake house. The area for rescue Centre is ear marked near proposed veterinary dispensary as indicated in the layout plan.

Quarantine area: At present the zoo does not have quarantine area. There are two staff quarter near the existing hostel and out of which one will be converted into Dispensary and another to quarantine house. The quarantine house will have sufficient outdoor area for medium and large animals.

Post mortem house:there is no post mortem house at present. It needs to be constructed with widows from all side to provide sufficient light. The area is marked near burial ground as indicated in the layout plan.

Incinerator: there is no incinerator in the zoo at present. Solid waste and the carcasses are disposed off by burning or burying within the zoo premises. Fire wood incinerator is considered near post mortem house indicated in the layout plan.

Burial ground:No burial ground has been specifically marked in the zoo. The carcasses are disposed off by burying or burning within zoo area. An area near incinerator is ear marked for the purpose.

Store and Feed supply section: At present there is no separate store and kitchen in the zoo. Range office and the dispensary are used for the purpose. A new store cum kitchen needs to be constructed and the area is marked near range office. The other areas of concern are requirement of deep freeze, weighing machine, gas stove, fly proof netting glazed tiles floor etc.

Sanitation section: Sanitation is usually looked after by Range Forest Officer and the animal section. This section takes care of the general cleanliness of the park, footpath, lawns, garden, office, animal enclosure etc. Veterinary section and animal keepers are responsible for disinfection, fumigation and other sanitation work inside and around the enclosure. For the work of sanitation outside the enclosure there are few casual laborers engaged at present. The section is working quite well to keep the park clean. Local made and concrete dustbins are provided in every corner of the park. The garbage are collected and disposed off, by burning. Improvement is required in pest control- mosquitoes, rodents, feral dogs etc. and introduction of manure and compost pits for disposal of animal waste.

Workshop and maintenance section: Nehru Park cum Mini Zoo, Danakgre is away from the market area, therefore it requires its own skilled labor for day to day maintenance of enclosure, building, structure, water supply etc. Without having its own skilled personnel it will not be possible to attend the above problem on immediate basis. The safety and security of the animal is paramount and whenever there is a problem, this has to be attended without any loss of time. The zoo does not have any such person at present, therefore such person needs to be appointed and small workshop has to be made available in the park with facilities like welding machine, equipment for carpentry and mason work. It also needs necessary equipment required for water supply and electricity. The workshop will be directly under the control of Range officer and has the following staff:-

- | | |
|----------------|------|
| i) Welder | -- 1 |
| ii) Mason | -- 1 |
| iii) Carpenter | -- 2 |
| iv) Plumber | -- 1 |

All the staffs in this sector should be skilled and appointed on daily wage basis initially and should be regularized based on their performance.

Security section: The zoo extended over an area of 13.04 hector. It is well fence, but in many instances miscreant try to enter the zoo at night. Therefore barbet wire fence needs to be replaced with RCC boundary wall. The Range Officer of the zoo looks after this section with the help of following staffs on rotational basis:-

1. Forester	1
2. Forest guard	1
3. Animal keeper	12
4. Mali	1
5. Chowkider	1

There is no separate staff for security; the staffs used in animal section are engaged for the purpose on rotational basis. Therefore separate security section needs to be either created or may be outsourced.

Water supply section. Large quantity of water is required for cleaning of enclosure, staff quarters, gardening, drinking and toilets. The zoo depends on public health engineering department of Tura for water supply. There are three water tanks in the zoo at present which are directly connected to main pipe line of PHE. It will not be sufficient in due course of time and therefore some more tanks needs to be constructed as indicated in the plan. During winter there is scarcity of water, therefore it needs up gradation preferably **bore well under ground** water for providing good quality water to animals; staff and also to visitors.

Power supply section. The zoo is yet to be electrified, however main power line with transformer with capacity of 200 K.V. is installed just near the entrance of zoo by power department, therefore installation power supply to zoo will not be a problem once the payment is made for the purpose to the concern department.

Disposal of solid and liquid waste: Solid waste of the zoo is disposed off by burning and by burying inside pits. The dung's are collected and dump inside pits away from each enclosure which are later burnt and covered. Fire wood incinerator is required for easy and hygienic disposal of solid waste.

The disposal of liquid waste is not a problem in the zoo due to its topography. There is no stagnation of water or sewage. Drains and culvert are provided where ever required.

Visitor's amenities: Resting shed, benches and toilets are provided in different location. There are also viewpoints provided at strategic location. However, lots of improvement is required in this direction. Drinking water facilities, clean toilet, proper signage, Cafeteria, parking etc. are the areas of concern.

Provision for wheel chair for disable person will be provided but by considering the contour of the zoo, it will be restricted to upper part of the zoo, starting from carnivores section to Birds section.

Lawns and garden: The Zoo has varied range of vegetation throughout the year with different type of orchid and other plant species, however to give aesthetic look floriculture and lawns have been created in the zoo. Children Park has to be created in a large area with facilities like merry go round, sea saw and swings. Proposal for orchiderium and nursery for plant and flower has been put up in proposal. At present it is looked after by animal keepers and one Mali.

Fodder cultivation and organic farming: At present the zoo has very small number of animal collection, therefore this section is not very important. The foddors for ungulates are easily managed from the zoo itself. However it may be considered in later part of the plan.

Entry gate and ticket counter: The entry gate with ticket counter is from the Garobadha Road. It needs to be modified with different entry and exit doors, vendors at the exit point and security cell at the gate is proposed. It will be manned either by a forest guard .

B. Animal Collection plan (Existing):

The zoo do not have animal collection plan at the moment. All the animals and birds displayed in the zoo are either rescued or seized from the state. Therefore all the displayed zoo inmates are native to the state. The collection plan is proposed in the Part-II of this plan. At present following animals and birds are displayed in the zoo:-

<u>Common Name</u>	<u>Zoological Name</u>	<u>No. of animals</u>
--------------------	------------------------	-----------------------

(A) MAMMALS

1. Himalayan Black Bear	<i>Selenarctosthibetanus</i>	2:2:0
2. Leopard Cat	<i>Felisbengalensis</i>	1:1:0
3. Cat Jungle	<i>Pelischaus</i>	1:0:0
4. Rhesus macaque	<i>Macaca mulatta</i>	3:2:0
5. Pig tailed macaque	<i>Macaca</i>	1:1:0
6. Sambar	<i>Cervus unicolor</i>	1:0:0
7. Barking Deer	<i>Muntiacusmuntjac</i>	2:2:0

(B) AVES :

1. Oriental pied hornbill	<i>Anthracoceroscoronatus</i>	0:0:1
2. Crested Hawk Eagle	<i>Spizaetuscirrhatus</i>	0:0:2
3. Barn Owl	<i>Tyto alba</i>	0:0:1
4. Brown Hawk Owl	<i>Ninoxscutulata</i>	0:0:2
5. Brown fish owl	<i>ketupazeylonensis</i>	1:1:2
6. Cattle Egret	<i>Bubulcus ibis</i>	0:0:1

(C) REPTILES

1. Python	<i>Pythonmolurus</i>	0:0:3
2. Indian Soft Shelled Turtle	<i>Lessimus punctata</i>	0:0:2

In addition to the above, few native animals, birds and reptiles of the state will be included in the collection plan. Two or three species of exotic birds may also be included for education purpose.

C. General Zoo administration section. Nehru Park cum Mini Zoo and Nokrek National Park is put under the establishment of the East and West Garo Hills Wildlife Division. Except for the casual laborers, all the regular staffs placed in the zoo are posted against the Nokrek National Park. The Divisional Forest Officer , East and West Garo Hills Wildlife Division looks after the Zoo as a Director. The Following staffs are placed in the zoo:

- | | | |
|-------|---------------------------------|--|
| i) | Assistant Conservator of Forest | -- 1No.as in charge of the zoo |
| ii) | Range officer | - 1 No. |
| iii) | Veterinary Assistant Surgeon | - 1 No. To look after the animal health of both the Zoo and the National Park. |
| iv) | Forester-I | - 1 No. |
| v) | Forest Guard | - 2 No. |
| vi) | Animal attendant | - 1 No. |
| vii) | Chowkidar | - 1 No. |
| viii) | Park Mali | - 4 Nos. |
| ix) | Casual workers/grass cutter | - 6 nos. |

D. Research.

Although no research work has been done by Zoo staff, any research scholar from outside and within the state carried out their research in the park in regards to floral species of the Park.

Small grant fellowship for study of different aspect of animals displayed in Zoo and also fauna and flora species of the park will be carried out from time to time.

E.Conservation Breeding.

The zoo has not taken up any conservation breeding program as of now. It will concentrate more on development of the zoo in the begging, but in the later part of the plan it will take up breeding program of Serow, Clouded leopard and birds of prey. The present display area will be modified for the purpose.

F. Education and awareness.

In a modern Zoo, education is very important and Nehru park cum Mini zoo has also contributed its bit in this respect. While educational signage on different animals, brochures and guide books have been published at different points of time starting from the inception of Zoo. There is a library with books on wildlife flora and fauna. Wild life film shows, organizing awareness camp, quiz competition etc. are organized from time to time.

Celebration of Wildlife Week, conducting tours and different types of competition for student are also organized. Researchers and students from universities, colleges and school also make use of the zoo and its facilities.

However, needs for interpretation centre still remains a dream although building meant for the purpose has already been constructed. Also needs lots of improvement in publication of brochures, signage, leveling of floral species etc.

G. Rescue and Rehabilitation.

Basically it is a rescue centre rather than a zoo. Though, with limited facilities the zoo has involved in many rescue and rehabilitation of wild animals. Many animals injured or orphanage keeps on coming for treatment and hand rearing.

However lots of improvement needs in respect of infrastructure. There is no intensive care unit for critically injured and also for infant animals. There are also shortage of equipment and medicine. There is also requirement of emergency fund in the hand of veterinarian for the purpose. Creation of quarantine facilities, treatment cell, life support equipment etc. are the areas of concern in this sector.

PART-II
CHAPTER - III

This Master Plan is a comprehensive document giving a detailed road map of the zoo for 10 years in respect of development, improvement and up gradation of the facilities and infrastructure available at the zoo and building up of the capacity for carrying out all the operations forming part of the zoo management with greater efficiency.

Objective of the NehruPark cum Mini Zoo:

Initially, the Nehru Park cum Mini Zoo, Danakgre was started by the District Magistrate of Tura during early sixties at Tura Park, but later handed over the Department of Forest and Environment during the year 1967. Since then it act as a rescue centre cum recreation for the visitors. Subsequently took the shape of mini zoo during the year 2001 at the present location. After the creation of minimum required infrastructure animals were shifted to the zoo during the year 2004. Like any other zoological park around the world it was established for the purpose of recreation and entertainment. But with the advancement of time and expertise in the field, the concept of modern zoo has undergone drastic changes. More stresses have been laid on conservation, education and research. Keeping these in view, the objectives of Nehru park cum Mini Zoo, Danakgre have been framed as follows:-

- 1 Rescue and rehabilitation of wild animals in distress.
- 2 Ex-situ conservation breeding of endangered wild fauna of the state.
- 3 Scientific research on wild fauna and flora.
- 4 Creating awareness and providing Education to the people about wild animals and the need for their conservation.
- 5 Providing recreation for Zoo visitors.

Vision of the Zoo:

Tura Mini Zoo was basically started for recreation purposes only, however with the advancement of time, the need to protect and conserve global biodiversity and wildlife was realized, therefore it was shifted to present location with the following vision:

1. A scientific institution engaged in Animal Welfare, Research, Conservation, Education and Sustainability.
2. Best business practice, being efficient, focused and productive. With close attention paid to planning, ecologically sound design and pollution free environmental.
3. Outstanding "Value for Money" for all who visit the zoo. Providing fun, entertainment and learning.

Mission statement.

The above objective are proposed to be achieved by housing and displaying of broad representative of diverse and endangered animals and birds, with emphasis on Indian fauna belonging to the region considering the climatic condition suited to them. Display of non native species will be more for sake of education and entertainment for the visitors. Following point are considered in the mission statement:

- (a) To act as Rescue Centre by receiving and keeping orphaned, seized, rescued and injured wild animals.
- (b) Develop amongst the visitors an understanding about the ecological linkages with the life supporting processes of nature and the need for keeping them intact by adopting sustainable life styles and living in harmony with nature.
- (c) Develop amongst visitor`s empathy for wildlife and motivate them to support the cause of conservation of wildlife.
- (d) Compliment the national effort in conservation of wildlife through planned coordinated conservation breeding of endangered wild animal species of the region.
- (e) Enhancing the role of the zoo in conservation of wildlife through collaborated research aiming at attaining management skilled for in-situ population and carrying out advocacy for protecting the wild animals and their natural habitat.

Strategy of the Zoo:

Following strategies will be followed to fulfill the mission/ objective of the zoo:

- i) Conservation: To focus resources on securing sustainable populations of indigenous endangered species of the state and their habitats through conservation breeding and integrated zoological programmes.
- ii) Animal Welfare and Husbandry: To further advance best practice animal husbandry and welfare that ensures physical and psychological well being of the animal collection.
- iii) Research: To be a recognized and credible resource for the wildlife research community andenable significant contributions in the field of conservation of wildlife.
- iv) Recreation:To provide unique botanical, wildlife and cultural experiences that delights the visitor.
- v) Education: To provide exemplary learning opportunities that positively influences people`sunderstanding, values, and impact on the natural world.
- vi) Sustainability: To promote sustainable practices in all aspects of the Zoo`s operations.

CHAPTER - IV

Future action plan:

The Master Plan is not blue print and is likely to be changed as per the advancement of time and requirement. However to prevent haphazard development of zoo due to frequent changes of manager and staff, future action plan is required. It aimed to provide direction for development of the zoo in coming 10 years i.e 2015 – 2025. The proposal is based on the topography of the site, water availability, vegetation climate, rainfall, visitors profile, education and research, needs and convenience. For convenience the proposal has been prepared section wise. The recommendation of CZA during evaluation of zoo from time to time has been kept in view in formulating the proposal of new structure and or modification of existing structures.

I).Proposed animal collection plan.

The collection plan is proposed based on the native species and only three species of non native birds are considered in the plan for education purpose. No exotic species is considered in the collection plan.

SL. No.	Species	Present stock with the Zoo				Proposed collection				Animals to be acquired or removed			
		M	F	U.S.	Total	M	F	U.S.	Total	M	F	U.S.	Total
	Mammals	1	0	0	1	1	1	0	2		1		2
1	Jangle cat	0	0	0	0	1	1	0	2	1	1	0	2
2	Clouded Leopard	0	0	0	0	1	1	1	2	1	1		2
3	Leopard Cat	1	1	0	2	1	1	0	2	0	0	0	0
4	Common Palm Civet	0	0	0	0	1	1	0	2	1	1	0	2
5	Himalayan Yellow throated morten	0	0	0	0	1	1	0	2	1	1	0	2
6	Poreupine Indian	0	0	0	0	1	1	0	2	1	1	0	2
7	Binturong	0	0	0	0	1	1	0	2	1	1	0	2
8	Slow Loris	0	0	0	0	1	1	0	2	1	1	0	2
9	Stumptailmacaque	0	0	0	0	1	1	0	2	1	1	0	2
10	Pig tailed macaque	1	0	0	1	1	1	0	2	0	1	0	1
11	Hoolock Gibbon	0	0	0	0	1	1	0	2	1	1	0	2
12	Capped langur	0	0	0	0	1	1	0	2	1	1	0	2
13	Barking deer	2	4	0	6	2	4	0	6	0	0	0	0
14	Serow	0	0	0	0	1	1	0	2	1	1	0	2
15	Himalayan Black Bear	2	2	0	4	2	2	0	4	0	0	0	0
16	Sun bear	0	0	0	0	1	1	0	2	1	1	0	2
17	Wild boar	0	0	0	0	1	1	0	2	1	1	0	2
18	Flying squirrel	0	0	0	0	1	1	0	2	1	1	0	2
	Total	7	7	0	14	21	23		43	14	16	0	31

AVES													
1	Oriented pied hornbill	1	0	0	0	1	1	0	2	0	1	0	1
2	Crested Hawk Eagle	1	1	0	2	1	1	0	2	0	0	0	0
3	Wood owl	0	0	0	0	1	1	0	2	1	1	0	2
4	Brown Hawk Owl	2	2	0	4	2	2	0	4	0	0	0	0
5	Brown fish owl	1	1	0	2	1	1	0	2	0	0	0	0
6	Burn owl	1	0	0	1	1	1	0	2	0	1	0	1
7	Peacock peasant	0	0	0	0	1	1	0	2	1	1	0	2
8	Jungle fowl	0	0	0	0	1	1	0	2	1	1	0	2
9	Cattle Egret I	1	0	0	1	1	1	0	2	0	1	0	1
	Total	7	4	0	10	10	10	0	20	2	6	0	9
REPTILES													
1	Indian python	2	2	0	4	2	2	0	4	0	0	0	0
2	Tortoise and turtle species (Native spp).												

In addition to the collection plan some birds and animals endemic to the state will also be considered depending upon the availability of the space and expertise. Some water birds are also considered for education purpose.

Justification of the collection plan.

The species considered in the collection plan are mostly native to the state and are often rescued but due to space problem, animals are release back to wild. The entire animals considered in the plan are native and therefore suited to the climatic condition of the zoo. Some of the species, mostly the birds of prey have been already displayed in the zoo for long time. The zoo has a past experience in handling these animals' species of the region. They also plays significant role in the education as these animals being more secretive endangered species and are rarely seen in the wild. Recognizing the importance of zoo in providing nature of education as well as their role in scientific research on different aspects of wild animals, emphasis has to be given to display Indian fauna with special reference to those belonging to the region.

Top priority has to be given to pair the single animals or animals of the one sex available in the zoo either by arranging mates for them or by transferring to other zoos on breeding loan or transfer in the interest of conservation of the species.

For long term commitment to conservation and captive breeding, the Nehru Park cum Mini zoo has identified few mission species like Serow, Clouded leopard and birds of prey for conservation breeding. In addition, few core species suggested are, Indian pangolin, Binturong and Pig tail macaque. Among the avian the species considered are peacock pheasant and jungle fowl.

Less important species like barking deer, sambar, Assamese macaque, etc. shall form the limited breeding species. Such species as per requirement will have control breeding programme by means of vasectomy or spaying without disturbing their sexual behaviour and biological need.

Tortoise, civet, pangolin etc. are very often rescued in the state and are released back to wild after treatment. Therefore those species are considered in the collection plan.

II).Description of lay out plan of the Zoo.

The master plan layout of zoo gives the detailed landscape map of the zoo with existing facilities and infrastructure. It also indicate the locations of the proposed developmental activities in animal display area, conservation breeding area, rescue centre area , visitors circulation routes, animal upkeep and healthcare facilities including animals quarantine facilities and isolation wards, visitors education facilities and civic amenities, service road, administrative blocks, entry plaza, car parking. New initiative in the plan is arrangement of display based on taxonomic and habitat requirement of species with open air enclosure where ever possible. It also includes Orchiderium, Fish pond and display of Amphibian. Separate map has been prepared for electricity, water supply, drainage and sewerage.

The Mini zoo covers an area of 13.4 ha. Out of this 9.5 hectare is earmarked for intensive development including conservation breeding centre and residential area. The display area and conservation area is only 4.81 hectare. An area covering 6.5 hectare is kept as forest area. Layout map is drawn in the scale of 1:1000 with contour interval of 5—10mtr.

The proposed land use of Zoo area is as follows:

a. Total Display area	-----	4. 20 hectare
b. Conservation Breeding Centre	-----	0. 61 hectare
c. Forest coverage	-----	6.50 hectare.
d. Office, store and kitchen	-----	0.38 hectare.
e. Children park, lawns, garden	-----	0.20 hectare.
f. Residential area	-----	0.80 hectare.
g. Zoo Dispensary, rescue centre, quarantine, post mortem		
House, incinerator and burial ground	-----	0.60 hectare
h. Booking office, kiosk, coffee shopview point etc.	-----	0.11 hectare
	Total	13.40 hectare
i. Footpath	-----	1.7 Km.
j. Road	-----	0.8 Km.

The layout Plan is drawn following the colour code as per CZA guideline:

- | | |
|--|-------------------|
| 1. Existing animal enclosures | -- Black colour. |
| 2. Enclosures to be modified | --- Green colour. |
| 3. Enclosures to redone after demolished | --- Red colour. |
| 4. Proposed new enclosure | ---- Blue colour. |

The Layout map is enclosed in **Annexure – V**

III).Proposal to address the inadequacies and shortcoming identified in the appraisal report:

Proposal for improvement of the shortcoming in the appraisal are listed section wise in details.

i) Animal Section:

The animal section is the most important section of any zoo and various aspects of topography and vegetation has to be kept in mind to locate enclosure for different species depending upon their habits. The display will also depend on management convenience. However the placement of the enclosure is basically base on taxonomic and habitat requirement of different species.

The maximum numbers of any species to be displayed depending on their social behavior has to be taken into account to provide adequate space for the individual or special group. The enclosure should be designed to take care of the biological need of the species, its safety and ease of viewing by the visiting public.

Considering the topography of the zoo, moat with brick or boulder wall type of enclosure are discourage except for bears where the area is plain. Attempts shall be made to provide open air enclosure for most of the species by chain link with aluminum plain sheet on top to prevent escape of animals. The other types of barriers like closed chain link mesh fence or glass shall be used whenever felt necessary depending upon the species and contour/topography of the location.

By considering the heavy rainfall in the area, the chain link, mesh wire use for aviary or enclosure shall be restricted to galvanized quality only.

All enclosure shall be provided with adequate protection to the animals against climatic variation, commensurate with the individual need of the species such as boulders, cages, trees, platform, shrubs, logs etc. This will meet their biological needs. Adequate attention has to be paid for provision of crate or isolation arrangements for protecting individuals or groups from aggression behavior of individuals in the group, protection of

expectant mothers, injured animals and young ones. Such separation will help in elimination of any problem of infighting, cannibalism or rejection.

All Feline and canine enclosure including bear enclosure shall have in-built squeeze cages attached for restraining of the animals for providing treatment and when necessary without putting the animal to undue stress for capture or transport to the zoo dispensary.

Each animal house shall be provided with adequate drainage facilities so that the liquid wastes are drained out of the enclosures and disposed off without contaminating the surrounding enclosures. Solid waste of the zoo shall be disposed off, by burning, by burying inside pit and there is also proposal for fire wood incinerator which will be used for disposal of carcass and bones. The dung's collected shall be dump inside pits away from each enclosure which are later burnt and covered.

Potable water supply shall be ensured to all animal enclosures and feeding cubicles preferably from underground bore well water or treated water.

In addition to enrichment of enclosure, plantation of fruit bearing trees, shrubs etc which are natural food of the respective species shall be carried out where ever possible.

To create love, affection and awareness among people towards wildlife and also to raise funds the novel scheme of “**Adoption of Animals**” under adoption program will be introduced in the zoo. However the signage, feeding, veterinary care of such animals will be done as per Zoo rules.

ii) Arrangement of display:

The placement of enclosure in the zoo has come up haphazardly in past without considering geographical location and habitat of the species. It is proposed to adopt **board taxonomic** display for convenience of management, research and education. However the habitat requirement of the species is also considered while placing the enclosures. The board classification will be as follows:

- (a) Primates.
- (b) Bears
- (c) Pangolin
- (d) Porcine
- (e) Porcupine
- (f) Birds- pheasant, birds of prey & other birds of State.
- (g) Ungulate
- (h) Water birds

- (i) Fish and amphibian
- (j) Turtle & tortoise
- (k) Reptiles
- (l) Medium carnivores – leopard & clouded leopard.
- (m) Flying squirrels, Civets & Binturong
- (n) Small carnivores- Linsang, leopard cat, jungle cat & Morten.

iii) Demolition, modification, or re-arrangement of existing enclosure:

Interpretation Centre:The present interpretation centre is constructed in the middle of the zoo and does not fit in modern zoo concept; therefore it will be modified into **snake house**. Interpretation centre is proposed at the entrance of the zoo.

The present display area is located at the extreme corner of the zoo at lowest elevation, whereas the entry point is at highest elevation in the opposite site, therefore it is not convenient for the visitors. Considering the fact, it is decided to convert the area for conservation breeding centre. There are 12 small enclosures which were constructed as makeshift enclosure, most which are very old, rusted and does not fit to hold animals any more. More over such enclosure do not fit into modern concept of zoo design or do not meet the biological needs of the species housed in them. Some of them shall be completely demolished; some shall be modified for proposed conservation centre.

- (i) The enclosure for birds of prey, hornbill, macaque, python, jangle cat and leopard cat are very small and old, hence shall be demolished.
- (ii) The two enclosures for Bears and one for deer are in good shape and can be used for breeding centre with little modification.

iv) Construction of new enclosure.

The present display area is marked for conservation breeding centre and new area is marked for display as shown Layout Plan. Therefore new enclosures are to be constructed for all the displayed animals. The enclosures will be constructed with appropriate arrangement of animal display as per their taxonomic and habitat requirement and also for the education importance to the zoo visitors and to make the zoo more interesting and attractive. It will give new look to the zoo. Moated type of enclosures is not considered due stiff contour and high rainfall of the area. The area of the individual enclosure is given in the layout map.

The enclosures proposed are:-

Primate enclosures: New enclosure for Common langur, Hoolock gibbon, Stamp tail macaque, Pig tail macaque and Slow Loris will be constructed at the area identified for primate. The enclosure hoolock and langur will be open air chain link fitted with plain sheet on top to prevent escape of animal. Enclosure for macaque and loris will be constructed with Iron angle post and thrust, covered with galvanized chain link ware mesh.

Bear enclosures: Two enclosures are proposed for display of Himalayan black bear and Sun bear. Enclosure will be placed side by side for education purposed. It will be moated on visitor's side and back side will have either brick wall or Galvanized chain link wire mesh fitted with plain sheet on top or moated depending upon the contour.

Enclosure forporcine:- One enclosures for wild boar is proposed at the lowest area of zoo near storm water for easy drainage. It will be open air constructed with chain link wire mesh. The enclosure will have a Sty away from visitors view point.

Enclosure for porcupine: It will be constructed with chain link wire mesh on the visitors side and brick wall on other three side with three meter deep RCC flooring filled with soil for burrowing and may have full or half roofing.

Aviary: It will be constructed with Iron angle post and thrust, covered with galvanized chain link ware mesh. It will be single enclosure with partition to display different species of native birds and also onenon native species. Back portion will have covered area preferably of RCC for protection from rain and for nesting.

Aviary for Birds of prey: Single enclosure with partition or separate enclosure for each species has been proposed. However, single enclosure with partition is preferred, considering the cost involvement and proper display of birds for education purpose. It will be constructed with Iron angle post and thrust, covered with galvanized chain link ware mesh.

Enclosures for ungulates: Four species of ungulates will be displayed side by side for education purpose. The enclosures will be either constructed with galvanized chain link mesh wire or with power fence. The proposed enclosures for ungulates as per lay out plan are:-

- a. Barking deer enclosure
- b. Sambar enclosure
- c. Serow enclosure.
- d. Goral enclosure

Amphibian enclosure: An enclosure for amphibian is proposed to display few important species found in the state. An irregular or oval shape pond with stone chip flooring and RCC wall with rock formation will be constructed to give natural look. Visitors view point will be fitted with fiber glass which will be connected with smooth finished brick wall on the back side to prevent escape of the species. The enclosure will have few partitions for different species of amphibian and will also have land portion in each partition. Light bulb will be fitted in every partition at night to attract insect and flies for feeding of the species.

Water Birds and fish: Creation of water body is proposed near ChildrenPark for display of water birds and fish. It will be constructed by boulder flooring after removing silted mud, side drainage around the pond to avoid siltation. Wooden bridges over the pond will be provided and RCC benches for beautification and visitors accessibility.

Turtle and tortoise: Different species of tortoise and turtle are rescued from the state, therefore it is included in the collection plan. Enclosure for turtle and tortoise will be furnished with artificial cliff, water fall and rock resembling nature.

Reptile house: The present interpretation centre constructed in the middle of the zoo is not in a proper location for the purpose. Interpretation centre is proposed at the entrance of the zoo and therefore the existing structure shall be modified for snake house.

Enclosure for leopards: Clouded leopard and Leopard cat will be displayed side by side for education purpose. The enclosure will be constructed with iron angle post and thrust, covered with galvanized chain link ware mesh.

Enclosure for small carnivores:- Enclosure for yellow throated marten, jungle cat and linsang are proposed to construct side by side with iron angle post and thrust, covered with galvanized chain link ware mesh.

Enclosure for Civets, flying squirrel and Binturong; Enclosure for this species will be constructed in a single row iron angle post and thrust, covered with galvanized chain link mash wire.

v) Interpretation centre: Interpretation centre is marked at the entrance of the zoo so that visitors can be sensitized in the beginning about the animals displayed in the zoo.

vi) Orchiderium An area has also been marked next to interpretation centre for creation of orchiderium at the entrance of the zoo for education, research and to give aesthetic look for

the visitors. Different species of orchids of the state and exotic orchid will be displayed in the orchiderium.

vii) Veterinary sector: The Nehru Park cum Mini Zoo has a veterinary dispensary which is look after by Wildlife Veterinarian posted against Nokrek National Park. The infrastructure meant for the Nokrek National Park has been created in the zoo. It has basic infra structure for treatment, minor operation and basic diagnostic facilities for stool and blood test. The zoo dispensary does not have any equipment for tranquilization like Air pressurized drug delivery equipment, blow pipe and jab stick. Tranquilizing drugs, required medicines and vaccines also needs to be made available.

a. The Dispensary building is constructed at the centre of the zoo and therefore not located at the ideal place. There is every possibility of spreading diseases at the time of epidemic from the present location. It is therefore decided to convert the present dispensary into security house and one of the staff quarter marked in the layout map will be modified into dispensary. The building is in good shape and needs furnishing and minor modification only.

b. Organizational Set up: The Dispensary has the following staff:

- | | |
|---------------------------------|------|
| 1. Veterinary Assistant Surgeon | -- 1 |
| 2. Animal attendant | -- 1 |

The additional man powers required in the dispensary are:

- | | |
|-------------------------------|------|
| 1. Veterinary field Assistant | - 1 |
| 2. Sweeper | -- 1 |
| 3. Attendant (daily wages). | - 1 |

c. Reference Library: The dispensary requires a small library for reference. Collection of books will include wildlife books, veterinary science, and journal and wildlife magazine.

d. Rescue centre; An area is marked in the Layout Plan near Veterinary Dispensary for rescue centre. The centre will have intensive care unit, animal restraining facilities and other necessary equipments for feeding, sanitation and feeding of animals. A rescue van will be attached with Veterinary Officer of the dispensary.

e. Quarantine area: At present the zoo does not have quarantine area. There are two staff quarter near the existing hostel and out of which one will be converted into Dispensary and another to quarantine house. The quarantine house will have sufficient outdoor area for medium and large animals.

f. Post mortem house; there is no post mortem house at present. It needs to be constructed with windows from all side to provide sufficient light. The area is marked near burial ground as indicated in the layout plan.

g. Incinerator: there is no incinerator in the zoo at present. Solid waste and the carcasses are disposed off by burning or burying within the zoo premises. Fire wood incinerator is considered near post mortem house indicated in the layout plan.

h. Burial ground: No burial ground has been specifically marked in the zoo. The carcasses are disposed off by burying or burning within zoo area. An area near incinerator is ear marked for the purpose.

vii) Store and Feed supply section: At present there is no separate store and kitchen in the zoo. Range office and the dispensary are used for the purpose. A new store and kitchen will be constructed near Range Office as marked in the plan. It will be provided with washing basin, gas stove, fly proof netting, glazed tiles floor, rack and cabinet etc. Items needed to be procured are deep freeze, weighing machine, Kitchen knives, utensils and other equipments required for preparation of animal food.

ix) Sanitation section:

Sanitation is one of the most important sections in a zoo as lot of solid and liquid wastes are generated every day from animal enclosure as well as from visitors. Unless suitable arrangement is made for their day to day disposal, it will be difficult to keep the zoo clean and pleasant. Hence, necessary infrastructure needed to be developed. It is essential to provide complete sewage disposal system, series of dustbins and construction of pit for dumping and burning and sweeping on daily basis. The public toilet and staff colony need proper and regular cleaning. To achieve this, besides man power, proper equipment should be made available from time to time. Improvement is required in pest control- mosquitoes, rodent's feral dogs etc. Introduction of manure and compost pits for disposal of animal waste. However due to its topography – undulating, hillock and slope the sanitation especially the liquid wastage has not been a problem in the zoo. Specific area has been ear marked for the visitors for eating food brought with them.

Polythene and tetra packs should be completely prohibited in the park. Composting of bio-degradable wastes should be done in the compost pits and manure so generated may be used in organic and fodder farm, lawns and garden.

x) Workshop and maintenance section :

Nehru Park cum Mini Zoo, Danakgre is 6 km away from the market area, therefore it requires its own skilled labor for day to day maintenance of enclosure, building, structure, water supply etc. Without having its own skilled personnel it will not be possible to attend the above problem on immediate basis. The safety and security of the animal is paramount and whenever there is a problem, this has to be attended without any loss of time. The zoo does not have any such person at present, therefore such person needs to be appointed and small workshop has to be made available in the park with facilities like welding machine, equipment for carpentry and mason work. It also needs necessary equipment required for water supply and electricity. The workshop will be directly under the control of Range officer and has the following staff:-

- | | |
|----------------|------|
| i) Welder | -- 1 |
| ii) Mason | -- 1 |
| iii) Carpenter | -- 2 |
| iv) Plumber | -- 1 |

xi) Security section:

It very important to keep the zoo animals, visitors, zoo staff and their families, zoo properties both movable and immovable secure and safe to make the zoo function properly. The zoo spreads over an area covering 13.4 hectors and is well fence, but in many instances miscreant try to enter the zoo at night. Therefore barbet wire fence needs to be replaced with RCC boundary wall. There is no separate staff for security; the staffs used in animal section are engaged for the purpose on rotational basis. The measures need to be taken in years to come are:-

- a. Separate security section needs to be created by outsourcing. Creation of separate section for this purpose by the department may not be feasible due fund constrain and also staff management problems. Therefore it is proposed for out sourcing.
- b. Replacement of barbet wire with **RCC security wall** around the park in phase manner. The soil formation at the zoo area is loose, therefore the security wall to be constructed, should have **RCC horizontal beam** at the base of the wall and another at the top of the wall to sustain the tensile force during rainy season and earthquake.
- c. Construction of **watch tower** with spot lights at vulnerable point.
- d. The staff colony will be surrounded by separating wall from the display area.

- e. Creating awareness among the nearby public about importance of wild life conservation in general and particular in zoo inmates and about **legal implication of wildlife protection act.**

xii). Water supply section. Large quantity of water is required for cleaning of enclosure, staff quarters, gardening, drinking and toilets. The zoo depends on public health engineering department of Tura for water supply. There are three water tanks in the zoo at present which are directly connected to main pipe line of PHE. It will not be sufficient in due course of time and therefore some more tanks needs to be constructed as indicated in the plan. During winter there is scarcity of water, therefore it needs up gradation preferably **bore well under ground** water for providing good quality water to animals; staff and also to visitors. The details of water supply plan are shown on the plan map.

xiii). Power supply section. The zoo is yet to be electrified, however main power line with transformer with capacity of 200 K.V. is installed just near the entrance of zoo by power department, therefore installation power supply to zoo will not be a problem once the payment is made for the purpose. All the enclosures, staff quarter, office etc will be electrified as shown in the plan map. A provision is made for installment of sound proof generator for emergency purpose.

xiv). Disposal of solid and liquid waste. Solid waste of the zoo is disposed off by burning, by burying inside pit and there will be installation of fire wood incinerator which will be used for disposal of carcass and bones. The dung's are collected and dump inside pits away from each enclosure which are later burnt and covered. Creation of compost pit (**Vermi compost**) for composting of bio-degradable wastes is proposed and the manure so produced will be used in flower garden.

The disposal of liquid waste is not a problem in the zoo due to its topography. There is no stagnation of water or sewage. Drains and culvert are provided where ever required. Few more culvert and side drainage near enclosure and water body shall be taken up to avoid pollution/contamination of proposed water body and adjacent enclosure.

xv).Visitors amenities. To make the zoo visiting interesting and rewarding, amenities needs to be created. Resting shed and toilet are provided at strategic location in the zoo. However following amenities required to be developed are:

a). **Resting shed, benches, toilets, and viewpoints** shall be provided in every strategic point.

b). **Drinking water** facilities: Installation of acquaguard or any other facilities for clean drinking water should be provided at suitable places.

c). **Wheel chairs** shall also be provided for disable at nominal charges but it will be restricted to certain area considering the contour of the zoo. Clean toilet for such visitors shall also be kept fully operational.

d). **Proper signage** for every species of animals displayed and also for important species of flora shall be done for education purpose.

e). In order to make the visit enjoyable, creation of water body, for water birds & fish are proposed in the plan period.

f). **Children Park** shall be created in a large area with facilities like merry go round, sea saw and swings. Activities for children to promote wildlife conservation shall also be provided at the middle of the zoo as indicated in layout plan.

g). **Cafeteria** at the entrance gate with sanitary and parking facilities is proposed. There will be one more food courts at the other end of the zoo. No non-biodegradable materials like plastic glass, plastic plate etc will be allowed inside such food court. Catering of food item, plastic water bottles and sale of alcohol shall be prohibited.

h). **Clock room** will be provided at the middle of the zoo near ChildrenPark.

i). Telephone booths shall be provided at zoo gate and at appropriate places inside the zoo.

j). **Souvenir shops** for selling curios of the park, photos, slides, guide books, stickers and other nature related artifacts like mugs, paper weight, caps, ties, T-shirt, etc. should be established in the zoo. This will not only help people take back certain durable wild animal related materials back home for long time to remember but also help the park to get some revenue like many foreign zoos. Gift shop will be attached at the zoo gate.

xvi). **Landscaping and gardening:** The zoo has varied range of vegetation throughout the year with different type of orchid and other plant species which lends greenery to the park throughout the year. But still some formal or informal gardens do have their aesthetic appeal to the visitors and zoo inmates also.

The zoo already has a flower garden and a Park at the entrance where Statue of First Prime Minister of India is erected.

Forest area: The whole area of the zoo is thickly forested out of which 70% of the area is earmarked for intensive development and the rest 60% area is left for Forest cover which will serve as habitats for free ranging animals who live in the zoo premises. This will also generate feeling of being in a natural forest for the visitors.

Plantation in vacant patches. At present all the zoo area is covered with trees and shrubs, however during the construction of enclosures and infrastructure there may be felling of trees. Such areas will be considered for plantation with rare and endangered species of native origin mostly of medicinal, timber, ornamental, latex, fruit and seed bearing trees which are natural feed for different species of displayed in the zoo. Plantation of bamboo and cane of the state shall also be encouraged in the clear patches of zoo area.

Removal of exotic plant and shrub: Many exotic species of shrub like *lantana camera*, *solinuinigram*, has come up in the zoo.. Such shrubs need to be totally uprooted and burned. Few exotic plants have also been planted in the zoo premises which needs for phasing out through replacement by indigenous species.

xvii).Lawns and garden: To give aesthetic look and pleasant atmosphere to the visitors, flower garden and park has been created in the zoo. However it needs to be improved. Children Park near proposed snake house centre is also considered in the plan.

Nursery: Nursery for plant and flower shall be taken up in the zoo at free space in the display area.

xviii) Fodder cultivation, organic farming and vermin compost. At present fodder are collected from within the park for feeding of ungulates. It may be considered in the later part of the plan at the off display area near proposed conservation centre. Bio-degradable wastes like leaf, litter, animal dung; vegetable wastes etc. should be composted or subjected to vermiculture for organic manure for the flower garden.

xix)Road and visitors' circulation:

Visitor's circulation footpath has already been constructed in the proposed display area. However it will need modification at certain point where area is stiff or for placement of enclosure. There will be main loop and sub loop (foot path) depending upon the topography and display area with elevation of 1:20 metres. for foot path for easy movement. Motor able road is not considered in the display area due to its topography. Road Via Staff Colony to propose conservation breeding centre is considered in the plan. However vehicles will be prohibited in the zoo.

xx) Entrance plaza: Entrance plaza consists of Parking area, cafeteria, ticket counter, Telephone booths, Souvenir shops and Zoo gate.

Parking place: Parking place will be constructed at the entry gate along Garo- Bada Road. Retention wall, earth filling and black toping will be done. Facilities for telephone boot, toilet, visitor's sheds etc. needs to be provided at the parking place.

A gate will be constructed at the present entry point with proper design and provide list of **Do's and Don't** and also guide map on it. It will have different entry and exit doors, with security cell.

xxi) Construction of bund for creation of water body: RCC bund strong enough to hold large quantity of water for creation of water body near interpretation centre is proposed for display of fish and water birds.

xxii) Administrative building and staff quarter: The zoo is place under the establishment East and West Garo Hill Wildlife Division; however one Assistant Conservator of Forest is posted in the zoo as the Director of Zoo. The Present Trainees Hostel inside the Zoo will be converted into Directors Office. The Office for the Range Forest Officer has already been constructed in the zoo. Few accommodations for staffs and labor barrack needs to be constructed at area marked for staff colony.

xxiii) Mobility:

- a. Rescue Van and small vehicle for carrying feed materials will be required for the zoo.
- b. Replacement of vehicle in every 10 years intervals or as prescribed should be taken up.

xxiv) Education and awareness: This is a very important component of zoo management. The visitors, after their visit should go back with empathy for wild animals in captivity and also in the wild, besides getting educated about different aspects of biology and ecology of the wild animals. Hence the following steps need to be taken in the years to come in a phased manner.

a. Creating of interpretation centre in modern lines with the advice and involvement of experts in the field. This should be interactive with sound and lighting effects. This should not only educate visitors on the zoo animals, but provide information on different protected areas of the state and ecology. Building for Interpretation centre has been constructed at the middle of the zoo which does not go along the modern concept of the zoo, therefore it is proposed to construct interpretation centre at the entrance of the zoo and the present centre will be converted as Snake house.

b. Creation of museum inside the zoo is discouraged.

c. Signage is the best educative materials for the visitors. They should be properly designed, made more interesting with pictures and ecological information and put in different enclosures and in groups of enclosures. Guide maps and direction boards should be displayed at different point of the park.

d. Introduction of **keepers talk** will be much more meaningful and practical for the zoo visitors. To achieve these keepers need to be trained and if possible few educated (at least class X standard) need to be appointed as keeper.

e. A guide teacher from the zoology back ground should be appointed for educating conducted group on different aspects of conservation and captive management. This shall also facilitate zoo's outreach activities to peripheral villages, schools and educational programs for various section of society like teachers, student, village organization, media and others.

f. An arrangement may be made for **zoo visit for students** from nearby schools from time to time. They can be exposed to various aspects of bio-science taking advantage of live animals, documents, and library facility of the park.

g. Celebration of **wild life week**, quiz competition, radio broad casting and publicity about wildlife should be carried out from time toe in collaboration with other Department, organization and NGOs.

h. Creation of own web site, facilities for film shows, digital camera etc needs to be made available.

i. All the plant, bamboo, cane and medicinal shrubs naturally available in zoo should be properly leveled with **common and scientific names**.

xxv) Research: Although there is abundant scope of research in endangered animals of zoo, floral and free living faunal species of the park, no work has really been taken up till date. Some effort needs to be put into this direction.

a. To start with, small grant fellowship project may be proposed on topic like improvement of the zoo, scientific management of zoo, Ex-situ conservation, welfare of animals, breeding and biology of species considered for conservation breeding and floral species found in the park.

b. The zoo should collaborate with different colleges and universities on animal research and provide facilities for management oriented research without involving any disturbance or discomfort to animals.

c. Research on veterinary, nutritional and physiological aspect may also be carried out for the benefit of the animals. Any other research work which is beneficial for zoo animals will be encouraged provided; it does not cause any discomfort or disturbance to zoo animals.

xxvi) Off display Conservation breeding: The zoo has not taken up any conservation breeding programme as of now. It will concentrate more on development of the zoo in the beginning, but in the later part of the plan it will take up breeding program of Serow, Clouded leopard and birds of prey. The present display area will be modified for the purpose.

xxvi). Rescue Centre.

a. Though, with limited facilities the zoo has involved in many rescue and rehabilitation of wild animals. Many animals injured or orphanage keeps on coming for treatment and hand rearing. However lots of improvement needs in respect of infrastructure. There is no intensive care unit for critically injured and also for infant animals. There are also shortage of equipment and medicine. There is also requirement of emergency fund in the hand of veterinarian for the purpose. Creation of quarantine facilities, treatment cell, life support equipment etc. is the areas of concern in this sector.

b. An area is marked near proposed Veterinary Dispensary with intensive care unit facility.

c. There are always shortage of equipment, medicine and fund for transportation expenses. Therefore provision for such emergency fund may be kept in the hand of veterinarian from time to time.

CHAPTER – V

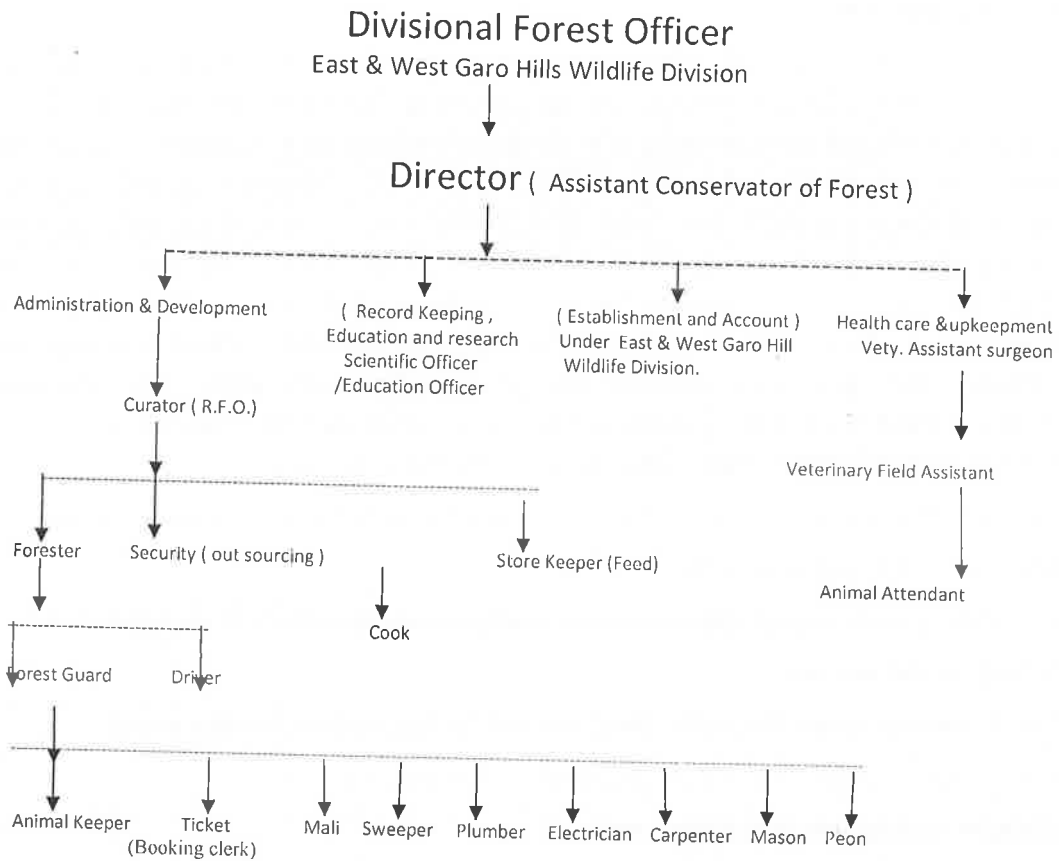
Personnel planning:

The Nehru Park cum Mini Zoo is placed under the establishment East and West Garo Hill Wildlife Division. Therefore, the Divisional Forest Officer of the Division will control financial and establishment matters of the zoo, however considering the nature of job one Assistant Conservator of Forest is posted in the zoo which will be re-designated as the Director. Overall administrative control of the Zoo lies with the Director. Key functional areas to be overseen by the Director are Planning & development, animal exchange, sponsorships & revenue and security of the zoo. One Range Forest Officer is posted as Curator of the zoo. The curator will look after animal housing, infrastructure development, workshop, security etc. Veterinary section is looked after by Veterinary Assistant Surgeon of Nokrel National Park and stationed at the zoo. Veterinary Officer will take care of health care and management including feeding of animals. Biologist will look after record keeping, education and research activity. The details of charter of duty is given in Management Plan. The recruitment rule for Grade A, B, C and D category of staff are as per State Government and Recognition of Zoo Rules, 2009.

A. Proposed cadre strength:

Sl.No.	Name of the post	Post Sanctioned	Post to be filled up	Proposed
1	Director	1	0	1
2	Curator	1	0	1
3	Veterinary Officer	1	0	1
4	Biologist/education	0	0	1
5	Forester	1	0	2
6	Office clerk	2	0	2
6	Forest guard	2	0	3
7	Animal keeper	10	0	10
8	Vety field assistant	0	0	1
9	Animal attendant	2	0	2
10	Welder	0	0	1
11	Carpenter	0	0	1
12	Masonry	0	0	1
13	Plumber	0	0	1
14	Mali	0	0	3
15	Driver	2	0	2
16	Generator set operator	0	0	1
17	Store keeper	1	0	1
18	Cook	0	0	2
19	Peon	2	0	2
20	Electrician	0	0	1
21	Sweeper	0	0	2
22	Security	To be out source if required		
	Total	23	0	42

B. PROPOSED STAFF PATTERN :



CHAPTER – VI

Disaster management:

There is no full proof management system that will prevent destruction and causality in natural calamity; however emergency preparedness shall aid successful control and mitigation. Though the occurrence of such natural and manmade disasters is certain, they are infrequent, and the zoo has to cope with it. All necessary equipments to deal with crisis like diesel generators, portable saws, axes, showels, bill hooks, water tankers, diesel pumping sets, ropes, spot lights, emergency lamps, siren, hooter, loud speaker, tarpaulin, chains, nuts and bolts, diesel, petrol, LPG, kerosene, lubricants, fuelwood, batteries, saw blades etc. shall be made available in the zoo. All the staff with the help of Department of Disaster management will train to deal with such situation through periodic mock drills. An Emergency Preparedness Hand Book shall be prepared which will specify the following points:

- a. Formation of emergency team with chain of command in the team.
- b. Each member and employ should know exactly what his/her role is during a disaster, whom to report and work with.
- c. List of the possibilities of disasters and its emergency preparedness in operational and orderly planned manner.
- d. List of personal needs like water, food, first aid, lantern, battery, torches stoves, rain/ winter cloth etc. will also be provided in the hand book

Possibilities of disasters in the Park are:

- a. **Fire control:** The preparedness in these regard will be based on our past experience which will include storage of water, storing fire extinguishers and immediate contact to the fire brigade. In case of forest fire a designated team keep on patrolling the area in dry season with walkie talkie and shall inform the HQ immediately in case of such calamity. From the past experience, the clearing of dry leaves, trees and plant from the affected area is found to be successful in controlling further spread of the fire.
- b. **Landslide and flood:** Due to heavy rainfall in the state, the incidence of flood and landslide are common. To avoid any disaster due to such natural calamity the layout plan is carefully prepared and location for construction of enclosures is avoided in the landslide and flood prone areas. Construction of culvert, boulder wall and drains are proposed in strategic area.
- c. **Cyclone situation:** Such natural calamities are usually not common in the area, however strong winds capable enough to destroy tall and old enclosure may occur. Preparedness for such situation will be formulated with possibility for immediate evacuation of animal or repairing of enclosure etc.

d. Breakdown of law and order: The management of Zoo may be put under the Essential Service Maintenance Act which will immensely help the zoo in smooth functioning at the time of such law and order breakdown. However preparedness is required in case of law and order breakdown due to external aggression or any other major situation. The preparedness will mostly concerned with stocking of food item, medicine, and other daily required materials for animal as well as for staff.

e. Outbreak of diseases: To prevent such outbreak of diseases Ring Vaccination will be carried out every six month in mammals and birds around the zoo. Diseases like bird flu and anthrax, the guideline provided by Government of India, Ministry of Agri. and Vety. will be followed strictly. In case of such eventualities culling and disposal of carcass will be done as per guideline provided by GOI. Disinfectant recommended by WHO for control of such outbreak will be made available in the zoo. This includes lime powder, hypochlorite, phenol, bleaching powder etc. Equipment for disinfectant like Sprayer, blowlamp etc will be made available in the zoo.

CHAPTER – VII

Contingency Plan:

Contingency plan for emergencies like snake bite, breakdown of power supply, escape of animals from enclosure, visitors falling into enclosure etc. along with preparedness needs to be formulated for the zoo. Most of the animals if freed can cause severe problems and danger to the people. Escape of zoo animals, aberrant human behavior etc. can create unforeseen situations. Meticulous prior planning with adequate finance is needed for preparedness to face such exigencies in the interest of the zoo animals as well as public safety. Points that are considered in the plan are:-

(A) Animal rescue from wild :

- a. Rescue team comprising of Veterinary Assistant Surgeon, Range Officer, Forester and forest guard along with animal keepers will be kept ready any time whenever required.
- b. Rescue van equipped with tranquilizing equipment and drug, movable laboratory facilities transport cages etc. will be created.
- c. Quarantine ward and treatment cell will be created in the Zoo Veterinary Dispensary.
- d. Provision for emergency fund shall be kept for procurement of medicine, feed and other miscellaneous items during rescue operation.
- e. Intensive care unit has also been proposed in the plan in the veterinary section.

(B) Escape of animals from enclosures :

- a. Rapid action force shall be formed to deal with such emergency situation.
The team shall have pre-arranged tranquilizing drugs and equipment, rope, cages, rescue van with stretcher for immediate recapturing of escaped animal.
- b. Pre arrange facilities for immediate evacuation of person getting injured during such operation to nearest hospital shall be made available.
- c. Guns and bullets in case of unavoidable circumstances.

(C) Monkey and dog menace:

At present the zoo has no such problem, although there were some problems with dogs owned by zoo staff earlier. The problem has been solved after removing of dogs from the zoo. The rearing of domestic animal inside the zoo campus is prohibited to prevent domestic animal menace and to prevent entry of infectious diseases.

(D) Arrangement of food during strike:

Deep freeze will be installed in the zoo for preservation of perishable feed item. Moreover movement of vehicle on "zoo duty" is normally exempted from the purview of any strike and therefore, it has never been a problem for the zoo.

(E) Snake Bite:

Anti- venom serum will be is kept in the Zoo Veterinary Dispensary for such type of emergencies. Emergency fund for evacuation and treatment of such patient will be kept under the control of Curator.

(F) Visitors getting injured/ fall inside enclosure:

First aid box, vehicle, ladder, ropes etc. are made available for minor treatment and evacuation of injured person. Rapid action team to deal with such type of emergencies shall be formed. Pre-arranged tranquilizing drugs and equipment will be kept ready for such eventuality.

(G) Fighting among Animals:

Preventive measures are usually taken to prevent infighting among animals; however infighting do occurred in the zoo. Manual separations with bamboo pole or tranquilizing equipment are usually used.

(H) Epidemics:

Vaccination of zoo animal is not always possible, therefore, main stress will be given on ring vaccination of livestock around the zoo twice in a year to prevent occurrence of epidemic. In case of any such eventualities the diseases infected animals will be kept in isolation shed and expert from Department of AH & Vety. and also from nearest Veterinary College will be outsourced.

(I) Break down of Power supply:

Installation soundless generator/D.G.Set is proposed in the zoo to meet the emergency power supply during break down of power supply.

(j) Free ranging animals/ feral animal menace:

Rat and birds manage is common in all zoos. Rat and bird proof enclosures, trap, etc. will be provided wherever possible.

CHAPTER - VIII

Capacity building:

Without motivated & trained staff, no zoo can provide appropriate care to the animals in its collection. Therefore all the officers and staff posted in the zoo shall be deputed for short term training conducted by CZA or any other organization within or outside of the country. Forester, forest guard and animal keepers posted in the zoo shall be made mandatory to undergo keepers training programme conducted by CZA. In-house meetings are regularly conducted to apprise the zoo staff of new developments taking place in different zoos in India and abroad. Team building exercises are also organized to develop cooperation among all zoo staff and officers.

CHAPTER – IX

E- governance:

A comprehensive information system for database management covering all aspects of the zoo, online reporting and suitable training of zoo staff needs to be developed. Introduction of the International Species Information System (ISIS), The soft ware on Animal collection record keeping (ARK) system. Medical records (MedARKS) soft ware will also be installed as per directive of CZA. Installation of BSNL Broad Band is under Process. The other software products of ISIS like Collection planning (REGASP), Small Population Record Keeping (SPARKS) and Viewing Physiological Reference values will also be introduced in due course of time.

All the officers and staffs posted in the zoo shall be provided training in computer, projector, record keeping etc.

CHAPTER – X

The broad budget analysis for the development of the zoo:

The broad budget analysis is based on the present schedule rate from state public work department and will vary as per the cost index of materials and labour charges at the time of implementation of the work: Some of the items not included in the list may also be taken into consideration as per future requirement. The financial provisions for the 2014-2024 are as follows:

A. INFRASTRUCTURE DEVELOPMENT

Item of Work Rs. In Lakh.

1. Construction of road 0.8	----- 30.00
2. Construction of security wall- 1.54 Km.	----- 225 .00
3. Electrification	----- 35.00
4. Construction of security gate with kiosks and cafeteria	-----30.00
5. Construction of feed store and kitchen	-----30.00
6. Development of water Supply	----- 15.00
7. Creation of water body	----- 30.00
8. Recreation park – Children park	-----7.00
9. Construction of Post Mortem House	-----20.00
10. Construction of Fire Wood Incinerator	-----15.00
11. Const. of staff quarters	----- 30.00
12. Public amenities- toilet, drinking water, dustbin etc.	-----70.00
13. Separating wall	-----50.00
14. Orchiderium and gardening	-----33.00
15. Medicine, tranquilizing and other veterinary hospital equipment -	7.00
16. Vehicles, Wireless sets, Computers, Office equipment, Furniture for office, squeeze cage, LCD projector, Ticketing machines etc. ---	27.00
17. Cafeteria	-----35.00
18. Parking Place	----- 50.00
19. Construction workshop shed with store. welding machine, carpentry equipment etc.	----- 50.00
20. Purchase of furniture office and hospital	-----25.00
21. C.C. Footpath, small hanging bridge, railing and drain	-----50.00
22. Conservation breeding Centre	----- 100.00
23. Vermi-compost manure	----- 6.00

Total

Rs. 940.00

B. CONSTRUCTION OF NEW ENCLOSURES.

<u>Enclosure for.</u>	<u>Rs. In Lakh.</u>
1. Pig tail macaque	25.00
2. Assamis macaque	25.00
3. Hoolock gibbon	35.00
4. Capped langur 35.00	
5. Slow loris	10.00
6. Bear enclosure (Himalayan and Sun Bear)	100.00
7. Birds of Prey	45.00
8. Aviary for birds	45.00
9. Barking deer	35.00
10. Sambar 35.00	
11. Rescuè Centre	20.00
12. Tortoise and Turtle.	30.00
13. Small carnivores-Leopard cat, Jangle cat & Morten	35.00
14. Civets and Binturong	30.00
15. Quarantine facilities	15.00
16. Wild boar.	20.00
17. Porcupine	35.00
18. Clouded Leopard	30.00
19. Serow 35.00	
Total	Rs. 665.00

C. RENOVATION AND MODIFICATION OF EXISTING ENCLOSURES AND OTHER MISCELLANEOUS ITEM:

<u>Item of work</u>	<u>Rs. In Lakh.</u>
1. Renovation of Interpretation centre into snake house 20.00	
2. Modification present hostel for Director Office	13.00
3. Modification of staff quarter into Dispensary	5.00
4. Modification of staff quarter into quarantine shed	5.00
5. Signage, annual report and brochures,	5.00
6. Procurement of Laboratory equipment, microchip equipment, tranquilizing equipment, Computer, Stationeries etc.	20.00
Total	Rs. 68.00

D. DAY TO DAY MAINTENENCE:

1. Maintenece (Feed and upkeepment, water and electricity)	70.00
2. Disaster management	14.00
3. Education and Awareness	6.00
4. Stationeries and office expenses	6.00
5. Medicine and equipment	20.00
6. Minor work and machineries	14.00
7. Rescue and treatment	6.00
8. Professional Services	4.00
9. Salary	170.00
10. Wages	9.24
11. T.A	4.00
12. Security expenses	12.00
Total	Rs. 329.24

Total Broad budget analysis for Ten years Plan = (A+B+C+D) = Rs. 2002.24
(Rupees Twenty Crore Two Lakh Twenty Four thousand) only.

PART -- III
Chapter -- XI

MANAGEMENT PLAN:

Management Plan details out the activity to be taken up in the line indicated in the Master Plan on priority basis in phases. The development activities considered during the 1st Five Year are based on the ground requirement priority. The activities left out in the 1st Five Year plan will be considered in the 2nd Five Year Plan as indicated:

1st Five Year:

I. CONSTRUCTION OF NEW ENCLOSURES.

[All figures Rs. In lakhs]

Sl. No.	Items	Year					Total	Funding
		2015-16	2016-17	2017-18	2018-19	2019-20		Agency
1	E enclosure for pig tail macaque	25	0	0	0	0	25.00	CFC
2	Enclosure for Assamis macaque	0	25.00	0	0	0	25.00	- Do -
3	Stump tail macaque enclosure.	0	0	0	0	25.00	25.00	- Do -
4	Enclosure for hoolock gibbon.	0	35.00	0	0	0	35.00	BRGF
5	Enclosure for Capped langur	0	0	0	35.00	0	35.00	- Do -
6	Enclosure for slow loris.	0	0	10.00	0	0	10.00	-Do-
7	Bear Enclosure-2 nos (Himalaya Black bear and Sun bear.	50.00	0	0	0	50.00	100.00	SPA
8	Enclosures for Birds of prey	45.00	0	0	0	0	45.00	SPA
9	Aviary for Birds	45.00	0	0	0	0	45.00	SPA
10	Enclosure for Barking deer	0	35.00	0	0	0	35.00	SPA
11	Enclosure for Sambar	0	0	35.00	0	0	35.00	CFC
12	Rescue Centre	20.00	0	0	0	0	20.00	CFC
13	Enclosure for Tortoise and Turtle.	0	30.00	0	0	0	30.00	CFC
14	Enclosure for Small carnivores- Leopard cat, Jangle cat & Morten	35.00	0	0	0	0	35.00	CAMPA
15	Enclosure for Civets and Binturong	0	30.00	0	0	0	30.00	-Do-
16	Quarantine facilities	15.00	0	0	0	0	15.00	S/Plan
	TOTAL RS.	235	155	45	35	75	545	

2. INFRASTRUCTURE DEVELOPMENT

[All figures Rs. in lakhs]

Sl. No.	Items	Year					Total	Funding
		2015-16	2016-17	2017-18	2018-19	2019-20		Agency
1	Construction of road 0.6 Km	0	0	30.00	0	0	30.00	SPA
2	Const. of security wall- 1.54 Km.	0	00	75.00	75.00	75.00	225.00	SPA
3	Electrification	35.00	0	0	0	0	35.00	S/Plan
4	Security gate, kiosks and cafeteria.	0	30.00	0	0	0	30.00	Tourism
5	Const. of feed store and kitchen,	0	30.00	0	0	0	30.00	S/Plan
6	Development of water Supply	0	0	15.00	0	0	15.00	-do-
7	Creation of water body	0	0	30.00	0	0	30.00	Tourism
8	Recreation park – Children park	7.0	0	0	0	0	7.00	CAMPA
9	Construction of Post Mortem House	0	0	0	0	20.00	20.00	S/Plan
10	Const. of Fire Wood Incinerator	0	0	0	0	15.00	15.00	-Do-
11	Const. of staff quarters	10.00	10.00	10.00	0	0	30.00	-do-
12	Public amenities- toilet, drinking water, dustbin etc.	10.00	20.00	20.00	10.00	10.00	70.00	NLCPR
13	Separating wall	0	50.00	0	0	0	50.00	SPA
14	Orchiderium and gardening	25.00	5.00	1.00	1.00	1.00	33.00	SPA
15	Medicine, tranquilizing and other veterinary hospital equipment.	2.00	2.00	1.00	1.00	1.00	7.00	CSS
16	Purchase of Vehicles, Wireless sets, Computers, Office equipment, Furniture for office, squeeze cage, LCD projector, Ticketing machines etc.	10.00	10.00	5.00	1.00	1.00	27.00	CFC
17	Cafeteria	0	35.00	0	0	0	35.00	S/plan
18	Parking Place	0	50.00	0	0	0	50.00	BRGF
19	Construction workshop shed with store. welding machine, carpentry equipment etc.	10.00	10.00	0	0	0	20.00	CAMPA
20	Purchase of furniture office and hospital		25.00	0	0	0	25.00	S/plan
21	C.C. Footpath, small hanging bridge, railing and drain	25.00	0	25.00	0	0	50.00	NLCPR

TOTAL RS.	134.00	277.00	212.00	88.00	123.00	834.00
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3.RENOVATION AND MODIFICATION OF EXISTING ENCLOSURES AND OTHER MISCELLANEOUS ITEM:

[All figures Rs. In lakhs]

Sl. No.	Item	Year					Total	Funding agency
		2015-16	2016-17	2017-18	2018-19	2019-20		
1	Renovation of Interpretation centre into Snake House .	0	20.00	0	0	0	20	State plan
2	Modification present hostel for Director Office	10.00	0	0	0	3.00	13.00	-Do-
3	Modification of staff quarter into Dispensary	5.00	0	0	0	0	5.00	-Do-
4	Modification of staff quarter into quarantine shed	5.00	0	0	0	0	5.00	-Do-
5	Signage, annual report and brochures,	1.00	1.00	1.00	1.00	1.00	5.00	-Do-
6	Procurement of Laboratory equipment, microchip equipment, Tranquilizing equipment, Computer, Stationeries etc.	2.00	2.00	5.00	2.00	1.00	12	BRGF
	TOTAL RS.	23.10	23.00	6.00	3.00	5.00	55.00	

CFC – Central Finance Commission

SPA - Special Plan Assistant

CAMPA- Compensatory Forestation Fund Management Planning Authority

NLCPR – Non Lapsable Central Pool of Resource

S/Plan - State Plan

BRGF- Backward Region Grant Fund

CSS – Central Sponsored Scheme

4. RECURRING EXPENDITURE (MAINTENANCE BUDGET)*[All figures Rs. In lakhs]*

Sl. No.	Item	Year					Total	Funding agency
		2015-16	2016-17	2017-18	2018-19	2019-20		
1	Maintenance (Feed and upkeepment, water and electricity)	5.00	6.00	6.00	9.00	9.00	35.00	S/ Plan
2	Disaster management	0.50	0.50	0.50	5.00	0.50	7.00	BRGF
3	Education and Awareness	0.20	0.20	0.30	0.50	2.00	3.00	S/plan
4	Stationeries and office expenses	0.50	0.50	0.50	0.50	1.00	3.00	Do
5	Medicine and equipment	0.30	0.60	1.60	5.00	2.50	10.00	Do
6	Minor work and machineries	1.00	1.50	1.50	1.50	1.50	7.00	Do
7	Rescue and treatment	0.20	0.30	0.50	1.00	1.00	3.00	Do
8	Professional Services	0.50	0.50	0.50	0.50	0	2.00	Do
9	Salary	17.00	17.00	17.00	17.00	17.00	85.00	Do
10	Wages	0.90	0.90	0.90	0.92	0.94	4.62	Do
11	TA	0.40	0.40	0.40	0.40	0.40	2.00	Do
12	Security	1.20	1.20	1.20	1.20	1.20	6.00	Do
	TOTAL RS.	27.7	29.6	30.9	42.52	37.04	167.62	

5. Projected Revenue collection:1st Five Year**Year wise collection (in lakh)**

Years	2015- 16	2016-17	2017-18	2018-219	2019-20
Collection	1.00	2.00	4.00	6.00	8.00

2nd Five year:**1. INFRASTRUCTURE DEVELOPMENT***[All figures Rs. in lakhs]*

S. No.	Items	Year					Total	Funding agency
		2020-21	2021-22	2022-23	2023-24	2024-25		
1	Conservation breeding centre for native endangered spp.	100.00	0	0	0	0	100.00	CSS
2	Vermi compost manure	0	0	4.00	1.00	1.00	6.00	State plan
	TOTAL RS.	100.00	0	4.00	1.00	1.00	106.00	

2. CONSTRUCTION OF NEW ENCLOSURES.*[All figures Rs. in lakhs]*

Sl. No.	Items	Year					Total	Funding agency
		2020-21	2021-22	2022-23	2023-24	2024-25		
1	Enclosure for Wild boar.	0	20.00	0	0	0	20.00	CFC
2	Enclosure for Porcupine.	0	0	35.00	0	0	35.00	Do
3	Enclosure for Clouded Leopard	30.00	0	0	0	0	30.00	Do
4	Serow	0	35.00	0	0	0	35.00	Do
	TOTAL RS.	30	55	35	0	0	120	

3. RENOVATION AND MODIFICATION OF EXISTING ENCLOSURES AND OTHER MISCELLANEOUS ITEM:

[All figures Rs. in lakhs]

Sl. No.	Item	Year					Total	Funding agency
		2020-21	2021-22	2022-23	2023-24	2024-25		
4	Maintenance of Enclosures	0.50	1.00	1.00	1.00	2.00	5.50	S/plan
6	Procurement of Laboratory equipment, microchip equipment, tranquilizing equipment etc	1.00	1.00	0.50	0.50	2.00	5.00	BRGF
8	Signage, annual report, brochures,	1.00	1.00	1.00	1.00	1.00	5.00	-do-
9	Repair and maintenance of various buildings, like postmortem house, staff quarters, painting and white washing of building in the zoo. Maintenance of water supply including replacement of rusted leaking pipes and misc. maintenance in zoo.	2.00	2.00	2.00	2.00	2.00	10.00	-S/Plan
10	Maintenance of barriers and animal enclosure railings, doors and mesh	0.50	1.00	1.00	1.00	0.50	4.00	-do-
11	Drinking water and Food troughs for animals	0.10	0.40	0.40	0.10	0	1.00	-do-
12	Maintenance of visitors facilities	0.20	1.00	1.00	1.00	1.00	4.20	CSS
13	Fund for Animal Exchange & Rescue	1.00	1.00	1.00	1.00	2.00	6.00	CSS
14	Maintenance of security wall, separating wall, fencing etc.	0	0	10.00	0	10.50	20.00	-do-
15	Maintenance of electrification	5.00	0	0	0	2.00	7.00	S/Plan
16	Maintenance of water body	0.20	0	0.20	0	0.10	0.50	-do-
	TOTAL RS.	11.50	8.40	18.10	7.60	23.60	69.20	

4. RECURRING EXPENDITURE (MAINTENANCE BUDGET)

[All figures Rs. In lakhs]

Sl. No.	Item	Year					Total	Funding agency
		2015-16	2016-17	2017-18	2018-19	2019-20		
1	Maintenance (Feed and upkeepment, water and electricity)	5.00	6.00	6.00	9.00	9.00	35.00	S/Plan
2	Disaster management	0.50	0.50	0.50	5.00	0.50	7.00	-do-
3	Education and Awareness	0.20	0.20	0.30	0.50	2.00	3.00	-do-
4	Stationeries and office expenses	0.50	0.50	0.50	0.50	1.00	3.00	-do-
5	Medicine and equipment	0.30	0.60	1.60	5.00	2.50	10.00	CSS
6	Minor work and machineries	1.00	1.50	1.50	1.50	1.50	7.00	S/Plan
7	Rescue and treatment	0.20	0.30	0.50	1.00	1.00	3.00	CSS
8	Professional Services	0.50	0.50	0.50	0.50	0	2.00	S/Plan
9	Salary	19.00	19.00	19.00	19.00	19.00	95.00	-do-
10	Wages	1.90	1.90	1.90	1.90	1.90	9.5	-do-
11	TA	0.40	0.40	0.40	0.40	0.40	2.00	-do-
12	Security	1.20	1.20	1.20	1.20	1.20	6.00	-do-
	TOTAL RS.	30.70	33.10	33.9			182.50	

2nd Five Years

Year wise collection (in lakh)

Years	2015- 16	2016-17	2017-18	2018-19	2019-20
Collection	1.00	2.00	4.00	6.00	8.00

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SPA - Special Plan Assistant

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NLCPR – Non Lapsable Central Pool of Resource

S/Plan - State Plan

BRGF- Backward Region Grant Fund

CSS – Central Sponsored Scheme

Procedures and strategy to be adopted for achieving goal, defined in the Master Plan:

Considering the diversified nature of job carried out in the zoo, it is difficult to formulate specific strategy. However, to avoid haphazard developments of the zoo following procedures are to be adopted:

A. Duties and Responsibilities:**i). Director:**

The Director is the overall in-charge of the zoo. He/she is responsible for smooth functioning of the zoo, proper housing upkeep and health care of the animals, proper visitor management and ensuring their safety. He is also responsible for administration, interacting with media and any other important issues relating to Zoo. However, financial, establishment and administrative matters will be control by Divisional Forest Officer, East and West Garo Hill Wildlife Division. For discharge of these functions smoothly the responsibilities and duties are assigned to all the zoo personnel as per **guidelines issued by CZA**. The directions issued by the Director are binding on all zoo personnel.

ii). Veterinarian;

Upkeep, health care, feeding and management of zoo animal is the primary duty of the veterinarian. Frequent visits to animal enclosures and assessing general health condition of the animals and timely screening of animal for parasitic load. Preparation of disinfection schedules, prophylactic treatment schedules and ensuring the implementation of same. Taking steps for timely restraining and treatment of sick animals, maintenance of treatment record card and conducting post mortem. He is also responsible for tranquilization, crafting, shifting and transportation of zoo animals. He will control the feed store and maintain record and stock ledger with the help of store keeper. He will also ensure the quantity and quality of feed supplied to the zoo animals.

iii). Curator (Range Forest Officer):

Upkeep and maintenance of animal collection and animal housing, including timely cleaning and disinfection of animals enclosure, timely feeding of animals in the prescribed manner, keeping a close watch on general health conditions of the animals and taking steps for getting sick animal treated on priority basis including crafting, shifting of animals and transportation of animals within the zoo. He is also responsible for construction and maintenance of animal enclosure, building, roads and other infrastructure. He will also personally supervise the

progress of Orchiderium, lawn and garden. He is also responsible for enrichment of animal enclosure and preparation of brochures, booklets, CDs, signage etc.

iv) Biologist cum Education officer:

Biologist will takes care of recording of animal behavior, maintenance of daily reports, studbooks, organising awareness / educational programmes including running of the zoo information centre cum library.He/ she will also look after the work of Scientific Officer which include record keeping, maintenance of animal history card, preparation of animal inventory, Education, research on behavior and biology of animal, training, genetic management of animals by formulating breeding policy and animal exchange.

B. Formation of health advisory and expert committee shall be done from time to time as per requirement. Technical expert like engineer, radiologist, dentist, ophthalmologist etc. will be outsource- as and when required.

C. Health Care: It is the most important sector of zoo management. Besides treatment and vaccination, health care also includes proper upkeeping, feeding, sanitation of enclosure and keeper. Health care management is a daunting task for zoo veterinarian and managers. The task became more difficult due to the diversity of animal species and change in behavior and psychology of wild animals due to captive condition. This sector therefore should not be left alone to the veterinarian. All the officers and staff posted in the zoo should involve.

Following schedule / procedure must be strictly follows:

1. Daily Report of zoo animals.
2. Schedule for disinfestations as per CZA guidelines.
3. Schedule for testing of parasitic load.
4. Daily treatment record.
5. Vaccination Schedule.
6. Deworming Schedule.
7. Proper disposal of animal excreta and regular cleaning of enclosure.
8. Schedule for health checkup of animal keepers. etc.

D. Feeding: The feeding Schedule for all the species of animals under collection plan should be prepared after careful examination of animals, its habitat and availability feed materials in the local market. CZA Guideline will be followed while preparing the feeding schedule. The quality and quantity of food materials are to be daily checkedby veterinarian.

E. Funding and resource management: An effort will be made to mobilized and convince funding agencies as shown in the plan.

F. Record keeping: Record keeping is one of the important components of zoo management. Following records will be maintained:

1. Animal History
2. Animal Pedigree
3. Birth and death Record
4. Acquisition of animal and animal exchange Records.
5. Medical history of animals
6. Post Mortem record
7. Vaccination and treatment record
8. Annual budget and expenditure record
9. Records of Visitors
10. Revenue collection record
11. Records of disaster and epidemic
12. Weather and season variation records
- 13 Nutritional requirement records.
- 14 Breeding Record

G. Zoo rules and policy.

The Nehru Park cum Mini Zoo will strictly follow the 'Recognition of Zoo Rules 2009' under Section 63 of The Wild Life (Protection) Act, 1972. In addition the zoo rules and regulation provided by CZA from time to time following points are included for the zoo:

- a. **Weekly closures:** For better management of the zoo and to provide stress free environment to animals the zoo shall remain closed on every Tuesday.
- b. **Opening and closing time :** During summer season the opening and closing time of the zoo shall be 9 AM to 6 PM while during winter season it will be 9 AM to 6 PM.
- d. **Film Shooting;** film shooting inside the zoo shall be permitted provided such act do not cause disturbance to the animals and their welfare.
- e. **Morning/evening walk and cycling:** The zoo shall not allow morning/evening walk, and cycling by public.
- f. **Animal demonstration and handling:** The zoo shall not allow animal handling by VIP's or public and animal demonstration.
- g. **Animal feeding by zoo visitors** shall not be permitted.
- h. **Animal ride** shall not be practice inside the zoo.

- i. Zoo shall not allow its premises for holding party/function/marriage/mela etc. However it can be used for holding meeting/conference/workshops related to wildlife conservation.
- j. Smoking inside zoo premises shall not be permitted.
- k. Burning of crackers or any short of explosive materials and fire arms inside the zoo premises including staff colony shall not be permitted to avoid disturbances to animals.

PART - IV

Annexure - I

Existing animal collection

Common Name	Zoological Name	No. of animals
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(A) MAMMALS

1. Himalayan Black Bear	<i>Selenarctosthibetanus</i>	2:2:0
2. Leopard Cat	<i>Felisbengalensis</i>	1:1:0
3. Cat Jungle	<i>Pelischaus</i>	1:0:0
4. Rhesus macaque	<i>Macaca mulatta</i>	3:2:0
5. Pig tailed macaque	<i>Macaca</i>	1:1:0
6. Sambar	<i>Cervus unicolor</i>	1:0:0
7. Barking Deer	<i>Muntiacusmuntjac</i>	2:2:0

(B) AVES :

1. Oriental pied hornbill	<i>Anthracoceroscoronatus</i>	0:0:1
2. Crested Hawk Eagle	<i>Spizaetuscirrhatus</i>	0:0:2
3. Barn Owl	<i>Tyto alba</i>	0:0:1
4. Brown Hawk Owl	<i>Ninoxscutulata</i>	0:0:2
5. Brown fish owl	<i>ketupazeylonensis</i>	1:1:2
6. Cattle Egret	<i>Bubulcus ibis</i>	0:0:1

(C) REPTILES

1. Python	<i>Python molurus</i>	0:0:3
2. Indian Soft Shelled Turtle	<i>Lessimus Punctata</i>	0:0:2

Annexure-II

Free living floral and faunal species occurring in the zoo campus:

A. Flora:

1. *Toona ciliate*
2. *Gmelinaarborea*
3. *Meliaazadirach*
4. *Bauhinia verigata*
5. *Cassia fistula*
6. *Ailantusexelsa*
7. *Eucalyptus spp.*
8. *Careyaarborea*
9. *Sterculiavillosa*
10. *Zantokxylum*
11. *Plumariarubra*
12. *Ficusbengalensis*
13. *Ficusbenjamina*
14. *Callicarpaarborea*
15. *Alstoniascholaris*
16. *Hollarhaenaantidyseptrixa*
17. *Wrightiatomentosa*
18. *Embliaofficinalis*
19. *Delliniapentagyna*
20. *Graviamacrophylla*
21. *Ficushispida*
22. *Ficusglomerata*
23. *Busexaserata*
24. *Erythrinasuberosa*
25. *Arthocarpuschaplasa*
26. *oroxyllumindicum*
27. *Shorearobusta*
28. *Tectonagrandis*
29. *Dalbergiasissoo*
30. *Letseapolyanta*
31. *Terminaliabelarica*
32. *Albizziaorlorotisima*
33. *Xyloamalongifolia*
34. *Macarenga spp.*
35. *Albizziaprocera*
36. *Cassia nodusa*
37. *Delonixregia*
38. *Lagerstromiaparviflora*
39. *Schimawallichii*
40. *Mesuaeferra*
41. *Castanopsisindica*
42. *Bombaxceiba*
43. *Polyanthalongifolia*
44. *Pinuskhasia*
45. *Acasiaauriculaeformis*

46. *Grevilliarobusta*
47. *Michelliachampaca*
48. *Psidiumguajava*
49. *Moringaoleifera*
50. *Tamarindusindica*
51. *artocarpusintegrifolia*
52. *Mangiferaindica*
53. *Lecioletalucocephala*
54. *Salix babylonica*
55. *Salix alba*.

B. Faunal species

Birds:

1. Jungle fowl (*Gallus gallus*)
2. Grey Shrike (*Laniusexcubitor*)
3. Common Myna (*Acridotherestrictis*)
4. Tree Pie (*Dendrocittavagabunda*)
5. Hill Myna (*Graculareligiosa*)
6. Magpie (*Copsychussaularis*)
7. Tailor bird (*Orthotomussutorius*)
8. Babbler (*Turdoidesstriata*)
9. Blue Rock Thrush (*Monticolasolitarius*)
10. Tree Pipit (*Anthustrivialis*)
11. Flower pecker (*Dicaeumerythrorhynchos*)
12. House sparrow (*Passer domesticus*)
13. Red Munia (*Amandavaamandava*)
14. Spotted Munia (*Lonchurapunctulata*)
15. Bulbul (*Pycnonotuscafer*)
16. Common green pigeon (*treronphoenicoptera*)
17. Turtle Dove (*Spilopeliachinensis*)
18. Emerald Dove (*Chalcophapsindica*)
19. Spotted Owlet (*Athenebrama*)
20. Nightjar (*Caprimulgusasiaticus*)
21. Lineated Barbet (*Megalaima lineate*)
22. Blue Jay (*Coraciasbenghalensis*)
23. Hoopea (*Upupa spp.*)
24. CrowbilledDrongo (*Dicrurusannectans*)
25. Oriole (*Oriolus spp.*)
26. Woodpecker (*Melanerpes spp.*)
27. RackettailedDrongo (*Dicrurusperadiseus*)
28. Blue throated Drongo (*Megalaimaasiatica*)
29. Hill Partridge (*Arborophilatorqueola*)

Animals.

1. Squirrel
2. Flying squirrel
3. Barking deer
4. Snakes/water snakes

Amphibian:

Megophrys major
M. Parva
Uperodenglobulosus
Amolopsformorus
Euphlyctis cyanophlyctis
Fejervaryanepalensis
Hoplobatrachus crassus
H tigerinus
Phrynoglossus borealis
Ranatyleri
Polypedates megacephalus
P terainensis
Rhacophorus maximus
Philatus shyamrupus

Annexure -III(A)

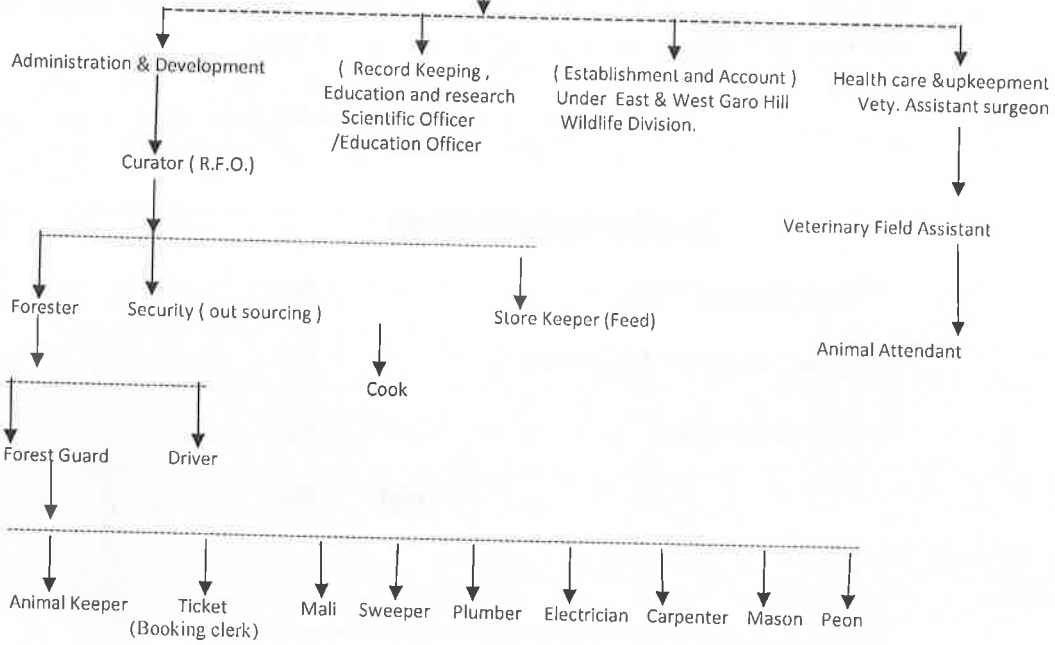
Sanctioned, proposed and present staffing pattern and position:

Sl.No.	Name of the post	Post Sanctioned	Post to be filled up	Proposed
1	Director	1	0	1
2	Curator	1	0	1
3	Veterinary Officer	1	0	1
4	Biologist/education	0	0	1
5	Forester	1	0	2
6	Forest guard	2	0	3
7	Animal keeper	10	0	10
8	Vety field assistant	0	0	1
9	Animal attendant	2	0	2
10	Welder	0	0	1
11	Carpenter	0	0	1
12	Masonry	0	0	1
13	Plumber	0	0	1
14	Mali	0	0	3
15	Driver	2	0	2
16	Generator set operator	0	0	1
17	Store keeper	1	0	1
18	Cook	0	0	2
19	Peon	2	0	2
20	Electrician	0	0	1
21	Sweeper	0	0	2
22	Security			
	Total	23	0	40

Annexure – III (B)
PROPOSED STAFF PATTERN :

Divisional Forest Officer
East & West Garo Hills Wildlife Division

Director (Assistant Conservator of Forest)



Annexure - IV**List of Building other than animal enclosure;**Residential Building

- | | | | |
|----|-------------------------|-------------------|---------------|
| 1) | SP Type Hostel Building | -- -- -- -- -- -- | 1 Nos. |
| 2) | SP Type II Building | -- -- -- -- -- -- | <u>5 Nos.</u> |
| | Total | | 6 Nos. |

Non-Residential Building

- | | | | |
|----|-------------------------------|-------------------|--------------|
| 1) | SP Type Range Office | -- -- -- -- -- -- | 1 No. |
| 2) | SP Type Veterinary Dispensary | -- | 1 No. |
| 3) | Interpretation centre | -- -- -- -- -- -- | <u>1 No.</u> |
| | Total | | 3 Nos. |
-