

**MASTER PLAN**  
**FOR**  
**SEPAHIJALA ZOOLOGICAL PARK**  
**TRIPURA**

O/o Central Zoo Authority

Diary No..... 39.....

Date..... 02/9/2012

**FOR THE PERIOD**  
**2012-2013 TO 2021-2022**

**DEPARTMENT OF FORESTS**  
**GOVERNMENT OF TRIPURA.**

Central Zoo Authority  
(Ministry of Environment & Forests)

CHECK-LIST FOR MASTER PLAN SUBMISSION

S. No.		Yes	No
1	Cover page indicating the Name of the Zoo, Operator of the Zoo, Duration of the Master Plan, Year of submission etc.	Yes	
2	The duration of the master plan should be 20/10 years with the provision of revision after 10 years.	Yes	
3	Certificate stating the Master Plan has been prepared by the following (name of the person, designation) and should contain their signature. Space should be left for the Member Secretary, Central Zoo Authority for counter signature	Yes	
4	List of contents (with page no.) 1 to 119 & Annexure -39	Yes	
5	Acknowledgement	Yes	
6.	Preface by an competent authority	Yes	
7	Forward by an competent authority etc.	Yes	
8	PART-I Chapter-I Introduction a. History of the Zoo b. Vision of the Zoo c. Mission of the Zoo d. Strategy of the Zoo e. Objectives f. Physical features like the topography of the area g. Geology h. Rock & Soil i. Flora & Fauna in Zoo premises j. Climate k. Rainfall l. Season m. Approach n. Demography of the surrounding area o. Legal Status of the Land p. Sources of Pollution, if any ( for an existing Zoo, the introduction section may also include, the present ground situation, layout, description of different facilities, difficulties faced in the management in the past and achievements)	Yes	
9	Chapter -2  Appraisal of the present arrangement and constraints a. Animal section, veterinary section, store and feed supply section, sanitation section, maintenance section, security section, water supply section, disposal of solid waste & liquid waste-sewerage, visitors	Yes	



	<p>h. Separate map showing sewerage line\</p> <p>i. The layout plan should also include details on, approach road to the zoo and various categories of roads &amp; paths, adjoining areas, parking arrangement, gates and barriers, administrative buildings – [zoo office, ticket counter, veterinary hospital], housing colony, industries in the surrounding areas, rail, roads- sources of pollution (if any)]</p> <p>j. The layout plan should be drawn following the given colour code :</p> <p>I. Existing animal enclosures (black colour)</p> <p>II. Enclosures to be modified (green colour)</p> <p>III. Enclosures that need to be redone afterdemolishing the old structure (red colour) and</p> <p>IV. Proposed new enclosures (blue colour).</p> <p>iii) Proposal to address the inadequacies and shortcoming identified in the appraisal report (as appraised in Part-1, 2 a). New activities if any, intended to be taken up.</p> <p>iv) Depending on the local condition of the zoo , other items may also be added – peculiar problems of the zoo-like off display conservation breeding centre and rescue centre</p> <p>Items not relevant can be deleted.</p>	Yes													
12.	<p>Chapter-V</p> <p>Personnel planning:- (Proposed cadre strength to manage different works considering the activities indicated in the plan including phasing of their deployment, outsourcing etc.) Comparative statement with existing staff, sanctioned and proposed staff, (as per Recognition of Zoo Rules, 2009)</p> <table border="1"> <thead> <tr> <th>Name of Post</th> <th>Post sanctioned</th> <th>Post filled up</th> <th>Proposed</th> </tr> <tr> <th>(1)</th> <th>(2)</th> <th>(3)</th> <th>(4)</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Name of Post	Post sanctioned	Post filled up	Proposed	(1)	(2)	(3)	(4)					Yes	
Name of Post	Post sanctioned	Post filled up	Proposed												
(1)	(2)	(3)	(4)												
13	<p>Chapter-VI</p> <p>Disaster management Plan to address problems faced during the natural calamities (Fire control, flood, cyclone situations, law and order break down, feed supply etc.)</p>	Yes													

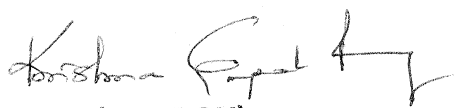


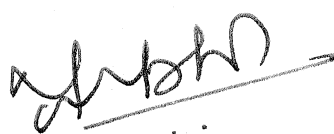
19	<p>Part-IV Annexure to the Master Plan</p> <p>a. Layout plan depicting the present setup (animal enclosures {including area provided in square meters}, mark viewing area for exhibits, location of feeding &amp; retiring cells, administrative building, visitor amenities, visitors pathway, service pathway, parking, feed store, hospital, post mortem house, carcass disposal area, etc.)</p> <p>b. Separate layout map indicating distribution of electricity line</p> <p>c. Separate layout map indicating the storm water</p> <p>d. Older maps, if available to indicate stages of development.</p> <p>e. Existing animal collection plan / inventory (Male: Female)</p> <p>f. Free living species occurring in the zoo campus</p> <p>g. Flora and fauna</p> <p>h. Sanctioned, proposed &amp; present staffing pattern and position</p> <p>i. List of buildings other than animal enclosures</p> <p>j. Notifications – creation of zoo society, acquisition of land etc., constitution of committees, legal status of land etc.</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	
20	<p>Others:</p> <p>1. At least 30% of the area earmarked for the zoo shall be kept under green belt and natural vegetation and the area for animal housing shall not exceed 30% area of the zoo (as per Recognition of Zoo Rules, Rule 10-3(4))</p> <p>2. Mobilizing financial resources for the implementation of master plan shall be the responsibility of the respective zoo operator.</p> <p>3. Detailed design of proposed animal enclosures may not be submitted with Master Plan document. The same to be submitted once Master (layout) plan is approved and on case to case basis at the time of execution.</p> <p>4. The final Master Plan for the long-term development of the zoo should be submitted to the Central Zoo Authority through and obtaining the concurrence of the Chief Wildlife Warden of the State / Municipal</p>		

	<p>Commissioner / Zoo Controller along with the counter signature of the Chief Wildlife Warden / Municipal Commissioner / Zoo Controller and Zoo Director.</p> <p>5. The digitized layout plan preferably be prepared using the software's AUTOCAD.</p> <p>6. Soft copy of the layout plan should also be submitted to CZA in PDF or JPEG format. The soft copy of the text portion of the master plan in MS-Word format should also be submitted.</p>	<p>Yes</p> <p>Yes</p>	
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## CERTIFICATE

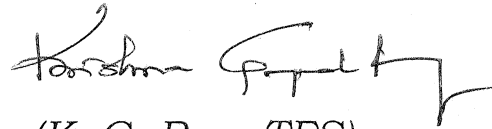
CERTIFIED THAT MASTER PLAN OF SEPAHIJALA  
ZOOLOGICAL PARK HAS BEEN PREPARED BY SRI AJIT KR.  
BHOWMIK, THE THEN DIRECTOR, SEPAHIJALA  
ZOOLOGICAL PARK AND REVISED BY SRI K.G.ROY,  
DIRECTOR, SEPAHIJALA ZOOLOGICAL PARK IN  
CONSULTATION WITH DR. A.K.GUPTA, PRINCIPAL CHIEF  
CONSERVATOR OF FORESTS & CHIEF WILDLIFE WARDEN,  
TRIPURA

  
(K.G.ROY)  
Director  
Sepahijala Zoological Park

  
(Dr.A.K.Gupta)  
PCCF & Chief Wildlife Warden  
Agartala, Tripura

## CERTIFICATE

In pursuance to letter No.F.19-23/93-CZA (256) (Vol. VI)(M)/1876 dt. 18-12-2012 of Member Secretary, Central Zoo Authority, **this is to certify “that the matter of mobilizing financial resources has been brought to the knowledge of Government for perusal”**



(K. G. Roy, TFS)

Director, Sepahijala Zoological Park  
Sepahijala

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- List of buildings other than enclosures
- Land Schedule of Sepahijala Zoo.

**ACKNOWLEDGEMENT**

I do hereby acknowledge the contribution made the committee constituted by the State Govt. vide Notification No.F.8 (127)/For-WI-2004/Vol-V/4429-40 dated 19-8-08 for formulating the Master Plan of Sepahijala Zoological Park. I also acknowledge the valuable contribution made by A B Consultant for preparation of digital lay out Plan. I also acknowledge valuable suggestions made by Sri S. K. Patnaik, PCCF, Orissa (Rtd.) & Sri R. S Bhaduria , PCCF, UP (Rtd) for improvement of Master Plan of Sepahijala Zoological Park. I do also acknowledge the valuable suggestion & guidance made by the Chief Wildlife Warden, Tripura for framing the Master Plan of Sepahijala Zoological Park. I also acknowledge the contribution made all others whose name has not been mentioned above but actually contributed in any stage of its preparation.

(A. K. Bhowmik)  
Director  
Sepahijala Zoological Park.

# EXECUTIVE SUMMARY OF MASTER PLAN OF SEPAHIJALA ZOOLOGICAL PARK.

Sepahijala Zoological Park is one of the 25 Medium Zoos recognized by the Central Zoo Authority, Govt. of India. It is known as a prime ex-situ institution for conservation of rare and endemic species of the North East India. It was established in the year 1972 in the shape of a mini deer park. It is owned and managed by the Forest Department, Govt. of Tripura. The zoo is situated in West Tripura District about 30 Km from Agartala and happens to be the only zoo in Tripura. The area presently under the control of Zoo is 68 Hactares.

No Master Plan was prepared for the zoo and it was extended and developed slowly over the years on the basis of the needs felt from time to time. A new approach has however evolved in the country in the recent past in the management of the zoos on scientific and conservation oriented lines and the need is felt that we should also manage our zoo at Sepahijala in accordance with these modern principles of zoo management. Moreover, the Central Zoo Authority, Govt. of India has also laid down a condition towards recognition of Sepahijala Zoo that we must prepare a long term Master Plan for development of Sepahijala Zoo and to be approved by the Central Zoo Authority within March 2009. Hence this proposal.

The instant Master Plan is the first of its kind prepared for Sepahijala Zoological Park. The Master Plan consists of mainly two parts viz. Part I & Part II. In Part -I, there are three chapters and in Chapter -I mainly (1) name and location, approach, constitution

& extent, history & development, statement & significant has been elaborated. And in Chapter –II mainly available resources of Sepahijala zoo has been described. Chapter III deals with appraisal of present arrangement and constraints. Here Director's personal section, Administrative section, Animal section, Vety. Section, Commissary section, Sanitation section, Garden section, Polythene free & Non smoking zone, Education section, Research Section, Estate Section, Water supply section, Power supply section, Roads/foot path/Trails network, Administrative building & Vety. Section, Staff accommodation, Mobility, Wildlife laws, Regulation & Policies, Visitor amenities, Identification of animals, Disposal of dead animals and waste have been elaborated. In Part I of the management Plan, it has been elaborated regarding the present status of animals, enclosures, visitors amenities, research activities healthcare etc and the constraints have also been described.

The Director Sepahijala Zoo so long was under the control of Wildlife Warden, Sepahijala and Vet. doctor and Curator in/c all other staff of the zoo were not answerable to the Director, Zoo for any of their duties and Director, Zoo found it difficult to manage the zoo as in long run it is the Director Zoo who requires administrative control over the staff of the Zoo to run it smoothly.

There was frequent problem of power supply which badly affected the water supply and preservation of life saving drugs of the animals.

There was as such no research & education section so long in the zoo which are important component of scientific zoo management. Control of unwanted birth of zoo animals are also a serious problem and needs future planning.

The Part-II of the management plan deals the proposed management. Role of zoos , preparation of Management Plan, Plan, Objectives, Theme, Mission statement, vision, objectives etc. are discussed in the beginning of the proposed management plan.

The future plan has been discussed in detail. The Director, Zoo has been declared as the Head of Office and DDO with a separate establishment with supportive ministerial staff. Modern hospital would be taken up with proper diagnostic facility. Infrastructure both for field and official staff have been described with justification.

Collection plan of animals to be housed at Sepahijala Zoo in future has been finalized in consultation with the Member Secretary, CZA on 1-12-07 during his visit to Sepahijala Zoo. Provision for construction of enclosures for all the animals to be housed in future has been kept in the Plan. Enrichment of enclosures with fulfilling the behavioral needs of the animals would be taken care of in due course.

Lay out plan has been finalized in consultation with the expert of CZA Sri S. K. Patnaik, Addl. PCCF (Orissa) Rtd. who visited our zoo at our request. Visitor circulation Plan has been provided interconnecting main road & loop & sub loop roads. Further, the another expert team on zoo design led by Mr. R. S Bhadauria, PCCF(Rtd.) of UP visited Sepahijala Zoo on 16-6-11 and suggestion of the expert team has also been incorporated.

Research proposals have been made with the 100% funding from CZA where such study have also been started. Education Plan of disseminating conservation messages to the visitors and the youths have been proposed in detail.

Sepahijala Zoo has been identified as National Coordinator Zoo for taking up Conservation Breeding Programme for Clouded Leopard, Spectacled langur, Pig tailed macaque and Binturong. Four Conservation Breeding projects for the above species were

submitted to CZA and CZA has approved for release of fund towards construction of enclosures. Fund for constructions of enclosures (partly) been released by CZA during the year 2008-09. Balance fund towards construction would require during the year 2009-2010. But part fund released during the year 2011-12 soon after visit of expert team of CZA on 27-1-11 led by Mr. R. S Tyagi of WII. Towards maintenance and running the Conservation Breeding Projects (four nos) fund provision has been made in the Plan as per the projects already submitted to CZA. These are five years Projects where costs towards running the Conservation Breeding Works are component of the total fund proposed. Copy of four projects has also been attached as appendix in this Master Plan.

Posting of field and other staff would be required as per requirement shown in the Master Plan. As proposed in the Plan, the dedicated staff would require at least for running the Conservation Breeding Programme. Officer specially trained on Breeding & conservation of endangered species would be required to have over all monitoring for Conservation Breeding Projects.

Capacity building and development of skill for the entire staff & workers have been shown in the Plan. This Plan would require to be implemented for up gradation of skill of existing and newly posted staff, workers and officials.

Provision has been kept for installation of wood based incinerator for disposal of solid wastes.

To ensure uninterrupted power supply, laying of underground electric line cable up to Sepahijala Wildlife Sanctuary.

Proposal have been made to set up a rescue centre in one corner of the new plan to accommodate the animals frequently brought to Sepahijala Zoo from other part of the State.

Elaborate disaster management Plan have been made to take care of possible disasters the zoo may encounter in future and strategies have been sorted out to overcome the same comfortably.

Contingency plan for the zoo have also been finalized for meeting up any sort on emergency needs or disorder in the normal system.

Adoption of animals of zoo has also been encouraged to built up animal lovers as decided by the Govt.

Central Zoo Authority, Govt. of India gives 100% financial assistance for some developmental works related to animal housing and animal health care and 50% share on other infrastructural development works. Department of Forests, Govt. of Tripura also give some funds from state plan for different developmental activities like staff housing etc., in addition to 50% share of the infrastructural work (50% share CZA).

Budget and schedule of operation have been detailed year wise for ten years period wef 2011-12 to 2020-2021. For each and every items of works source of fund flow have been identified. In all, 3262.28 lakhs lakh are the involvement.

Review would be done to assess the implementation of targeted works in the prescribed time schedule.

# Master Plan of Sepahijala Zoological Park

## Part-I

### Chapter-I

### INTRODUCTION

#### a. History of the Zoo

The story goes that there was a camp of “sepoy” of the then Maharaja of Tripura on the side of marshy area locally called “jala” near existing Forest Training School, Sepahijala. Thereafter, the name of this place was coined as Sepahijala. Earlier, this area was highly rich in wild flora and fauna. With the rapid expansion of population, the pressure on the forest of Sepahijala has been increased resulting gradual diminishing of forest cover. In order to protect this hot spot of biodiversity, an idea of setting up of Bio-complex was mooted and therefore Sepahijala Bio-complex came into existence in the year 1972 with setting up of a Botanical garden and a small Deer Park. The Deer Park was gradually elevated to the status of Zoo.

#### b. Vision of the Zoo:

There has been worldwide cry for conservation and protection of Bio-diversity for the very existence of mankind as with the increasing pressure of population, Bio-diversity has been getting depleted day by day. The significant factor is the diminishing of wild animals with great rapidity. The habitat being shrunk rapidly their conservation has become arduous which warns to have conservation in captivity. Sepahijala Zoo is one of

such effort where in more than 50 species of wild animals have been kept for conservation and protection.

**c. Mission of the Zoo**

To conserve and breed endangered & rare fauna, particularly the primates of Tripura , Clouded Leopard, Binturong for subsequently restoring the biological attributes and diversity of wildlife in the forests of Tripura in particular and India in general.

Ø To generate database about the behavior, breeding, population dynamics and veterinary care of the animals kept in the zoo for helping the conservation of these animals in the long run.

Ø To educate people about the faunal richness of the state & the country, for their support for conservation of biodiversity in the state and the country.

Ø To develop Eco-tourism potential for the people of the state.

- Wildlife education and interpretation for the purpose of communicating conservation values to the visiting public for better understanding and appreciation of wildlife and its role in the ecosystem.
- Captive breeding for the purpose of display and exchange with other zoos and rehabilitation of endangered and threatened species.
- Scientific study and Research on animal behavior, nutrition, reproduction disease etc.
- Recreation for the purpose of providing wholesome, healthy and educational activity to a large number of people by utilizing the natural setting without detriment to any of the preceding objectives.

#### **d. Strategy of the Zoo**

The strategy of Sepahijala Zoo is to conserve the endemic fauna of North East India by captive Breeding and providing naturalistic enclosure fulfilling the requirement of animals on scientific line. Also to display few exotic animal to cater the demand of the visitors. This attempt is a support to in-situ conservation.

#### **e. Objectives**

The Zoo in the initial stage started to provide recreation to the people of the state and accordingly it started its journey in the shape of mini deer park in the year 1972 and gradually the objective kept on changing as per the National Zoo Rule and also as per guideline of Central Zoo Authority and now the main objective of the Zoo is (1) Conservation (2) Education (3) Research & Recreation.

#### **f. Physical feature like topography of the area**

**Physical** The Sepahijala Zoo is situated in the Sepahijala District under Bishalgarh Sub-Division. It is situated within 23°37' to 23°42' North latitude and 91°17' to 91°21' East Longitude

The area is undulating with small hillocks; locally called tilla interspersed and along valleys called lungas. The altitude of the area is 49.8 m above mean sea level.

#### **g. Geology**

No survey information is available from the geological survey of India. However, the facts available from the Working Plan of the Forest Department of Tripura and a report from the Department of Science , Technology & Environment , Government of Tripura (State of Environment in Tripura, 1989) gives the following information. Here we are dealing with Tripura in general with reference being made to the Zoological Park and the nearby areas under Sepahijala zoological park whenever it is found necessary..

#### **h. Rock & soil**

Rock is semi consolidated sediment mostly and the soil is mostly sandy loam with red loam.

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

The park is composed of natural vegetation originally existed through out the area on which Sepahijala Wildlife Sanctuary has been declared.

The composition of the crop is mostly moist deciduous type with semi evergreen vegetations in the lungas. Top canopy trees consists of *Albizzia procera*, *Albizzia stipulata*, *Artocarpus chaplasi*, *Bursera serrata*, *Careya arborea*, *Garuga pinnata*, *Gmelina arborea*, *Schima wallichii*, *Shorea robusta*, *Sterculia villosa*, *Syzygium cminii*, *Terminalia bellirica*, *Vitex pendencularis*, *Sterospermim spp.*, and *Michellia species*. The middle storey is composed of *Careya arborea*, *Dillenia pentagyna*, *Lagerstroma parviflora*, *Mallotus philipensis*, *Premna begalensis*, *Shorea robusta*, *Bridelia spp.*, *Michellia spp.* and *Wrightia species*.

The undergrowth consists of *Coffea begalensis*, *Clerodendron infortunatum*, *Eupatorium audoratum*, *Flamingo chappar* and *Imperata spp.* Undergrowth vegetation is usually sparse around the flat areas and gentle slopes but thicker in most other areas. Climbers such as *Acacia pinnata*, *Bahinia velai*, *Butea parviflora*, *Dalbergia stipulata*, *Mikania scandens* and *Pachycarpa* are found in this forest. The canopy within mixed forest is very much broken. Detailed list of flora available in the zoo premises has been shown in the Annexure.

Since the Zoo is situated within the Sepahijala Sanctuary and the peripheral concrete boundary is not considered by CZA, hence all the species available in the sanctuary have access in the zoo area comprising of 68.0 Ha. The species are Rhesus macaque, Pig Tailed macaque, Slow Loris, Spectacled Langur, Capped langur, Leopard cat, Wild cat, Clouded Leopard, Common Palm Civet, Himalayan Palm Civet, Large Indian Civet, Small Indian Civet, Wild boar, Indian Porcupine, Crab eating

mongoose, Barking deer, Pangolin, flying squirrel and among reptile are python, king cobra, monitor lizard and in addition 124 species of birds are found within this sanctuary which are also seen in the zoo premises some of them are Red jungle fowl, hill myna, Pied hornbill, Crested serpent eagle, Brahmini Kite, King fisher, white ibis Kalij pheasant, great egret, etc. Detailed list of fauna in the free ranging state in the Zoo is annexed.

**j. Climate:-**

The climate is very interesting that is not too hot and not too cold as the temperature mentioned below will reveal the fact.

**Temperature**

Summer- April	Max, 35.5°C
	Min 25.2°C
Winter- Jan	Max- 26.8°C
	Min 10.8°C

**k. Rainfall:**

234 cm of rainfall on an average each year with rainy days more or less 96 days well distributed from June to October.

**Humidity** Humidity is generally and ranges between 70% to 80%.

**Wind** The wind more or less remains Northerly from November to February and becomes Southerly with the onset of monsoon. In general the force of wind is quite severe during February to October and comes down gradually until it becomes steady during winter.

**Water**

A water pump is functioning out of two existed in the Past.

However the remaining one would be made ready to cater day to need of water supply in the zoo as well as in the complex;

**l. Season**

There are normally six seasons of which Winter, Summer, Rainy season and Autumn are the main seasons.

**m. Approach**

The zoo is situated within Sepahijala Wildlife Sanctuary in West Tripura District and about 30 km. away from Agartala, the state capital. It is surrounded by lush green forests on three sides and by road on the Northern Side. The zoo is situated at a distance of 4 Km from Agartala Udaipur road (National High way) at gate No-1 where the visitors get down from the public transport. They have to move on foot to visit the zoo in case they do not have their own means of transportation, which is troublesome for children of less age and old people too. Zoo authority does not provide any transportation facility to the visitors at present.

**n. Demography of the surrounding area**

The area being located within the sanctuary of 18.53 Sqkm and surrounded by natural cover and have a very good ecological importance and suitable for housing the animals in the natural environment.

The State is located in the Bio-geographic zone of 9B-North-East Hills and possesses an extremely rich bio-diversity, which is getting increasingly threatened. Situated in the Indian sub-region of Oriental Zoo-geographic

region, local flora and fauna bear a very close affinity and resemblance with floral and faunal components of Indo-Malayan and Indo-Chinese sub-regions.

**o. Legal status of the land**

Sepahijala Zoo was initially situated within Charilam Reserve Forest, which has been declared in the year 1987 as Sepahijala Wildlife Sanctuary. Thus the entire area of 68 ha falls within Sepahijala Wildlife Sanctuary.

**p. Source of pollution if any**

There is no source of pollution as such as the Zoo is situated inside the natural surrounding.

## **CHAPTER-2**

### **Appraisal of the present arrangement & Constraints**

**a. Animal section**

As such there is no separate wing as animal section. However, The curator Zoo is overall head of the zoo affairs who is assisted by three forester, four forest guards and 76 nos workers working with animal cleaning and feeding etc. for day to day zoo activities and there are Carnivores section, Primate section, Aviary section, Reptile section, Ungulate section. One forester have been trained in zoo keeping and management at Vandalour, and one guard have been trained from Guwahati Zoo. There are 59 nos enclosures 44 nos are cages of these 15 nos are open air enclosures assigned mainly to tiger, lion, Rhino, Primate, Himalayan Black bear, Clouded leopard and Sambar.

### **Veterinary section**

The present veterinary hospital has a dispensary, nursery for hand rearing. Some more essential facilities like pathological laboratory, X-ray unit, Operation theatre needs to be provided to make the veterinary section responsive to all the immediate need of the animal health care.

Two new quarantine wards have been created with suitable restraining facilities for examination and treatment of animals along with Post mortem room, Quarantine ward, sick animal bay.

At present dead bodies are buried in the burial ground and for endangered species, the carcasses being burnt with fuel and firewood. This does not appear to be the proper arrangement and there is a need for proper incineration system. A suitable incinerator should be constructed at the site of the burial ground in order to avoid contamination. Solid wastes from the animal enclosures including the left out bones are also to be incinerated on daily basis. The creation of incinerator is more important in the present prevailing humid condition of Sepahijala and the state of Tripura for which fund has already been received from CZA.

A pathological laboratory in the zoo has to be taken up for testing routine examination. Two personals have already been trained from State Disease Investigation Laboratory Agartala in this regards.

The Health Advisory Committee of Sepahijala Zoo constituted involving experienced veterinarians of ARDD need to meet at least once in every six months.

At present Zoo have one Veterinarian, one veterinary assistant and two helpers which are not sufficient for this zoo being a large zoo and one more Jr. Veterinarian along with at least one Veterinary Assistant is essential. One pathologist is required to be posted for carrying out laboratory works in the Zoo.

The veterinary section shall have a small reference library with publications containing papers on treatment of different diseases in wild animals and books on the subject.

#### **Store & feed supply section**

One food committee have been constituted for receiving the food items supplied by the contractor which is headed by Veterinary Assistant Surgeon and assisted by one forester, one Forest Guard, two workers and a veterinary assistant of the zoo. Curator is the Member secretary of the committee.

Every year tenders are floated by the Conservator of Forests, Southern Circle for daily supply of animal feed. The materials are received on proper challan on daily basis. The food committee deserves the right to reject any inferior quality material

#### **Maintenance section**

The section is responsible for the maintenance of infrastructure in the zoological park and it's round the clock security. At least ten workers have been engaged in two shifts for night watching the zoo premises. There are also six armed personals who keep watch of security point for the visitors in the day and also at night. These are to be substituted with professional security staff from out sourcing.

#### **Security section:-**

There are no separate security engaged during the day time but the staff and the permanent labourers working during the day takes care of the said purposes and during the night twelve permanent labourers are engaged in two shift to guard the animal enclosures. A separate security Plan is required to be finalized as per guideline of CZA.

**Water supply section**

Presently the only source of water supply in the Zoo is from a submersible pump. One pump operator assisted by an assistant is working on regular basis for the purpose. One more water pump has to be installed.

**Disposal of solid wastage & liquid waste sewerage**

The Zoo disposes the dead carcasses after conducting proper post mortem in the burial ground and there is proposal to dispose the carcasses through incineration. And the work will be taken up soon. Also all solid wastes including feed left over by the animals are buried and the liquid wastes are drained out of the enclosures and deposited in huge pits and reclaimed properly.

**Visitor amenities**

The ticket counter is located on the main entrance Visitors amenities provided such as resting sheds, drinking water points , toilets, kiosks in and around the zoo. More facilities are required to be developed.

**Lawn & garden landscape section**

The Park is located in a natural environment within the Sanctuary. The vegetation has been intact at most of the places and this has reduced the requirement of more of artificial gardens or lawns. However, some formal gardens have to be developed to provide attraction in some vacant spaces. And hedge lines with ornamental species are to be planted along foot paths inside the Zoo.

**Any other section peculiar to zoo**

**Sanitation section:** There is no such separate section as such and for sweeping and cleaning the entire roads inside zoo and the Zoo premises, 10 workers are regularly working and in case of special necessity additional workers are also engaged for cleaning the Zoo complex.

**Polythene free and non smoking zone:** Sign boards have been displayed in places inside zoo declaring the entire zoo area is polythene free zone and the staffs have been alerted to keep strict vigil over the visitors for not violating the order. Dustbins have been placed at various conspicuous walking trails. We have also fixed sign boards declaring the Zoo area as non smoking zone. The visitors are not allowed to enter inside the Zoo with Polythene materials.

**b. Animal collection Plan (existing) & proposed animal collection plan**

**Animal collection plan existing as on 31-3-13 along with proposed animal collection plan**

Sl. No	Animal collection plan existing as on 31-03-2013	Total nos in stock as on 31-03-2013`		Animal collection plan (proposed)	No of animal as per carrying capacity	Surplus / defecate i.e S & D
	1	2		3	4	5
	<b>Birds.</b>					
1	Himalayan griffon (Gyps	1	0.0.1			

	<i>himalayensis</i> )					
2	Hornbill Indian Pied ( <i>Anthracoceros malabaricus</i> )	2	1.1.0	Hornbill Indian Pied <i>Anthracoceros coronatus</i>	<u>4 Nos</u>	2 D
3				Stork White Neck <i>Ciconia episcopus</i>	2 Nos	2 D
4				Bittern <i>Botaurus stellaris</i>	<u>4 Nos</u>	4 D
5				Eagle Crested Serpent <i>Spilornis cheela</i>	<u>4 Nos</u>	4 D
6				**Peacock Pheasant <i>Polyplectorn bicalcaratum</i>	2 Nos	2 D
7				**Burmese Peacock <i>Pavo muticus</i>	2 Nos	2 D
8				**White peacock	2 Nos	2 D
9	Pea fowl ( <i>Pavo cristatus</i> )	4	2.2.0	Common Peacock <b>Pavo cristatus</b>	<u>4 Nos</u>	
10	Vulture ( <i>Gyps bengalensis</i> )	3	3.0.0	Vulture <i>Gyps bengalensis</i>	4 Nos	1 D
11	White stork ( <i>Ciconia ciconia</i> )	0	0.0.0	Stork White <i>Ciconia ciconia.</i>	2 Nos	2 D
12	Black breasted Pheasant Kalij ( <i>Lophura leucomelanos</i> )	1	0.1.0	Kalij Pheasant <i>Laphura leucomelanos</i>	4 Nos	3 D
	<b>Mammals</b>					
13	Fishing Cat <i>Felis viverina</i>	4	1.1.2	*Fishing Cat <i>Felis viverina</i>	2 No	2 S
14				**Golden Cat <i>Felis temmincki</i>	2 No	2 D
15	Black Bear Himalayan ( <i>Solonarctos thebetaneus</i> )	13	5.7.1	Himalayan Black Bear <i>Selenarctos thibetenous</i>	6 Nos (2:4)	7 S
16	Binturong ( <i>Arctitis binturong</i> )	5	3.2.0	Binturong <i>Arctitis binturong</i>	<u>15 Nos</u> <u>(5:10)</u>	10 D
17				* Zebra	2 Nos	2 D
18				* Giraffe	2 Nos	2 D
19	Cat Jungle ( <i>Felis chaus</i> )	1	1.0.0	Wild Cat ( <i>Felis Chaus</i> )	<u>6 No</u>	5 D
20	Cat leopard	7	1.6.0	Leopard Cat ( <i>Felis</i>	10 No	3 D

	( <i>Felis bengalensis</i> )			<i>bengalensis</i> )		
21				*Marble Cat <i>Felis marmorata</i>	2 No	2 D
22	Civet Common Palm ( <i>Paradoxurus hermaphroditus</i> )	4	3.1.0	Common Palm Civet <i>Paradoxurus hermaphroditus</i>	4 No	
23	Civet Himalayan Palm ( <i>Panguma larvata</i> )	0	0.0.0	Himalayan Palm Civet <i>Paguma larvata</i>	4 No	4 D
24	Civet Indian Large ( <i>Viverra zibetha</i> )	0	0.0.0	Large Indian Civet <i>Viverra zibetha</i>	6 Nos (2:4)	6 D
25	Civet Indian Small ( <i>Viverricula indica</i> )	0	0.0.0	Small Indian Civet <i>Viverricula indica</i>	4 No	4 D
26	Elephant Indian ( <i>Elephas maximus</i> )	3	2.1.0	Indian Elephant <i>Elephas maximus</i>	2 No	1 S
27	Hoolock gibbon ( <i>Binopithecus hollock hollock</i> )	4	2.2.0	Hoolock Bonopithecus hoolock	<u>5 Nos</u>	1 D
28				**Golden Langur <i>Trachipethecus geei</i>	6 Nos	6 D
29	Langur Capped ( <i>Trachypithecus pileatus durga</i> )	2	1.1.0	Capped langur <i>Trachipethecus pileatus</i>	6 Nos	4 D
30	Langur Spectacled ( <i>Trachypithecus obscurus phayrei</i> )	17	2.8.7	Spectacled Langur <i>Trachipethecus obscurus phayrei</i>	<u>16 Nos</u> <u>(6:10)</u>	1 S
31	Leopard or Panther ( <i>Panthera Pardus</i> )	5	2.3.0	Leopard ( <i>Panthera Pardus</i> )	5 (2:3)	
32	Leopard Clouded ( <i>Neofelis Nebulosa</i> )	13	9.4.0	Clouded Leopard ( <i>Neofelis nebulosa</i> )	15 Nos (5:10)	2 D
33	Macaque Pig Tailed ( <i>Macaca nemestrina</i> )	21	8.8.5	Pig Tailed Macaque <i>Macaca leonina</i>	16 Nos (6:10)	5 S
34	Slow Loris <i>Nycticebus coucang</i>	2	2.0.0	Slow Loris <i>Nycticebus coucang</i>	10 Nos	8 D
35	Macaque Rhesus ( <i>Macaca mulut</i> )	6	3.3.0	Rhesus Macaque <i>Macaca mulatta</i>	6 Nos	
36	Himalayan Yellow Throated Martin ( <i>Martes flabigula</i> )	1	1.0.0	Yellow throated marten <i>Martes Flavigula</i>	2 No	1 D

37	Rhinoceros Indian One Horned ( <i>Rhinoceros unicornis</i> )	1	1.0.0	Indian one horned Rhino <i>Rhinoceros unicornis</i>	4 Nos (2:2)	3 D
38				**Malayan Giant Squirrel <i>Ratufa bicolor</i>	6 Nos	6 D
39				** Indian Giant Squirrel <i>Ratufa indica</i>	6 Nos	6 D
40				Pangolin <i>Manis crasicaudata</i>	6 Nos	6 D
41				Mithun Bos Frontalis		
42				**Mongoose Crab eating <i>Herpestes urva</i>	2 No	2 D
43				Wild dog ( <i>Cuon alpinus</i> )	2 No	2 D
44				Indian Bison or Gaur <i>Bos gaurus</i>	7 Nos (2:5)	7 D
45	Tiger Bengal ( <i>Panthera tigris tigris</i> )	2	1.1.0	Royal Bengal Tiger ( <i>Panthera tigris tigris</i> )	5 Nos (2:3)	3 D
46	Jackal ( <i>Canis aureus</i> )	2	1.1.0	Jackal <i>Canis aureus</i>	5 Nos (2:3)	3 D
47				**Hyena <i>Hyaena hyaena</i>	2 No	2 D
48	Black buck	4	1.1.2	**Black Buck <i>Antelope cervicapra</i>	6 No	2 D
49				Assamese Macaque <i>Macaca assamensis</i>	6 Nos	6 D
50	Common langur	3	1.2.0	**Common Langur <i>Trchipethecus entellus</i>	6 Nos	3 D
	<b>Reptiles</b>					
51				** Four horned antelope <i>Tetracerus</i>	4 Nos	4 D

				<i>quadricornis</i>		
52	Crocodile Marsh ( <i>Crocodylus palustris</i> )	2	2.0.0	Crocodile <i>Crocodylus palustris</i>	<u>4 Nos</u>	2 D
53	Eastern Hill Terrapin ( <i>Melanochelys tricarinata</i> )	3	1.2.0			
54	Monitor Lizard ( <i>Varanus bengalensis</i> )	4	2.2.0	Monitor Lizard <i>Varanus bengalensis</i>	6 Nos	2 D
55				**Nilgai <i>Boselaphus tragocamelus</i>	<u>4 No</u>	4 D
56				Python <i>Python molurus</i>	4 Nos	4 D
57	Python Reticulate ( <i>Python reticulates</i> )	2	1.2.0			
58	Indian Flap Shell Turtle ( <i>Lissemys punctata</i> )	0	0.0.0			
59				Turtle	10 Nos	10 D
60	East Asian Tortoise ( <i>Geochelone elongata</i> )	4	1.3.0			

	<b>Birds.</b>					
61	Dove Emerald ( <i>Chalcophaps indica</i> )	2	0.2.0	Dove Emerald <i>Chalcophaps indica</i>	2 Nos	
62				Moorhen Purple <i>Porphyrio porphyrio</i>	2 Nos	2 D
63	Dove spotted ( <i>Streptopelia Chinensis</i> )	1	0.1.0	Dove Spotted <i>Streptopelia chinensis</i>	4 Nos	3 D
64				Heron Night <i>Nycticebus caucang.</i>	2 Nos	2 D
65				* Grey billed	2 Nos	2 D

				trigopan <i>Tragopan blythii</i>		
66	Red Jungle fowl ( <i>Gallus gallus</i> )	6	2.4.0	Red Jungle Fowl <i>Gallus gallus</i>	4 Nos	2 S
67				Hen White Brested Water <i>Amaurornis phoenicurus</i>	4 Nos	4 D
68	Heron Pond ( <i>Ardeola grayii</i> )	2	1.1.0	Heron Pond <i>Ardeola grayii</i>	4 Nos	2 D
69	Ibis White ( <i>Threskiornis aethiopica</i> )	2	1.1.0	Ibis white <i>Threskiornis aethiopica</i>	4 Nos	2 D
70				Tyto Capensis		
71				Fish Owl <i>Bubo flavipus</i>	2 nos	2 D
72				Great Horned Owl <i>Bubo bubo</i>	2 Nos	2 D
73				Stork Black Neck <i>Ephippiorhynchus asiaticus</i>	2 Nos	2 D
74				Pigeon Imperial <i>Ducula badia</i>	2 nos	2 D
75				Pied Myna <i>Starnus contra</i>	2 Nos	2 D
76				Hill Myna <i>Gracula religiosa</i>	4 Nos	4 D
77				Parakeet Rose Ring <i>Psittacula krameri</i>	4 Nos	4 D
78	Pelican Rosy ( <i>Pelecanus onocrotalus</i> )	6	3.3.0			
79	Stork Adjutant (lesser) ( <i>Leptoptilos javanicus</i> )	1	1.0.0	Srork Adjutant(lesser) <i>Leptoptilos javanicus</i>	2 Nos	1 D
80	Teal lesser whistling ( <i>Dendrocygna javanica</i> )	2	0.0.2			
81	Silver pheasant	2	1.1.0	** Silver Pheasant	2 Nos	
82	Golden pheasant	3	1.2.0			
83				Emus	2 Nos	2 D
	<b>Mammals</b>					
84	Deer Barking ( <i>Muntiacus</i> )	6	4.2.0	Barking deer <i>Muntiacus munjtak</i>	5 No	1 S

	<i>muntjak</i> )					
85	Deer Spotted ( <i>Axis axis axis</i> )	340	155.185.0	Spotted Deer <i>Axis axis</i>	12 No	328 S
86	Lion (hybrid)	2	0.2.0	Lion ( <i>Panthera leo</i> )	5 Nos (2:3)	5 D
87	Porcupine Indian ( <i>Hystrix indica</i> )	3	2.1.0	Indian Porcupine <b>Hystrix indica</b>	<u>4 Nos</u>	1 D
88	Sambar	2	1.1.0	**Sambar Cervus unicolor	<u>7 No</u>	5 D
89	Hog deer	3	1.2.0	** Hog Deer <i>Axis porcinus</i>	6 No	4 D
90				Chimpanzee	2 Nos	2 D
91	Hippopotamus	2	1.1.0	Hippopotamus	2 nos	

**Population management & Control of Spotted deer population:** Population size has to be maintained as per the guideline of CZA in case of large zoos. Excess nos should be transferred through exchange programme with other zoos.

At present there are more than 300 nos spotted deer in the Zoo. The excessive population growth of spotted deer is to be controlled. Already certain measures have been taken to control birth of spotted deer which has to be continued. In this process, we have made several compartments and segregated male and female spotted deer in these compartments and by this process new birth have been totally stopped. Several more compartment has to be made to thin the segregated population and the process would be continued so long it is required.

The matter of shifting maximum numbers of spotted deer in other forest areas in the state has been taken up at appropriate level for which details field level survey is on and hopefully, we will be able to reduce the existing huge population by way of shifting a good number of spotted deer in the wild with the approval of state Wildlife Board.

(No.F. 8(127)/For-WL-2004/V-VI/1133-35, dated: 22-02-2011)

**c. General Zoo Administration section**

The Director zoo was working under the control of Wildlife Warden. For better control and management of the Zoo and as per provision of Wildlife Protection (Act), as well as to fulfill the condition of Central Zoo Authority, the Director of Zoo has been declared as Head of Office and also have DDO power which effected wef Jan'09. But recently the work sanctioning power in respect of Director Zoo has been vested upon with the District Forest Officer since April 2011 which is affecting day to day management problems of the Zoo for want of immediate required sanction on urgent nature.

Director, Zoo has been provided minimum skeleton ministerial staff along with PA having telephone with STD & internet facility. Construction of office of Director Zoo has also been completed during the year 2010-11.

**d. Research**

As such no separate section functioning as Research Section in the zoo but the existing sections (Animal, Veterinary) are performing the required works in the shape of recording behavioural data in the zoo so as to form a part of research activities in the zoo. One biologist is required to be appointed for carrying out research activities in the zoo. This is being felt the need of the hour for maintaining the zoo on scientific line and accordingly five Research proposal have already been sent to CZA who have already sanctioned one such proposal and Biologist also appointed from 2009 and now left on getting better job. However, new biologist needs to be appointed.

**e. Conservation Breeding**

As such no conservation Breeding section was functioning in the Zoo at the initial stage. However, as per guideline of CZA as well as funding received from CZA such section is functioning since 2008-09 as Sepahijala Zoological Park has been identified as a coordinating Zoo for four species .

**f. Education & Awareness**

This is a very important component of zoo management. The visitors after their visit go back with empathy for wild animals in captivity and also in the wild besides getting information about different aspects of biology and ecology of the wild animals. Hence, the proper steps need to be taken up in years to come. Already one nature Interpretation centre has come up in the Ist gate of Sanctuary to cater the need of visitors and the same needs to be up graded. School groups are brought at the Sanctuary and the Zoo for the whole day and they are explained various ongoing activities in the zoo and Sanctuary and the need for keeping the animals in the captivity and to take up conservation breeding programme in the Zoo.. This is being done on regular basis.

As such no section is maintained by name of Education Section. Display boards in front of the animal enclosures containing the brief description of the particular species are put. Major events like Vanamotshava, Environment day, Wildlife Week are celebrated which are also part of education awareness programme in the Sanctuary. Informative leaflets are published to convey conservation messages to the young generation.

**g. Any other activity peculiar/ unique to zoo**

**Power supply section:-** Two workers have been posted to look after the electrical faults and immediate repairs in the zoo.

**Roads/footpaths/trails network:-** There is a good network of roads/footpaths and visitors trails in the zoo. The roads need to be improved.

**Administrative building and veterinary section:-** The Office building of Director Zoo has been completed during 2010-11 and needs proper furnishing. The veterinary Hospital also been constructed during 2008-09 and needs proper furnishing. The office building of Curator, Zoo needs major repair.

**Staff accommodation.** Staff are staying about 0.5 km away from the zoo which is also not sufficient for accommodation of all staff. For accommodation of Curator, Vet doctor and other staff more construction are required to be constructed.

**Mobility.** At present one Tata Specio Gold (From JICA Project) and a commander jeeps are used for movement in the zoo one is used by the Director, and the other is used by the VAS & curator exclusively for the zoo affairs.

**Wildlife Laws, Regulations & policies;** All the existing wildlife regulation laws are implemented in the zoo.

**Identification of animals.** At present the individual animals name is given and history card is maintained where identifiable natural marks, which separates distinctly from other individual of same species, are recorded and subsequent identification is made.

## **PART-II**

### **CHAPTER-III**

#### **Future objective including vision**

Management-plan being the pre requisite for good management there is no other alternative than to prepare a good and long term management plan. A particular manager may have farsightedness and the capability to achieve the good management. But without the guidance and support of a good plan he may also fail due to present complex system of today.

Zoological park should also function according to pre arranged and accepted plans, objectives, rules and schedules. A management planning process with values and objectives should also document the management plan of our zoological park. This will ultimately help to achieve those objectives within time bound framework.

## Vision

Provide naturalistic enclosures for all the indigenous species being housed in zoo at present & ensure their up keep on scientific manner to remove all the short coming the zoo is presently facing in terms of housing , health care & & education

Set up off display facilities for ex-situ conservation of endangered fauna of the region for which Zoo is selected as National Co-ordinator and for which Sepahijala Zoo shall act as participating zoo. Make the visitors experience to the zoo pleasant, rewarding, educative and innovative.

Ensure safety of the zoo animals with appropriate fencing & security arrangements.

Public should view the zoo as:-

- I. Scientific institutions engaged in animal welfare and conservation.
- II. Centers of knowledge on effective techniques for maintaining healthy ambiance and pollution free environment.

### **Conservation Message to be imparted to the zoo visitors:**

- I. Work for conservation of wildlife and its habitat.
- II. Adopt sustainable lifestyle and live in harmony with nature
- III. Contain the consumptive use of natural resources with in sustainable limits through reuse, recycling and refusal.
- IV. Conservation of nature in explicably linked to survival of mankind and his environment.

### **Mission statement**

Ex-situ conservation of flora and fauna of North Eastern States & creation of awareness among the masses regarding their conservation and ensure the empathy for the Wildlife. And in the process provide support for in-situ conservation. This can broadly elaborated as:

- I. Complement the National efforts in Conservation of wildlife through planned coordinated conservation breeding of endangered wild animals species of North East India.
- II. Develop amongst visitors' empathy for wild animals and motivate them to support the cause of conservation of wildlife.
- III. Develop amongst the visitors and understanding about the ecological linkage 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.
- IV. Enhancing the role of zoos in conservation of wildlife through collaborative research aiming at attaining management skills for in situ population and carrying out advocacy for protecting the wild animals and their natural habitats.

Conservation of the Eastern Himalayan (North Eastern to be specific) endangered fauna by conservation breeding and to support the in-situ management is our mission. Our effort is also to boost Conservation initiative through Education and Research.

### **Theme & strategy**

**Theme:** Theme will be conservation & display of biodiversity of North East India with special reference to Tripura. We decided to display the animals taxonomically at Sepahijala Zoological Park.

## **CHAPTER-IV**

### **Future Action Plan**

#### **i) Proposed / recommended collection Plan**

Sepahijala Zoo is a specialized Zoo, animal species of North East India will be its primary target. After lot of deliberation it has been decided to house few exotic species also in the zoo.

To get the data of the animal species we in the area of influence and in what number and where a complete wildlife census had been conducted in the State of Tripura during the year 2002. On the basis of earlier records and findings of the recent census only 83 no animal species have been identified for display and breeding in the zoological park in consultation of Member Secretary, CZA during his visit to Sepahijala zoo on 1-12-07. Some of these are not critically endangered or not in need of immediate ex-situ efforts but have been included just for display and research purposes. Whereas, others have been adopted as a part of planned conservation breeding project for their ultimate rehabilitation in the areas where they still exist or were found in the recent past. The list of the species forming part Collection Plan along with the population size is given in the annexure. That also includes the largest no of all the individuals which can be house of all the species.

#### **ii) Description of the lay out plan of the Zoo**

Master lay out Plan shall consist of a detailed landscape map of the existing zoo in a scale 1:2000. All the existing facilities and infrastructure and the locations of proposed

developmental activities in animal display area ,conservation breeding area, rescue center area, visitor circulation routes, animal upkeep, and health care facilities including animal's quarantine facilities and isolation wards, visitor education facilities and civic amenities, service roads, administrative blocks, entry plaza, car parking, would be indicated on the map. A digitized master lay out plan with AutoCAD (1:2000 scale) has been made for the purpose of future use and submitted to CZA which has already been approved..

### iii) **Direction arrow on the lay out Plan**

Traditionally the Zoo have extensive network of roads. As all the roads are inter connected, we experienced that the visitors are getting disoriented and moving haphazardly in all directions. Thus it felt that the zoo should have only one main approach road to take the visitors to the zoo animal display areas. The main road should be should be connected to various exhibits with loop roads and sub-loop roads of lesser width and specifications on the basis of hierarchy (importance) assigned to each road. The loop roads and sub loop roads would intersect the main road at prominent junction points, where appropriate signage indicating the directions of prominent animal exhibits and visitor facilities should be available. Accordingly the lay out Plan has been prepared and approved by the CZA

## **ZOO Master Plan:**

The Master Plan is a comprehensive document to guide the systematic and planned development of an existing and a new zoo for a reasonably long period of resources 10-12 years keeping its land, financial, personnel, physical and aesthetic resources and constraints in view, in order to provide holistic nature conservation education with wholesome recreation. This document helps in optimum utilization of the

zoo resources in a planned manner, without being affected by individual whims, peer or uninformed public opinion and serves as a document to guide annual budgeting and personal planning.

### **ARGUMENT**

As mentioned in the objective, Sepahijala Zoological Park may mainly concentrate on Eastern Himalayan eco system, so mainly fauna available to our state and comfortable to the climate here may be displayed and conserve here.

Beside conservation of ecologically important species we may arrange to display some animal of general attraction too especially some exotic species considering our geographical position and demand of the people of the state. In our plan we may keep it in mind that finding no other alternative people of Tripura comes here time and again, rather accepts the most economic and affordable scope with a hope to get something more and new. Though surrounded by sanctuary thick under growth restrict sighting animals in nature except primates, which need to be supplemented through our naturalistic display. Developing zoo to zoological park/Garden through systemic conservation of bio-diversity and display of animals in their natural habitat with definite planning is our aim.

### **ECONOMIC**

The zoo is running with the govt-aided fund. Considering the population of our state, no of visitation and managing the zoo with the earning through gate money may not

economically viable. But it may be possible to recycle the revenue for pretty yearly maintenance. Enhancement of entry fee may also add extra support to this effect.

### **SCIENTIFIC WORK**

Our zoo has achieved some success in the field of successful breeding of many species like leopard, clouded leopard, wildcat, leopard cat, Binturong, Himalayan Black Bear and some primates. Very recently toddy cat, hornbill and bear have given birth in our zoo. Hand rearing of three-clouded leopard and a two-leopard cubs added confidence to our management and conservation practice. Though there is lack in documentation of such works, in future this may be taken care. Posting of biologist and modernization in scientific research oriented document may add values to our work. Five research proposals have been initiated to the CZA of which one such proposal have already been approved.

### **DISPLAY OF ANIMALAS**

Display of captive animal is to coincide with the modern thought of zoo management. Old menagerie needs to be replaced as conservation center. Developing a true environmental resource center is our aim. Where our theme should be environmental, subject should be ecosystems – survival of species, concern should be holistic conservation and organizational networks. An objective oriented list of animals to be displayed with modern housing facilities to be achieved.

## CONSERVATION BREEDING WORK

Conservation breeding of rare and endangered species is other important parameter of *ex-situ* management. Birth in zoo captivity is not Conservation breeding. It should have definite plan and scientific base. Planned breeding in captivity with specific objective only will achieve the supportive role to *in-situ* management practice and conservation goals. We must know what are the species to be bred and up to what extent? The ultimate objective has to fulfill through captive breeding. Adequate scientific and research-oriented work should compliment planned breeding. CZA has taken initiatives to identify such species for taking up Conservation Breeding. Sepahijala Zoo will also play important role in this regards.

## RESCUE CENTER

It is experienced that injured and rescued animals are being send to this zoo for nourishment and after care, Many such animals have been rehabilitated in the zoo enclosures. Under the circumstances it has become urgently necessary to set up a rescue cum rehabilitation center for those injured / orphans animals.

### Strategy for future action plan

(1) **General**

Very often visitors from far away are misguided and come to zoo on weekly holiday. As per the mandatory provision of Zoo recognition 1992 "Every Zoo shall have closing day once in a week" Friday is a weekly holiday in our zoo. It needs wide circulation so that visitor does not suffer.

(2) **Administration**

For the purpose of proper upkeep and quick disposal of problems zoo establishment need to be separated with adequate administrative and financial

delegation of power. Like other developed Zoo, the Zoo Authority should be constituted for fast development of the Zoo on scientific line.

To provide naturalistic housing facility to zoo animals and for preparation of modern design/estimates at per with CZA guideline and for execution of such works one junior engineer may be posted in zoo.

To minimize the problem regarding handling with sick etc animals beyond office hour at least two veterinarians to be posted in zoo and extra remunerations may be given for such jobs to all categories of staffs.

**(3) Enclosure Design**

- i) Stand of barriers may be modified / improved for safety of visitors as well as animals and erected at safe distance from enclosure.
- ii) Nature looking enclosures for all small cats and need to be constructed.
- iii) Appropriately designed enclosures for reptile especially for python with hibernation is urgent need.
- iv) Provision would be made for enrichment of each and every enclosures to cater the behavioural needs of the animals.
- v) All sorts of designs of enclosures would first be approved by CZA and then detailed estimates would be prepared and implemented.

**(4) Hygiene and upkeepment**

- i) Appropriate system to be developed for disposal of solid and liquid waste in the zoo.
- ii) Round the clock potable water has to be ensured.

(5) **Animal care, health and treatment**

- i) Need to be developed through appointment of educated, trained and experienced zookeeper or by giving training .
- ii) Infection of communicable disease needs to be prevented by thorough checking of health of the worker. State health department may kindly be requested to organize health camp at least twice in a year. The system is presently being followed and would be taken care of in future.
- iii) Full fledged veterinary facility through establishment of
  - A) Hospital
  - B) Diagnostic lab
  - C) Post mortem room etc.
- iv) Disposal of carcass in an earmarked burial ground or burnt in Incinerator.
- v) Educated Forester leveled office need to be trained through ARD training institute for the purpose of helping the veterinary officer at Zoo.
- v) Construction of sick animal bay, quarantine and neo-natal facilities.

(6) **Captive breeding of animals**

- i) A proper objective oriented guideline to be laid down for Captive breeding.

- ii) Need to conduct a wider discussion to find the way out from large population of spotted deer. At present males are segregated to stop breeding which has been found effective.
- iii) Genetically viable population need to be maintained for the purpose of better management of Zoo.
- iv) Introducing new blood to stop in breeding hazard and Pairing of all single species.

(7) **Education and Research** i) Appointment of Biologist cum research officer for research oriented studies, keeping scientific record and data and preparing study paper. This is under consideration of CZA.

- ii) Preparation of zoo annual report for all corresponding year and for sending to CZA etc.

(8) **Visitor amenities**

The following visitor amenities need to be improved.

<ul style="list-style-type: none"> <li>• Retiring room in entry gate</li> <li>• Drinking water facility</li> <li>• Canteen facility</li> <li>• Creation of lawns and gardens</li> <li>• Introduction of some more lucrative animals like hyena</li> </ul>	<ul style="list-style-type: none"> <li>• Guide map and sin ages</li> <li>• Lavatory facility</li> <li>• Telephone facility</li> <li>• Children corner</li> <li>• Communication from road head.</li> <li>• Wheel chair for</li> </ul>
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<p>big mammals and beautiful birds and exotic spp like giraffe, zebra, hippo etc.</p>	<p>handicapped</p> <ul style="list-style-type: none"> <li>• Library</li> <li>• Information Center</li> <li>• More sheds</li> <li>• More water facility</li> <li>• Guide</li> <li>• More leaflets</li> </ul>
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v) **Legend on lay out Plan**

Legend on the lay out Plan has been properly shown covering all features indicated in the lay out plan and such Master (lay out ) Plan has already been approved by the CZA.

**FUTURE ACTION PLAN**

The action plan is targeted to provide a time bound guideline towards management and development activities for next ten year plan period from 2012-2013 to 2021-2022 This forms a part of earlier plan for the left out portion of works, which could not be undertaken for obvious reason.

Recommendation of central Zoo Authority during evaluation, Zoo needs, visitor profile and convenience of the management have been kept in view for formulation of the

draft proposal. For the purpose of better and coordinated management the proposal is prepared on the nature of works dividing it in various sections.

1. Administrative section
2. Health Care management section.
3. Monitoring cum estate section.
4. Research cum education cum publicity section.

**Administrative Section: -**

This section will be directly under the control of Director who has been declared as Head of office with delegation of necessary administrative and financial power. A full-fledged office with necessary establishment near the zoo premises needs to be structured along with posting of staffs like

1) Head Clerk	-	1
2) Accountant	-	1
3) Cash clerk	-	1
4) Personal assistant		1
5) UDC	-	1
6) LDC	-	2
7) Driver	-	3
8) Peon cum Dakwala	-	3
9) Ticket Booking clerk-		3

This section will administer the coordination of different wings and section of zoo. For the purpose this section needs to be equipped with modern facilities like Video/Digital Camera, Telephone with STD and fax facility, Computer and typewriter set etc.

### **Health Care Management Section: -**

This section needs to be given top most priority. Since Sepahijala Zoological Park is a large category of zoo as per CZA guideline and deals with maximum number of critically endangered species special emphasis needs to be given to equip the section with best possible and most modern facilities. There is regular constrain from the part of zoo manager to maintain health status of zoo during especially during holidays and on leave period of zoo veterinarian. Of course during long leave period of present zoo veterinarian a stop gap arrangement is done by the ARDD Department such part-time arrangement can never support the zoo management up to the satisfaction. Since it is a large category of zoo and dealing with a large no of animals hence it is proposed to engage one Jr. Veterinarian to assist the Sr. Veterinarian, which is mandatory for all large category of zoo. The Forest Department may create two TVS-Gr.-V cadre post in the Deptt for solving the crisis of Vety. doctor who is required to be brought from ARDD Deptt. on deputation for certain period and soon after his transfer a new doctor reasonable time to conversant himself with the wild captive animals. One Pathologist is essentially required to carry out tests in the laboratory. At least three Veterinary Assistants are required to be posted in the hospital to take care health and hygiene of zoo animals and Conservation Breeding center. The section needs to be equipped by establishment of modern facilities with top most priority.

1) **Construction of hospital with following facilities.**

- 1) Dispensing room for out door patient.
- 2) In patient ward cum isolation ward.
- 3) Pathological lab.
- 4) X-ray unit.
- 5) Operation theatre.
- 6) Quarantine.
- 7) Neo-natal cum hand rearing nursery.

Construction of veterinary hospital has been completed during 2008-09 and infrastructure for diagnostic facilities are to be developed.

2) **Crematorium**

For the purpose of disposal of carcasses it necessary to earmark an area for the purpose crematory or burial ground with modern crematory facility to maintain hygiene status. A room with post mortem facility is a fold of stipulation by CZA evaluation team.

The requirements are;

1. Crematory
2. Post mortem room – Already constructed during 2008-09 by CZA fund along with postmodern facility. Since then post mortems are being carried out here only. One wood based incinerator is being constructed during the year 2011-12 with CZA fund.

**Human resource for this section: -**

- 1) One Sr. veterinarian (exists)/ on deputation for ARDD)

- 2) One Jr. Veterinarian (need to be appointed)
- 3) One Pathologist
- 4) One Vet. Assistant (on deputation from ARD Department,
- 5) One X-ray Technician (need to be appointed)
- 6) Keeper-1
- 7) One attendant

**Equipment required:**

- 1) Microscope
- 2) Blood simmer
- 3) X-ray machine
- 4) Lab equipment

**Monitoring cum Animal Section: -**

Headed by curator of Zoo

In the rank of ACF

This section may subdivided into

- a) Commissary cum food store sub Section.
- b) Animal supervision sub section.
- c) Maintenance sub section.
- d) Security sub section.
- e) Sanitation sub section

**Commissary subsection/ Food & Store section :-**

At present this section is working as food committee headed by a forester with one FG, one Vety, Assistant and two workers. It is proposed to post a Forest Ranger under the control of the Curator who will look after this section. The Conservator of

Forests, Southern Circle, floats tender for animal food and daily needed food articles. On the basis required food articles are being received daily/weekly from the contractor on proper challan. Required food items are being cooked as per prescription of food schedule. Food items are then supplied to the animal section for feeding on daily basis. For storing of some articles of food like compounded ration etc for herbivore animals there is a godown. Some facilities are to be created for the purpose of better efficiency of the section. Food committee is changed after certain interval.

- The present godown is to be modernized with better facilities.
- Refrigerator may be provided to store fresh fruit, vegetables etc.
- The kitchen needs to be improved and gas chullah be utilized in the purpose of cooking.
- For the purpose of weighing electronic digital weighing machine may be introduced.
- For the purpose of checking the quality of milk supplied lactometer may be introduced.
- Fodders for herbivore may also be collected through this section.
- Delivery of food articles to animal supervision sub section may also be made through challan.
- Instead of present practice delivery van may be arranged for supply of food to each beat.

At present green leaf/ fodder are being collected from the near by forests which causes destruction of habitat. There may be effort for collection of silage fodder for the purpose. Even the zoo itself may develop some fodder plantation for such

emergency need. There is scope of production of green fodder in the vicinity through the EDC member. A try in this regard may give good impact both for to zoo animals and sanctuary habitat. This will also be a good earning source for the EDC members.

In the godown premises an office room may be constructed for the purpose of maintaining records etc by the storekeeper cum in charge food committee (In charge commissary sub section).

**The peripheral boundary of the Zoo has to be closed by chainlink mesh fence to act as security fencing. We have already received fund and the work is in progress.**

**Animal supervision sub section: -**

This will work under direct supervision of curator zoo. Day-to-day look after of the captive animals in the zoo will be the prime responsibility this section. For the purpose of better management the zoo may be divided into following section.

- 1) Primate
- 2) Reptile
- 3) Aviary
- 4) Carnivore/ Omnivore
- 5) Deer park/Herbivore
- 6) Rescue center
- 7) Captive breeding center (CBC)

For every there should be supervisor assisted by supportive subordinates as animal keeper and required number of zoo worker. Zoo worker shall have to assign to perform the day-to-day work like, feeding, animal care and maintenance of enclosure (Pity nature)

and observation of animal behaviour. A section wise distribution of enclosure along with number of animals is shown below inclusive of CBC.

Name of beat	Name of animal	Population	Number of cells
1. Primate	1. Gibbon	2:0:0 =1	1 (closed cage)
	2. Spectacled langur	2:8:2=12	2 (one Closed cage and one
	3. Capped langur	1:0:0=1	open moat)
	4. Pig tailed macaque	7:8:1=16	1 open moat
	5. Rhesus macaque	3:3:0=6	1 – do –
	6. Other inclusions	2:0:0=2	1 – do – 4 – do -
2. Reptile	1.Crocodile	2:0:0=2	1 moat and 1 lake
	2.Python	1.1.0=2	1 closed enclosure with cells
	3.Other snakes	Nil	1 enclosure with cells
	4.Monitor lizard	3.2.0=5	1 caged enclosure
	5.Turtle & Tortoise	1.0.0=1	1 – do –
	6. Other inclusions		
3. Aviary	1. Birds of prey like, vulture	=4	2 caged enclosure
	2. Hornbill	1:2:0=3	1 big caged enclosure with
	3. Peasantry like peacock, Kalij, Jungle	3:8:0=11 + Other	one small enclosure. 1 big enclosure with 8 cells

	4. Clouded leopard	6:10:0=10	cage and feeding cells 1 enclosure with 6 separate cells, two moat enclosures.
	1. Wild cat	1:1:0=2	1 caged enclosure with cells
	2. Leopard cat and other collections like marbled/Fishing cat	8:4:4=16	1 caged enclosure with 5 cells 1 caged enclosure cells
	1. Hyena	-	1 Open moat with 2 feeding cells
	2. Jackal	1:1:0=2	
	3. Bear	5:7:0=12	1 Open moat with 2 feeding cells 3 Open moat with 12 cells
	1. Binturong	2:3:0=5	1 caged enclosure with 5 cells
	2. Large Indian civet	1:0:0=1	2 caged enclosure with 10 cells
	3. Small Indian civet	2:0:0=2	
	4. Himalayan Palm civet	1:1:0=2	
	5. Common palm Civet	2:1:0=3	
	6. Yellow throated martin	1:0:0=1	
8. Herbivore	1. Rhino	1:0:0=1	Open moat

	2. Bison 3. Sambar 4. Chital or Spotted deer 5. Barking deer 6. Other collections like White fellow deer, Black buck, Mouse deer etc	- 1:1:0= 2 Required no 2:4:0=6 As in collection plan	Open moat Open moat Open moat Open moat for each and top less chain link mesh enclosure for mouse deer
9. Exotic animal	Giraffe, Zebra, Hippo, Emu	As in collection plan	Necessary no of enclosure as per approved plan
10. Rescue	For rescued animals	-	One for herbivore, one for carnivore animal as per design approved by CZA
11. Conservation breeding	For different animals as per specific approved program – Proposed for Clouded leopard, Binturong, Spectacled langur, Pig tailed macaque, Hoolock.	-	As per specific design

Adequate stress to be given to give naturalistic looks to the enclosure. Attempt has to be made to construct suitably bigger open moat type enclosure for specific species as per scope and requirement. Depending on the climatic condition naturalistic stand of barrier need to be provided with locally available material. It is also necessary to provide with in built squeeze cage to each enclosure to minimize undue stress to the animals while capture and carrying is needed for treatment etc definite purpose.

Cleaning of enclosure, enclosure wall and its adjoining area, drains, disposal of solid and liquid waste, feeding, maintenance of animals, maintenance of record regarding supply of food, maintenance waste food register, watering, providing drinking water and ensuring disinfections etc are the responsibility of this section. Respective beat officers are to take care regarding following of disinfections schedule as below.

Disinfections schedule	As per annexure
Food schedule	As per annexure
Prophylactic schedule	As per annexure
De-worming schedule	As per annexure

**Maintenance sub section: -**

This section will also work directly under supervision of curator of zoo. Day-to-day development, emergency and minor maintenance and construction work, estate management like civil works i.e maintenance of road and footpath, water supply system, electrical power supply system, staff accommodation, visitor amenities, maintenance of

forests and weeds inside zoo etc will be the major responsibility of this sub section along with security of zoo. One forester and 2-3 HFg/Fg along with a set of worker as below will be posted for smooth functioning of the sub section.

- |                  |                                   |
|------------------|-----------------------------------|
| a) Welder        | b) Meson                          |
| b) Carpenter     | c) Day and night security guards. |
| c) Pump Operator | d)Electrical worker.              |

**Footpath:**

There is a main road (brick peach) running from entrance gate to exit gate primate moat. There is network of footpaths leading to each enclosure from the main road a part of which is improved by lying of chequered tiles. Rest portion of this network will also be improved similarly in phased manner. The brick soled road would be improved and made black topped and carpeting. 10no jharudars are deployed for cleaning etc maintenance of the same. Maintenance sub section with the help of these jharudars will be responsible for the work.

**Electrical power System: -**

State Electricity Corporation is responsible for supplying of power in the park. Under obvious reason shading in power supply is common. A diesel-operated generator set may lie installed to support such failure to keep uninterrupted power supply specially to safe guard valuable medicine like snake anti venom, vaccine etc. The maintenance sub-section with the help of two worker and in collaboration with the state Electricity corporation is to keep the power line maintained and free from tree branches so to avoid shot circuit. These lines were laid long back and needs immediate repairs. However, one estimate

have been approved by the Govt. recently around 11.27 lakhs rupees which has been placed to the Power Deptt. by us and the renovation works are yet to be completed.

**Water supply system: -**

This is a crucial issue in zoological park management. Through out the year potable water supply round the clock in park is to be maintained. As the system is dependable on underground water hence a stand by pump need to be installed to support the system in case of any failure. For the purpose it will be better to have an overhead tank with in zoo complex to store water for use. Such tank will also give additional support to worker in cleaning as where necessary the high pressure can be used for better cleaning. All delivery opening need to have stopcock minimize wastage of water. A periodical maintenance schedule is also needed to clean the blockage in pipeline due to sedimentation. The maintenance sub committee with the help of two workers deployed for the purpose is responsible for the purpose. The water contains iron particle for which one iron removal plant has to be installed.

**Staffs accommodation:-**

Staffs posted in zoological Park may be divided in 2 category viz essential and non-essential posts. Arrangement to be made for accommodation of staffs posted in essential posts. At present there is a quarter complex at Baidya Dighi (Apx 250 m for zoo

complex) where staffs are accommodated. Priority may given to those performing duties in essential posts even quarter are to be ear marked for those essential posts. All the field staffs as well as few ministerial staff need to be declared essential posts for whom provision of accommodation is essential.

Responsibility of maintenance of stuff quarters, animals house, quarantine, conservation breeding center etc assets will lie with the maintenance sub section.

### Visitor amenities

It is very important section and to be developed and maintained to make the visitation pleasant and less tiring. Amenities that med to be developed are :

- Particular parking under parking place for all category vehicle out side the zoo boundary in a suitable place
- Leaflets / brochures would be made available for the visitors.
- Proper signage / signboards and road guide signage would be made and updated in the zoo for presenting the display in an appropriate manner to the visitors.
- There should be drinking water facility one at near the entrance gate, one at primate section and one at main section.
- Public toilet proposed to be constructed with ramp provision for physically handicapped person near lion present moat.
- **Car Parking place is to be marked near the exit gate of the zoo and already shown in the lay out Plan as per observation made by the Expert committee of CZA earlier**

- Existing food canteen to be improved for better facility of visitors and the location has been shown in the lay out Plan as observed by the Expert committee of CZA earlier..
- Sulabh toilet facility is being developed near the food canteen.
- Wheel chair would be arranged in main gate to provide on demand to invalid persons may at nominal charge.
- Rest shed provided in different places are need to be maintained in a presentable manner. As the zoological park spreads over a large area of 68 ha visitor needs break during their visit to have some rest. It is also helpful to provide protection from rain & heat.
- Telephone booth is proposed to be thought of in the main/ Entrance gate for facility to visitors.
- Information board and required warning would be displayed wherever necessary.
- Guides are proposed to be provided from local youths taking the help of EDC with proper training.
- Best performed visitors would be rewarded annually. Zoo evaluation team would be formed for evaluating the best visitors on peak visiting days who will select the best visitor for that day who will be rewarded later on in special programmes at Sepahijala.
- Visitors' survey would be carried out on regular basis to provide more amenities/facilities to the visitors. A format has been settled in this respect

which would be implemented on peak visiting days and the survey team would be made aware for proper visitor survey.

- Transportation facility for the visitors from Ist gate to the Zoo would be made as appropriate.
- Visitors' circulation paths would be designed in the zoo as proposed in the Master Plan to reduce the rushes of visitors at a particular location in the Zoo.
- School groups would be addressed by the trained staff in the Zoo to disseminate the appropriate conservation messages.
- Arrangements would be made to keep the belongings of the visitors in the entry gate with nominal charges.
- In the peak hours of visitor rush, security personals would make circuit inside zoo to ensure visitor safety. More counters may be opened during peak visiting days.
- The Staff & workers residing inside the zoo would be friendly with the visitors and make their visit pleasant by providing them required information and assistance.

#### **Weeds maintenance:-**

Tripura being a high rainfall area with distribution of rainfall over 8 months weeds growth is very high. Such growth gives a bad look and required regular weeding.

Maintenance sub section is responsible to keep the area clean to give the zoo a smart look.

**Identification of Animals:-**

It is being done by the veterinary section by way of maintaining history card etc as in prescribed format laid by the CZA. This will be continued. This section may maintain similar nature records. It is also felt necessary to use transponder / collar/ ear tag etc for the purpose of individual identification. The five species viz. spectacled langur, pig tailed macaque, binturong, clouded leopard , hoolock are targeted as per CZA's instruction for marking every individuals with transponders and thereafter other species would be done.

**Disposal of Solid and liquid waste product:****Solid waste disposal:**

At present solid wastes are produced in the zoo such as excreta of the animals, food residuals of meat, vegetable, corns, fruits etc. These are mainly biodegradable. These can be buried in number of pits for similar nature of solid wastes and can subsequently be used for farming in the Zoo as manure and raising vegetable garden for the Zoo animals. Vermi -composed could be made with the help of local SHG from the solid wastes and these would form a source of income for the SHG also.

In addition, there also forms solid wastes from the dead animal carcass. For the purpose of disposal of carcasses it necessary to earmark an area for the purpose crematory or burial ground with modern crematory facility to maintain hygiene status. Fencing would be done around the burial ground. We may also develop facilities to dispose such solid waste products by installing incinerator to maintain proper hygiene.

We have installed a wood based incinerator for disposal of carcass as installed in Nandan Kanan Zoo.

In case of waste bone from the supplied meat, the science & Technology would be encouraged to collect the same from the zoo on payment of due royalty on regular basis which can minimize the quantum of solid wastes.

**Liquid Wastes:** Liquid wastes are also formed from the liquids passes through the drains after cleaning of the enclosures and water tanks etc. The drainage system should be developed in such way that all such liquids would accumulate in a particular point maintaining required level and a number of receiving tanks can be made in a row and the waste liquids can be passed from one tank to the other and devices can be put in each tank to allow suspended solid materials in each tank even by screening through a properly devised system and to ensure release of comparatively pollution free liquid. Experts' views in this respect would be taken into consideration.

**Drainage system:**

Drainage system needs to be improved. If possible liquid waste is to be recycled through modern technology. If it can be done, it will help in re use of the huge quantity of drained water and minimize daily lifting of underground water and use of pump.

**Mobility:**

At present there is one Tata Gold Speciosa, which is functional. Directors' mobility etc other commander jeep is used by the VAS & day to day purpose which is

specially meant for special task force. Tata Gold specio may be used by the VAS and the following vehicles are requires procurement:

- i . One MARUTY GYPSY for Director's use
- ii One light van type vehicle for daily use in zoo.
- iii Two battery operated car vehicle for visitors

#### **PROPOSAL FOR DISPLAYING ADDITIONAL ANIMALS.**

Following animals are proposed to be acquired and kept in zoo for enrichment of its animal collection:

**a. Indigenous species:**

- Different kind of non poisonous snakes
- Python
- Monitor lizard
- Turtle
- Pangolin
- Otter
- Small birds like Red Breasted Parakeet, all type of Myna
- Squirrel

**b. Exotic species:**

- Big birds like Emus, Ostrich
- Zebra
- Hippopotamus

**Fire:** - This has a serious affects for the captive animals and as the precautionary measures as taken up well in advance like making fire line all around the Zoo hence furious incidents did not occur in the Zoo in the Past.

**Animal escape:** This also happens due to not following the security code by the keepers and not remaining vigilant and careful and also due to sabotage by miscreants. Such incidents occurred in the past in case of Rhino, Lion, Leopard, Crocodile, Monitor Lizard, Spectacled langur, Leopard cat etc. This has serious impetus on Zoo management since we need to ensure the safety of animal, keeper and the visitors.

**Monkey & dog menace:** Monkey menace at Sepahijala Zoo is not observed seriously at present. But we need to keep provision for encountering any such occurrence in future.

The pet dogs mostly enter inside the zoo along with workers and with the visitors. Provisions have to sorted out for solving this problem..

**Anthrax:** This is a serious disease and the same occurred in case of herbivores as well as in carnivores. Serious impact occurs in case of outbreak of this serious disease and proper measures are taken up.

**Flood:** There is no such incident of food occurring in the Zoo experienced but due to run off water during rainy season at times disruption of dams in the deer park and other water pools occurs and when such incident occurs along boundary line of the enclosure, then chances are there for escape of animal.

**Draught:** Due to this factor the natural water pools in the enclosure becomes dry and there experiences shortage of drinking water for the deer population and for the bathing of elephants and also for Rhino.

**Strike:** - This has serious impact and we faced such problems in the past due to strike called by the workers in the zoo when the Department had to arrange procurement of food items and cleaning of the enclosures were major problem. But in case of other political strike in the adjoining area it also hampers for procurement of perishable food items by the supplier.

**Resource available in the zoo and mode of mobilization with other line deptts:**

The Zoo is at present is not well equipped to encounter all kinds of disasters and would require to receive supports of other deptts. to combat emergent crisis from disasters.

However, at present the zoo have equipments /materials to deal with the crisis like diesel, generators, axes, shovels, ropes, emergency lamps etc and would require procuring necessary equipments /materials, portable saws, bill hooks, diesel pumping sets, ropes, spot lights, siren, hooter, loud speaker, tarpaulin, chains, nuts & bolts. Stock of diesel-30 lits, petrol-10lits, LPG-one set, kerosene-20 lits, lubricants-5 lits, fuel wood-5 cum, batteries-20 nos, saw blade-three, Generator set- 5 K.watt – 3 nos etc. would be required to be stored sufficiently.

The Zoo is situated in West Tripura District under Bishalgarh Sub-Division. There is line Deptts like BSF, ARDD, Police, Block, Fire Service, PHE, PWD, Health Deptt., SDM, Agriculture, Telecom, Power deptt. etc. at Bishalgarh who are to be approached during any of the crisis listed above. In addition, ONGC and Agartala Municipality may be approached for meeting up of emergent disaster situations. Prior inter-departmental linkage mechanism would be built up with all these line departments to ensure emergency support during any sort of disaster in the zoo. Their contact Nos would be kept with the kept ready with the Director, Zoo; Curator zoo and the VAS for seeking help as and when required.

<b>Name of Deptt.</b>	<b>Contact person name</b>	<b>Type of assistance could be mobilized</b>
BSF	Commandant 194 Bn. BSF	Security .
Police	SDPO, Bishalgarh, O/C BSL PS	Security
ARDD	Asstt. Director, ARDD	Treatment for animals.
Block	BDO, BSL	Relief during Crisis period.
Fire service	O/C Fire service STN,	Rescue during crisis period
SDM	SDM, BSL	Relief during Crisis period
Agriculture	Suptd. Agri, BSL	Assisting with materials.
Telecom	SDO(Telecom)	Communication during Crisis
Power Deptt	Sr. Manager, BSL	Immediate restoring the power
PHE Deptt	EE, PHE, BSL	Restoring water supply line.
PWD Deptt	EE, PWD, BSR	Restoring road communication

Health Deptt	SDMO,BSL	Health care of workers and staff.
Municipality	AGT. Municipality	For materials like crane
ONGC	GGM, Asset Manager	Assisting with crane etc.
ICAT	Sr. Information officer	Dissemination of Information.

<b>Name of Deptt.</b>	<b>Contact person</b>	<b>Contact number</b>
BSF	Commandant 194Bn. BSF	2361251(O)
Police	SDPO, Bishalgarh, O/C BSL PS	2360215, 2361244(O)
ARDD	Asstt. Director, ARDD	2362679(O)
Block	BDO, BSL	2361250(O)
Fire service	O/C Fire service STN,	2361234(O)
SDM	SDM, BSL	2361294(O)
Agriculture	Suptd. Agri, BSL	2361350(O)
Telecom	SDE (Telecom)	2361301(O)
Power Deptt	Sr. Manager, BSL	2361793(O)
PHE Deptt	EE, PHE, BSL	2362123(O)
PWD Deptt	EE, PWD, BSR	2867412(O), 9436137788(M)
Health Deptt	SDMO,BSL	2361420(O)
Municipality	AGT. Municipality	2225459(O)
ONGC	GGM, Asset Manager	2374300(O), 9436120101(M)
ICAT	Sr. Information Officer	2361655, 9436134390(M)

**Strategies:**

- ❖ During cyclone, there are incidents of breaking tree branches, uprooting of trees and some times these fall on the enclosures and obstruct movement of visitors and even of the keepers and supervisors. These are required to be removed immediately on urgent basis for which provision of fund has to be made.
- ❖ There is no food problem in the zoo through out the year once food supply tender is accepted and in case of delay in taking decision of animal food tender by the authority we need to arrange depttl. Supply or with the help of existing tenderer which smoothens the supply temporarily.
- ❖ To combat fire hazard in the zoo, fire lines are maintained around the zoo, would require to be maintained in future also. The firewatchers engaged in the Sanctuary during the fire season would be vigilant to combat any fire incident. There are four fire extinguisher kept in the curators office. The Fire service station of Bishalgarh immediately responses for any fire incident when contacted for.
- ❖ In the event of break down of any sort of law and order situation the security staffs immediately reacts and control the situation in the event of necessity Bishalgarh Police station is contacted who also responses promptly. The practice would be followed in future.

- ❖ In the event of out break of bird flu in and around Sepahijala Zoo, we immediately seek the help of National referral center, IVRI, State ARDD, Deptt. The Health advisory committee constituted for Sepahijala Zoo also meets frequently to advice and also to take stock of the situation and to ensure implementation of advices given by the National referral center in the Zoo and finally to overcome the emergent situation.
  
- ❖ Zoo had experienced many emergent situations like escape of ferocious animals like Black bear, Rhinoceros etc and attack by such animals. Infect a disaster management system to be facilitated by:
  - 1) At least two elephant may be stationed for driving of big animals in case required.
  - 2) Some emergency equipments like rope, cable, ladder, net, fire extinguisher etc.
  - 3) Tranquilizing drugs and equipment needs to be kept in an accessible area so that it can be handled in case of necessity. Training in handling of such equipment has also been organized during April'2008 to make it conversant to officials to facilitate one or other person available during emergent situation. Periodic mock drills would be required to be conducted to make the staff and officials well conversant with the tranquilizing dart operation.

- 4) The keepers are to be trained properly to follow the safety measures in the zoo during working with the animals to avoid the accident and attack by the animals or remove any sort of injury to the animals.
- 5) Awareness among the staff and the public communities has to be raised to apprise them to get prepared to combat any situation of the disaster in the zoo and the surroundings.

**Line of command & formation of quick response team:**

To combat the disaster in all respect in the zoo, a team is proposed for constitution, which would function during the period of disaster as follows:

SL. NO	Name of Authority	Designation in the team	Contact No
1.	Director, Sepahijala Zoo	Chairman	9436122784(M)
2.	I/c vety Hospital, Sepahijala Zoo	Member	9436458176(M)
3.	Asstt. Wildlife Warden, Wildlife Range	Spl. Invitee	9612778617(M)
4.	Forester, I/C Mammal section	Member	
5.	Forester, I/C Deer section	Member	
6.	Forester, I/C Primate, Aviary section	Member	
7.	FG I/C of Deer / Primate/Aviary section	Member	
8.	Sri Abul Hossain, P/L	Member	986421300(M)
9.	Sri Akmat Ali, P/L	Member	9862019727(M)

10. Sri Nitya Kr. Deb, P/L Member
11. Curator, Sepahijala Zoo Member-Secretary 9436478485(M)

The above committee would frequently meet and discuss the issues related to disaster management and brought forward to the authority in case of decision is required for that particular level. They should be properly trained and equipped to cope up with any sort of disaster and to formulate a plan accordingly in advance. There would be rehearsal among the committee members as to how they would perform in case of occurrence of any sort of disaster. The committee would also monitor the post disaster related activities i.e rehabilitation, reconstruction & development process in the zoo.

**Warnings and disseminations:** In case of receipt of any kind of advance warnings for any sort of disaster, the committee would meet urgently to take necessary precautionary and safety measures to minimize the damage by the particular probable disaster, which may strike the life and property in the zoo. Immediate preparatory steps to be taken have to be chalked out and appraised to all concerned. The team leader for dissemination for message will be the Curator, Zoo whose mobile No is 9436122058.

**Budgetary provision/ funding mechanism:** Maintenance in zoo is a regular phenomenon. Many time it become necessary to perform emergency maintenance work for which fund is to be made available. To mitigate any sort of disaster an impressed fund through recycling of gate money may be raised to meet up such expenditure. An amount

of Rs. 25,000/- should be kept as impressed fund to take immediate step in any disasters incidents in the Zoo on emergent basis.

**Integration of disaster management plan into development plan:**

During

carrying out any sort of development activities in the Zoo, items related to check various disasters have to be incorporated in the constructions etc. to make it full proof against a particular identified disaster in the Zoo area and its surroundings. **The zoo area may be declared smoking free zone to avoid pollution and fire disaster.**

**i) Framing Infrastructure:** The team proposed as in earlier para for combating the disasters in the zoo would be responsible for all times. However, this would be reviewed from time to time and would be changed in case of necessity.

**ii) Planning:** It is required to ensure capacity building of these team members for equipping them to handle all sorts of probable disasters anticipated in the Zoo at any point of time. This requires training all team members locally by inviting experts from related depts. and also nominating in the State Level training programmes as and when such programmes are organized.

**iii) Strategy:** For proposing any development activities in the Zoo, all points related to encountering various anticipated disasters in the zoo should also be taken into consideration and proper arrangements would be incorporated in all such plan to make it full proof from any sort of disaster in future.

**Regular use of the plan and its use:**

A plan in each case of above identified disaster has to be settled by the committee in consultation with various experts of related

depts. and these should be regular in use and updated so as to built it up as a full proof mechanism against the disaster. It is most important to make the members thoroughly aware of the materials to be used for different disaster management as well as the entire process to be followed. For attaining this, regular practice schedule would be made and implemented which will make the members thoroughly acquainted with the process.

## **Chapter-VII**

### **Contingency Plan**

#### **(1) Animal rescued from wild:**

As there are very remote chances of exchange as well as acquisition of desired animals from the zoos of the region the only possibility of acquisition of desired animals from the wild. There is provision for such acquisition from the wild for the recognized zoos under section 12 of the Wildlife (Protection), Act, 1972. It is further added that acquiring and transportation of animals from western zoos is quite cost prohibitive, more so these animals are all from the same captive stock from generations.

In case any animal rescued from the wild under certain emergent and unavoidable situation and brought to the Zoo with the permission of Chief Wildlife Warden, Tripura those animals shall not be included with the zoo stock until and unless is permitted by the Chief Wildlife Warden if the same is at all required to house in the Zoo for either pairing of to introduce new blood such as for CB project.

## (2) Escape of animals from enclosures

At present in case of animals escaped from the enclosure we try to take it back by persuasion and found effective. However, in case of necessity we would use tranquilization, which are readily available in the stock. The visitors are required to be immediately vacated from zoo to avoid any attack of visitors by the escaped animal if it is ferocious/ dangerous one and thereafter, keeping the situation cool and studying the appropriate device would be effective for push back the procedure would be followed. In case of such escape the following team shall take the lead:

i) Dr. Gautam Dasgupta, Asstt. Director,

ARDD, I/C Vety Hospital

Chairman

9436458176(M)

ii) Sri Swapan Bhowmik, Fr.

Member Secretary

iii) Sri Nishu Deb, P/L

Member

iv) Sri Chan Mia, P/L

Member

v) Sri Nitu Deb, P/L

Member

## (3) Monkey & dog menace

We have been continuously requesting the visitors not to feed the monkeys or eat in front of them in the zoo as well as to those are free ranging. Awareness programme would be carried out involving the staff, workers & the visitors to stress on following points:

1. We would make a system to dispose the garbage so that it does not attract monkeys.
2. One should avoid being close to any monkey troop.

3. One should avoid confrontation with the monkey for both i.e for his safety and that of the monkey.
4. Nobody should feed wild monkeys or eat in front of them in parks, on the road, at home or anywhere.
5. Nobody should smile or show teeth to monkeys it means danger to them.
6. None should taunt or tease wild monkeys anywhere.
7. One should not run from wild monkeys—if it threatens one should stand on the ground with a threat pose. Better to avoid wild monkeys entirely.
8. One should not try and fight if a monkey grabs something of his. The person himself is more valuable than anything he carries.

Signboards have been fixed at various prominent locations in this regard.

The pet dogs mostly enter inside the zoo along with workers and with the visitors. Special awareness campaign would be made to aware the visitors as well as to the staff and workers for helping the administration by way of keeping their dogs off the zoo for obvious reason. Vaccination of dogs surrounding the zoo would be taken up. The dogs shall not be allowed to enter inside the zoo in any case. Food wastes inside the zoo shall be kept under proper cover so that the dog do not get smell from outside the zoo.

**(4) Arrangement of food in case of strike (non supply by contractor)**

We have made provision to keep food supply uninterrupted under any situation. One Commander Jeep No-TR-01B/955 has been placed under Curator Zoo who would procure any sort of food items from the locality in case of any strike or failure by the contractor.

**(5) Snake bite**

We procured snake antivenom serum to encounter snake bite of which the date expired. We would procure the same and keep ready in the stock under the custody of VAS at veterinary hospital of Sepahijala Zoo for subsequent use as per necessity.

**(6) Visitor getting injured/ visitor falling inside**

Visitor getting injured/visitors falling inside enclosures are taken care of by the workers and staff who remains present around the zoo during the working hours. In case of occurrence of any such incident the following team would control the incident:

- |                            |                  |
|----------------------------|------------------|
| i) Sri Swapan Bhowmik, Fr. | Member Secretary |
| ii) Sri Nishu Deb, P/L     | Member           |
| iii) Sri Chan Mia, P/L     | Member           |
| iv) Sri Nitu Deb, P/L      | Member           |
| v) Sri Akbar Khan, P/L     | Member           |

**(7) Fighting among animals**

Fighting among animals is a common phenomenon in the captivity due the social character of the wild animals which mainly observed during feeding in groups and also during breeding season. To overcome this situation, the feeds should be provided in various places inside the enclosure incase groups exist in the same enclosure and provision may be made to provide feed in a separate feeding cubical for individuals. Fighting during breeding season needs to be observed and overcome by segregating the adult male from the other temporarily.

**(8) Epidemics**

Provision has to be made to encounter from any sort of epidemics on emergency basis. As for example for protecting the wild animals form bird flue and other diseases, vaccination of cattle in surrounding areas of zoo would be taken up in collaboration with the ARDD to prevent communication of any sort of disease to the captive animals from the domestic animals.

**(9) Break down of power supply**

For maintaining uninterrupted power supply in the Zoo measures has to be taken and alternate power supply can also be devised like solar energy and even generator. The power Deptt has assured to recognize Sepahijala feeder as emergent feeder soon after the completion of renovation works for which fund have also been sanctioned by the Govt. In future, to avoid disruption of power supply due to falling of trees during rainy season, provision has been made in this Plan to install under ground cable lines.

### **10) Free ranging animals/ feral animal menace**

To spot entry of free ranging animals and feral animals inside the enclosure and to avoid attack of captive animals by such free ranging animals, adequate measure would be taken while designing the enclosures so that the free ranging animals do not get scope to enter inside the enclosures and that can damage/ injure the captive animals.

**Stoppage of water supply:** At present there is only one submergible pump, which is covering the water supply of entire zoo premises, FRH, Training Centre, Baidhyardighi Qr. complex and Botanical garden area. In case of disorder of the existing pump the entire water supply line gets water supply completely stopped for which we need to keep additional pump set in store to immediately install for resuming the water supply with out any interruption.

**For cyclone:** The Sepahijala Zoo is situated inside the Sanctuary as result lots of trees are available within the zoo premises and also in and around the enclosures. The Zoo is severely prone to cyclone damages. Thus, to overcome heavy damage due to uprooting of trees and falling tree branches over the enclosures and visitors' path we need initially to carry out lopping of the trees which can cause serious damages due to the above reasons. In addition, emergent instruments/tools are to be kept in store for immediately remove the fallen trees/branches from the zoo premises after such incidents on war footing basis. Further, the quick response team formed for the zoo shall monitor the cyclone disaster to immediately restore the normal position.

**For Fire incident:** As such there is no severe threat from fire for the zoo and precautionary measures are always been taken to avoid any major damage form fire. Fire lines are normally required to be made around the zoo premises. At least ten potable fire

extinguishers are needed to be kept in the zoo. Fire Service station, Bishalgarh is required to be kept on alert during fire season so that immediate help is extended in case of major incident.

**For flood:** Depending upon the location of the Zoo in a hilly terrain, there is normally no threat from flood. The rainwater drainage system has to be maintained in such a way so that water does not stagnate unnecessarily to terminate to flood situation in the Zoo, which may cause tremendous harm to the captive animals.

### **CHAPTER-VIII**

#### **Capacity building**

As per the proposed Management Plan, the staff strength would be Veterinary Surgeon-1, VAS-1, Curator-1, Forest Ranger-2, Biologist-1, Junior Engineer-1, Education Officer-1, Pathologist-1, Vety. Assistant -3, Forester-14, Mate-1, Zoo keeper (FG/HFG)-16, Permanent Labour-76 & Casual labour -10. It is considered that dealing and managing wild animals are required specialized skills and know how. Thus, each and every individuals linked with wildlife management in the captivity require short term/long term training depending upon the nature of duties allotted to them. Wildlife Institute of India in collaboration with Central Zoo authority, GOI usually imparts training programmes every year and on getting such information, we used to nominate the untrained personals of required level to participate in the said training programme. At present the Director, Curator, VAS, one existing Forester out of three, three FG out of four were trained on animal handling and management courses conducted by the Central Zoo Authority in different parts of the country from time to time.

### Plan to upgrade skills of zoo staff

However, a training calendar is proposed as under to impart training programmes in future for all level officials / staff of the Zoo during the ten year project period.

Year	Designation of staff to be trained	Name of Institution where to be trained	Duration of training	Tentative amount would involve In Rs.	Source of fund
2012-	Zoo Keepers-5	CZA	One week	15,000/-	CZA.
2013	Forester-3	Do	Two weeks	30,000/-	CZA
	Permanent Labour-20	Forest Training School, Sepahijala	One week	20,000/-	State Plan.
	Vety. Assistant-2	ARDD Training Centre, RK Nagar.	One month	30,000/-	State Plan
	Biologist-1	WII, Dehradun	Two weeks	30,000/-	CZA
2013-	Forest Ranger-1	WII, Dehradun	Two weeks	30,000/-	CZA
2014	Zoo keeper-5	CZA	Two weeks	30,000/-	CZA.
	Forester-3	Do	Two weeks	30,000/-	CZA

	Permanent Labour- 20	Forest Training School, Sepahijala	One week	20,000/-	State Plan.
	Veterinary Surgeon	IVRI	Two weeks	40,000/-	CZA
	Education officer	CZA	One week	25,000/-	CZA
2014-	VAS-1	IVRI	Two weeks	40,000/-	CZA
2015	Zoo keeper-2	CZA	Two weeks	20,000/-	CZA
	Forester-3	CZA	Two weeks	40,000/-	CZA
	Permanent Labour- 20	Forest Training School, Sepahijala	Two weeks	30,000/-	State Plan
2015-	Zoo keeper-2	Do	Two weeks	20,000/-	CZA
2016	Forester-4	CZA	Two weeks	40,000/-	CZA
	Permanent Labour- 16	CZA	Two weeks	30,000/-	State Plan
<b>Refresher Course</b>					
2016-	Director Zoo	WII	Two weeks	35000/-	CZA
2017	Forester-3	CZA	One week	20,000/-	CZA
	VAS	IVRI	One week	20,000/-	CZA
	Permanent labour- 20	Forest Training School, Sepahijala.	One week	20,000/-	State Plan

2017- 2018	Curator Zoo Forester-3 Zoo keeper-5 Permanent labour- 20	WII CZA CZA Forest Training School, Sepahijala	Two weeks One week One week One week	30,000/- 40,000/- 50,000/- 20,000/-	CZA CZA CZA State Plan
2018- 2019	Forest Ranger-1 Forester-3 Zoo Keeper-4 Vety. Asstt.- 2 Permanent Labour- 20	WII CZA CZA R. K. Nagar, ARDD Sepahijala Training School	One week One week One week One week One week	25,000/- 40,000/- 40,000/- 10,000/- 20,000/-	CZA CZA CZA CZA State Plan
2019- 2020	Vety. Surgeon-1 Vety. Asst-1 Forester-3 Zoo keeper-4 Permanent Labour- 20	IVRI RK Nagar, ARDD CZA CZA Sepahijala TRG. School	One week One week One week One week One week	25,000/- 5,000/- 40,000/- 40,000/- 20,000/-	CZA CZA CZA CZA State Plan

2020-2021	Forester-3 Zoo keeper-2 Permanent Labour-16	CZA CZA Sepahijala TRG.	One week One week One week	40,000/- 20,000/- 16,000/-	CZA CZA State Plan
2021-2022	Forester-2 Zoo keeper- 2	CZA CZA	One week One week	28,000/- 20,000/-	CZA CZA
<b>TOTAL</b>				<b>11,44,000/-</b>	<b>CZA- 9,58,000/- State Plan- 1,86,000/-</b>

In addition, the other staffs /officials would be nominated as and when requisite training programmes intimation would be received from the CZA /WII/IVRI and other nodal agencies and their training expenses would be borne by the respective Institutions.

Normal training for the untrained staff, workers would be completed within a period of four year i.e by 2014-2015 and thereafter refresher courses would be arranged for all the staff/ workers in a phased manner.

Refresher course would also be done for the foresters and other sub-ordinate staff and workers frequently at Forest Training School, Sepahijala and in other venue in the state and outside the State as indicated above. Budget provisions have been made for the entire training schedules.

**Interaction with other zoos**

As mentioned earlier, Sepahijala zoo is specialized for rearing animals of North East India and good nos of species available at Sepahijala zoo are also available in North East Indian Zoos viz. Guwahati Zoo, Shillong Zoo, Aizwal Zoo, Kohima Zoo, Manipur zoo and the zoo of Arunachal Pradesh. So it is proposed to pool all the resources of these developing zoos along with Sepahijala Zoo so that captive populations of endangered species of these zoological parks can be treated as one population and exchange of animals including breeding loans etc. could be organized for more planned and coordinated breeding programmes. Govt. of India should be approached to create one such platform for these North East Indian Zoological parks for co-operative population management for planned breeding of North East India species

**Regional cooperation with institution**

As mentioned in the previous paragraph efforts are on for better coordination at the regional level but at the moment there is very limited scope so for the time being coordination at global level particularly with the zoos dealing with endangered animals of North East India in the North Europe, North America, China, Thailand, Malaysia etc. is required to be made for purposeful and successful conservation breeding programme for these animals. Help of Worlds Zoo Organization, captive breeding specialist groups and zoo authority /associations of these countries can be taken for better coordination.

## CHAPTER-IX

### E- governance

For maintaining transparency in the administration and its functioning, all sorts of activities should be communicated to the website as well as Panchayat Samiti and Blocks which covers the jurisdiction of Sepahijala Zoological Park. At the end of each financial year, Annual reports will be published in local language and **vanchetana shava** will be organized where the activities carried out in last year shall be brought to the notice of representatives of Panchayat Raj Institution in a gathering where the common people from the surrounding Panchayat will also be invited to remain present. . The views of the elected panchayat bodies as well as the common people of the surrounding Panchayats shall be taken into consideration for future planning and implementation of various activities.

**Adoption of Zoo animals;** Recently, we launched a noble scheme in the zoo i.e adoption of zoo animals by the animal lovers who may bear the expenses of the maintenance of an animal for a year or so and can avail privilege but would not be entitled to have the ownership right of that animal. Publicity in this regard is required to be done to get sufficient response.

### **Zoo Authority, Tripura, Sepahijala:**

The Zoo has also been registered under Society Act and soon the functioning of Zoo Authority, Tripura, Sepahijala will start functioning and we shall be in a position to spend the revenue for upkeep of Zoo and other emergent purposes. The donation like

adoption and from other sources would enable us to build viable fund for utilizing for the development of the Zoo in future.

## **CHAPTER-X**

### **a. Broad budget analysis for implementing the plan**

#### **A. Modification of enclosures:**

The existing enclosure may be modified as an emersion enclosure for housing the Tigers and the lions can be shifted in the present tiger enclosure. The present Bison enclosure may be modified for leopard enclosure and one new Bison enclosure may be constructed. The existing Binturong enclosure may be modified with a bigger surrounding the existing location.

Enclosures are to be constructed for the following animals:

1. Clouded leopard
2. Porcupine
3. Binturong
4. Leopard
5. Jackal
6. Hyena
7. Bison
8. Sloth Bear
9. Black buck
10. Nilgai
11. Yellow throated martin

The existing leopard & clouded leopard enclosure requires to be demolished and a new clouded leopard enclosure is required to be constructed. Existing Hybrid lion enclosure would retain till the existing stock which are at old age would die.

Further, enclosures are to be made for housing the following animals:

- Zebra
- Giraffe
- Hippopotamus
- Ostrich
- Emus
- Reptile house
- Walk through aviary
- Pangolin
- Butterfly Park
- Silver pheasant

#### **b. Construction & development**

##### **Design for the new enclosures with probable cost :**

All the mooted enclosures should have brick wall all around with MS grill in the visitor gallery. There should be adequate space in the service cage for easy movement of the animals. Apart from providing brick wall, Chainlink mesh wire fencing should also be provided over the brick wall at a height of 3 mt. to avoid

littering / teasing of animals. Few photography windows may be kept on the chainlink fence. Water supply arrangement should also be made in all the enclosures.

One Junior is essentially required for the Zoo who can also look after the construction works of the Sanctuary also.

In case of the enclosure of birds, care should be taken to avoid any vertical post within the enclosure so that the bird may fly safely. Further, effort has to be made to keep trees within the enclosures. Arrangement for nesting place is also to be made in side the enclosures with provision for adequate water arrangement

**c. Day to day maintenance**

Maintenance of available paraphernalia as per budget is an essential and integral component of management. The ideas and strategies decided in the management plan are useless unless the management has appreciable infrastructure in maintained condition.

The zoo is presently receives 100% of its maintenance budget from the State Govt. It is suggested to search out the possibility of sponsorship for maintenance of zoo animals including their diet. Industrial, Commercial organizations may be contacted for the same. Income tax Department should also be contacted to exempt such contributions/sponsorships under section 80 G of Income Tax Act. This will help the zoo in generating additional funds for better management.

Maintenance budget required for 2009-2010 for different works including staff salaries has been projected in tabular format below. There will be 10% increase in

maintenance cost annually for each item of work and in total expected, so provision should be made accordingly.

**MAINTENANCE BUDGET FOR SEPAHIJALA ZOOLOGICAL PARK  
FOR THE YEAR 2012-13.**

**STATE PLAN.**

<u>Sl No</u>	<u>Particulars of works</u>	<u>Involvement of amt. In Lakh</u>	<u>Sch-No</u>
	<b>Recurring</b>		
1.	Salary of staff/ TE	4.50	Non Plan-/Plan
2.	Up keep meant of Sepahijala Zoo (Wages of workers)	10.0	Sch-14- 27 MW
3.	Cost of animal food In/c medicine for captive animals	128.0	Sch-14, 28-23 ration
4.	Misc. expenses (detergents, disinfectant, torch cells, brooms etc)	1.0	Sch-I, Direction & Admnistration
5.	Construction of sheds inside enclosures	0.60	Sch-14 Wildlife Conservation
6	Cost of making /improvement shifting cage/ transportation cages	0.50	Sch-14 , Wildlife Conservation
7	Procurement of chain link/ welded mesh	8.5	Sch-14- 28-21 S & Mat
8	Weeding and cleaning of Zoo complex beyond enclosure thrice	1.55	Sch-14

3	Cost of three nos Generator set	3.5	TFC
	<b>Total of Non recurring</b>	<b>7.5</b>	
	<b>Total of State –Plan</b>	<b>175.95</b>	

**MAINTENANCE BUDGET FOR SEPAHIJALA ZOOLOGICAL PARK  
FOR THE YEAR 2013-14.**

**STATE PLAN.**

<u>SI No</u>	<u>Particulars of works</u>	<u>Involvement of amt. In Lakh</u>	<u>Sch-No</u>
	<b>Recurring</b>		
1.	Salary of staff/ TE	4.50	Non Plan-/Plan
2.	Up keep meant of Sepahijala Zoo (Wages of workers)	10.0	Sch-14- 27 MW
3.	Cost of animal food In/c medicine for captive animals	148.0	Sch-14, 28-23 ration
4.	Misc. expenses (detergents, disinfectant, torch cells, brooms etc)	1.0	Sch-I, Direction & Admnistration
5.	Construction of sheds inside enclosures	0.60	Sch-14 Wildlife Conservation
6	Cost of making /improvement shifting cage/ transportation cages	0.50	Sch-14 , Wildlife Conservation
7	Procurement of chain link/ welded mesh	8.5	Sch-14- 28-21 S & Mat
8	Weeding and cleaning of Zoo	1.55	Sch-14

	complex beyond enclosure thrice in/c making of fire line around the zoo during the year		
9	Signage and display boards	0.60	Sch-14, S& Mat
10	MTC of Staff Quarters	5.5	Sch-12-30-27 MW
11	Awareness programme	1.50	Sc-14 Wildlife Conservation.
12.	Educational / interpretation materials	0.50	Sch-14, S & Mat
13	Cost of fuels for one Tata Sumo & one commander jeep detailed in the Zoo in/c maint.	1.45	I Direction & Administration- 30- 18 POL
14	Office contingency/Printing and stationery	1.75	I Direction & Administration-30- 13 OE
15	Improvement of Deer enclosures with RCC Posts and replacement of torn nets and refining	2.5	Sch-14 Wildlife Conservation 18-27- Mw
	<b>Total of Recurring</b>	<b>188.45</b>	
	<b>Non-recurring</b>		
1	Installation of two more drinking water facility inside zoo for visitors	3.0	Sch-14, Wildlife Conservation
2.	Providing one more toilet facility in	3.0	TFC

	side zoo for visitors.		
	<b>Total of Non recurring</b>	<b>6.0</b>	
	<b>Total of State –Plan</b>	<b>194.45</b>	

**MAINTENANCE BUDGET FOR SEPAHIJALA ZOOLOGICAL PARK  
FOR THE YEAR 2014-15.**

**STATE PLAN.**

<b><u>Sl No</u></b>	<b>Particulars of works</b>	<b>Involvement of amt. In Lakh</b>	<b>Sch-No</b>
	<b>Recurring</b>		
1.	Salary of staff/ TE	5.50	Non Plan-/Plan
2.	Up keep meant of Sepahijala Zoo (Wages of workers)	10.0	Sch-14- 27 MW
3.	Cost of animal food In/c medicine for captive animals	158.0	Sch-14, 28-23 ration
4.	Misc. expenses (detergents, disinfectant, torch cells, brooms etc)	1.0	Sch-I, Direction & Admnistration
5.	Construction of sheds inside enclosures	0.60	Sch-14 Wildlife Conservation
6	Cost of making /improvement shifting cage/ transportation cages	0.50	Sch-14 , Wildlife Conservation
7	Procurement of chain link/ welded mesh	8.5	Sch-14- 28-21 S & Mat
8	Weeding and cleaning of Zoo	1.55	Sch-14

	complex beyond enclosure thrice in/c making of fire line around the zoo during the year		
9	Signage and display boards	0.60	Sch-14, S& Mat
10	MTC of Staff Quarters	5.5	Sch-12-30-27 MW
11	Awareness programme	1.50	Sc-14 Wildlife Conservation.
12.	Educational / interpretation materials	0.50	Sch-14, S & Mat
13	Cost of fuels for one Tata Sumo & one commander jeep detailed in the Zoo in/c maint.	1.45	I Direction & Administration- 30- 18 POL
14	Office contingency/Printing and stationery	1.75	I Direction & Administration-30- 13 OE
15	Improvement of Deer enclosures with RCC Posts and replacement of torn nets and refining	2.5	Sch-14 Wildlife Conservation 18-27- Mw
	<b>Total of Recurring</b>	<b>199.45</b>	
	<b>Non-recurring</b>		
1	Installation of two more drinking water facility inside zoo for visitors	3.0	Sch-14, Wildlife Conservation
2.	Providing one more toilet facility in	3.0	TFC

	side zoo for visitors.		
	<b>Total of Non recurring</b>	<b>6.0</b>	
	<b>Total of State –Plan</b>	<b>205.45</b>	

**MAINTENANCE BUDGET FOR SEPAHIJALA ZOOLOGICAL PARK**  
**FOR THE YEAR 2015-16.**

**STATE PLAN.**

<b><u>SI No</u></b>	<b>Particulars of works</b>	<b>Involvement of amt. In Lakh</b>	<b>Sch-No</b>
	<b>Recurring</b>		
1.	Salary of staff/ TE	6.50	Non Plan-/Plan
2.	Up keep meant of Sepahijala Zoo (Wages of workers)	10.0	Sch-14- 27 MW
3.	Cost of animal food In/c medicine for captive animals	168.0	Sch-14, 28-23 ration
4.	Misc. expenses (detergents, disinfectant, torch cells, brooms etc)	1.0	Sch-I, Direction & Admnistration
5.	Construction of sheds inside enclosures	0.60	Sch-14 Wildlife Conservation
6	Cost of making /improvement shifting cage/ transportation cages	0.50	Sch-14 , Wildlife Conservation
7	Procurement of chain link/ welded mesh	8.5	Sch-14- 28-21 S & Mat
8	Weeding and cleaning of Zoo	1.55	Sch-14

	side zoo for visitors.		
	<b>Total of Non recurring</b>	<b>8.0</b>	
	<b>Total of State –Plan</b>	<b>218.45</b>	

**MAINTENANCE BUDGET FOR SEPAHIJALA ZOOLOGICAL PARK  
FOR THE YEAR 2016-17.**

**STATE PLAN.**

<b><u>SI No</u></b>	<b>Particulars of works</b>	<b>Involvement of amt. In Lakh</b>	<b>Sch-No</b>
	<b>Recurring</b>		
1.	Salary of staff/ TE	7.50	Non Plan-/Plan
2.	Up keep meant of Sepahijala Zoo (Wages of workers)	10.0	Sch-14- 27 MW
3.	Cost of animal food In/c medicine for captive animals	178.0	Sch-14, 28-23 ration
4.	Misc. expenses (detergents, disinfectant, torch cells, brooms etc)	1.0	Sch-I, Direction & Admnistration
5.	Construction of sheds inside enclosures	0.60	Sch-14 Wildlife Conservation
6	Cost of making /improvement shifting cage/ transportation cages	0.50	Sch-14 , Wildlife Conservation
7	Procurement of chain link/ welded mesh	8.5	Sch-14- 28-21 S & Mat
8	Weeding and cleaning of Zoo	1.55	Sch-14

	complex beyond enclosure thrice in/c making of fire line around the zoo during the year		
9	Signage and display boards	0.60	Sch-14, S& Mat
10	MTC of Staff Quarters	5.5	Sch-12-30-27 MW
11	Awareness programme	1.50	Sc-14 Wildlife Conservation.
12.	Educational / interpretation materials	0.50	Sch-14, S & Mat
13	Cost of fuels for one Tata Sumo & one commander jeep detailed in the Zoo in/c maint.	1.45	I Direction & Administration- 30- 18 POL
14	Office contingency/Printing and stationery	1.75	I Direction & Administration-30- 13 OE
15	Improvement of Deer enclosures with RCC Posts and replacement of torn nets and refining	2.5	Sch-14 Wildlife Conservation 18-27- Mw
	<b>Total of Recurring</b>	<b>221.45</b>	
	<b>Non-recurring</b>		
1	Installation of two more drinking water facility inside zoo for visitors	4.0	Sch-14, Wildlife Conservation
2.	Providing one more toilet facility in	4.0	TFC

	side zoo for visitors.		
	<b>Total of Non recurring</b>	<b>8.0</b>	
	<b>Total of State –Plan</b>	<b>229.45</b>	

**MAINTENANCE BUDGET FOR SEPAHIJALA ZOOLOGICAL PARK  
FOR THE YEAR 2017-18.**

**STATE PLAN.**

<b><u>Sl No</u></b>	<b><u>Particulars of works</u></b>	<b><u>Involvement of amt. In Lakh</u></b>	<b><u>Sch-No</u></b>
	<b>Recurring</b>		
1.	Salary of staff/ TE	8.50	Non Plan-/Plan
2.	Up keep meant of Sepahijala Zoo (Wages of workers)	10.0	Sch-14- 27 MW
3.	Cost of animal food In/c medicine for captive animals	188.0	Sch-14, 28-23 ration
4.	Misc. expenses (detergents, disinfectant, torch cells, brooms etc)	1.0	Sch-I, Direction & Admnistration
5.	Construction of sheds inside enclosures	0.60	Sch-14 Wildlife Conservation
6	Cost of making /improvement shifting cage/ transportation cages	0.50	Sch-14 , Wildlife Conservation
7	Procurement of chain link/ welded mesh	8.5	Sch-14- 28-21 S & Mat
8	Weeding and cleaning of Zoo	1.55	Sch-14

	complex beyond enclosure thrice in/c making of fire line around the zoo during the year		
9	Signage and display boards	0.60	Sch-14, S& Mat
10	MTC of Staff Quarters	5.5	Sch-12-30-27 MW
11	Awareness programme	1.50	Sc-14 Wildlife Conservation.
12.	Educational / interpretation materials	0.50	Sch-14, S & Mat
13	Cost of fuels for one Tata Sumo & one commander jeep detailed in the Zoo in/c maint.	1.45	I Direction & Administration- 30- 18 POL
14	Office contingency/Printing and stationery	1.75	I Direction & Administration-30- 13 OE
15	Improvement of Deer enclosures with RCC Posts and replacement of torn nets and refining	2.5	Sch-14 Wildlife Conservation 18-27- Mw
	<b>Total of Recurring</b>	<b>232.45</b>	
	<b>Total of State –Plan</b>	<b>232.45</b>	

**MAINTENANCE BUDGET FOR SEPAHIJALA ZOOLOGICAL PARK**  
**FOR THE YEAR 2018-19.**

**STATE PLAN.**

<b><u>SI No</u></b>	<b><u>Particulars of works</u></b>	<b><u>Involvement of amt. In Lakh</u></b>	<b><u>Sch-No</u></b>
	<b>Recurring</b>		
1.	Salary of staff/ TE	9.50	Non Plan-/Plan
2.	Up keep meant of Sepahijala Zoo (Wages of workers)	10.0	Sch-14- 27 MW
3.	Cost of animal food In/c medicine for captive animals	198.0	Sch-14, 28-23 ration
4.	Misc. expenses (detergents, disinfectant, torch cells, brooms etc)	1.0	Sch-I, Direction & Admnistration
5.	Construction of sheds inside enclosures	0.60	Sch-14 Wildlife Conservation
6	Cost of making /improvement shifting cage/ transportation cages	0.50	Sch-14 , Wildlife Conservation
7	Procurement of chain link/ welded mesh	8.5	Sch-14- 28-21 S & Mat
8	Weeding and cleaning of Zoo complex beyond enclosure thrice in/c making of fire line around the zoo during the year	1.55	Sch-14
9	Signage and display boards	0.60	Sch-14, S& Mat

3.	Cost of animal food In/c medicine for captive animals	208.0	Sch-14, 28-23 ration
4.	Misc. expenses (detergents, disinfectant, torch cells, brooms etc)	1.0	Sch-I, Direction & Administration
5.	Construction of sheds inside enclosures	0.60	Sch-14 Wildlife Conservation
6	Cost of making /improvement shifting cage/ transportation cages	0.50	Sch-14 , Wildlife Conservation
7	Procurement of chain link/ welded mesh	8.5	Sch-14- 28-21 S & Mat
8	Weeding and cleaning of Zoo complex beyond enclosure thrice in/c making of fire line around the zoo during the year	1.55	Sch-14
9	Signage and display boards	0.60	Sch-14, S& Mat
10	MTc of Staff Quarters	5.5	Sch-12-30-27 MW
11	Awareness programme	1.50	Sc-14 Wildlife Conservation.
12.	Educational / interpretation materials	0.50	Sch-14, S & Mat
13	Cost of fuels for one Tata Sumo & one commander jeep detailed in the Zoo in/c maint.	1.45	I Direction & Administration- 30-18 POL

14	Office contingency/Printing and stationery	1.75	I Direction & Administration-30-13 OE
15	Improvement of Deer enclosures with RCC Posts and replacement of torn nets and refining	2.5	Sch-14 Wildlife Conservation 18-27-Mw
	<b>Total of Recurring</b>	<b>254.45</b>	
	<b>Total of State –Plan</b>	<b>254.45</b>	

**MAINTENANCE BUDGET FOR SEPAHIJALA ZOOLOGICAL PARK  
FOR THE YEAR 2020-21.**

**STATE PLAN.**

<u>SI No</u>	<u>Particulars of works</u>	<u>Involvement of amt. In Lakh</u>	<u>Sch-No</u>
	<b>Recurring</b>		
1.	Salary of staff/ TE	11.50	Non Plan-/Plan
2.	Up keep meant of Sepahijala Zoo (Wages of workers)	10.0	Sch-14- 27 MW
3.	Cost of animal food In/c medicine for captive animals	218.0	Sch-14, 28-23 ration
4.	Misc. expenses (detergents, disinfectant, torch cells, brooms etc)	1.0	Sch-I, Direction & Admnistration
5.	Construction of sheds inside enclosures	0.60	Sch-14 Wildlife Conservation

6	Cost of making /improvement shifting cage/ transportation cages	0.50	Sch-14 , Wildlife Conservation
7	Procurement of chain link/ welded mesh	8.5	Sch-14- 28-21 S & Mat
8	Weeding and cleaning of Zoo complex beyond enclosure thrice in/c making of fire line around the zoo during the year	1.55	Sch-14
9	Signage and display boards	0.60	Sch-14, S& Mat
10	MTC of Staff Quarters	5.5	Sch-12-30-27 MW
11	Awareness programme	1.50	Sc-14 Wildlife Conservation.
12.	Educational / interpretation materials	0.50	Sch-14, S & Mat
13	Cost of fuels for one Tata Sumo & one commander jeep detailed in the Zoo in/c maint.	1.45	I Direction & Administration- 30-18 POL
14	Office contingency/Printing and stationery	1.75	I Direction & Administration-30-13 OE
15	Improvement of Deer enclosures with RCC Posts and replacement of torn nets and refining	2.5	Sch-14 Wildlife Conservation 18-27-Mw

	<b>Total of Recurring</b>	<b>265.45</b>	
	<b>Non-recurring</b>		
1	Installation of two more drinking water facility inside zoo for visitors	6.0	Sch-14, Wildlife Conservation
2.	Providing one more toilet facility in side zoo for visitors.	6.0	TFC
	<b>Total of Non recurring</b>	<b>12.0</b>	
	<b>Total of State –Plan</b>	<b>277.45</b>	

**MAINTENANCE BUDGET FOR SEPAHIJALA ZOOLOGICAL PARK  
FOR THE YEAR 2021-22.**

**STATE PLAN.**

<u>Sl No</u>	<u>Particulars of works</u>	<u>Involvement of amt. In Lakh</u>	<u>Sch-No</u>
	<b>Recurring</b>		
1.	Salary of staff/ TE	11.50	Non Plan-/Plan
2.	Up keep meant of Sepahijala Zoo (Wages of workers)	10.0	Sch-14- 27 MW
3.	Cost of animal food In/c medicine for captive animals	230.0	Sch-14, 28-23 ration
4.	Misc. expenses (detergents, disinfectant, torch cells, brooms etc)	1.0	Sch-I, Direction & Admnistration
5.	Construction of sheds inside enclosures	0.60	Sch-14 Wildlife Conservation

6	Cost of making /improvement shifting cage/ transportation cages	0.50	Sch-14 , Wildlife Conservation
7	Procurement of chain link/ welded mesh	8.5	Sch-14- 28-21 S & Mat
8	Weeding and cleaning of Zoo complex beyond enclosure thrice in/c making of fire line around the zoo during the year	1.55	Sch-14
9	Signage and display boards	0.60	Sch-14, S& Mat
10	MTC of Staff Quarters	5.5	Sch-12-30-27 MW
11	Awareness programme	1.50	Sc-14 Wildlife Conservation.
12.	Educational / interpretation materials	0.50	Sch-14, S & Mat
13	Cost of fuels for one Tata Sumo & one commander jeep detailed in the Zoo in/c maint.	1.45	I Direction & Administration- 30-18 POL
14	Office contingency/Printing and stationery	1.75	I Direction & Administration-30-13 OE
15	Improvement of Deer enclosures with RCC Posts and replacement of torn nets and refining	2.5	Sch-14 Wildlife Conservation 18-27-Mw

	<b>Total of Recurring</b>	<b>278.0</b>	
	<b>Total of State –Plan</b>	<b>278.0</b>	

## **Budget**

### **PLAN BUDGET:-**

Plan budget refers to the budget required to operate the management Plan strategies for future development. Each Scheme should be drafted with complete understanding of style and content needs to be appreciated and cited. It is not a routine work. It needs long term vision and understanding of zoo objectives, zoo architectures, local skills/traditions, sensitivity to practical applications. Often consultations with muster because of the inadequacies in drafting/planning, more importantly if are written by rote. Even if a scheme gets through it fail to deliver the benefits.

Central zoo Authority, Govt. of India gives 100% financial assistance for some share developmental works related to animal housing and animal health care and 50% share on other infrastructural development works. Department of Forests, Govt. of Tripura also give some funds from state plan for different developmental activities like staff housing etc., in addition to 50% share of the infrastructural work (50% share CZA).

The Plan require the budget over its entire period of implementation, considering the time frame of commencement and conclusion of each scheme. Accordingly the plan budget has been projected in a tabular format.

**YEARWISE ABSTRACT OF PLAN FUND REQUIRED IN LAKHS:**

<b>SL NO</b>	<b>YEAR</b>	<b>TOTAL FUND REQUIRED IN LAKHS</b>
1	2012-2013	440.89
2	2013-2014	495.85
3	2014-2015	698.8
4	2015-2016	509.9
5	2016-2017	240.3
6	2017-2018	143.10
7	2018-2019	140.10
8	2019-2020	196.10
9	2020-2021	187.10
10	2021-2022	111.10
<b>Total</b>		<b>3169.74</b>

STATEMENT OF PLAN BUDGET AND SCHEDULE OF PERATION FOR THE YEAR 2012-2013 TO 2021-2022  
YEAR WISE COST INVOLVEMENT IN LAKHS.

SL NO	ITEM OF WORKS	QUANTUM OF WORKS	YEAR WISE COST INVOLVEMENT IN LAKHS.										SOURCE OF FUND	
			2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22		GRAND TOTAL
1	MTC of Breeding enclosure for Clouded leopard / Pig tailed Macaque/ Spectacled langur, Binturong including all related activities of the four projects	4	180	185	190	173	92.7	90	84	82	89	90	1255.7	
2	Const. Of Porcupine enclosure	1	7.5	0	0	0	0	0	0	0	2	0	9.5	
3	Const of Zoo counter gate with waiting rooms/ sovenlour house and clock room of belongings of visitors.	1	0	15	0	0	0	0	0	0	4	0	19	
4	Providing Chainlink mesh fencing around conservation breeding centre over 800 MT	1	20	0	0	0	0	1	0	0	0	1	22	
5	Const. of walk through aviary	1	0	0	50	0	0	0	0	0	2	0	52	



33	Renovation of kitchen & and installation of Gas oven for animals	1	0	0	0	5	5													10
34	Maints. Of Reptile enclosure	1	0	0	0	0	0	5	0	0	0	2								7
35	Mtc. Of Conservation breeding enclosure for Bnturong	2	0	0	0	2	0	0	3	0	0	0	0	3						8
36	Impv. Of Staff Qrs.	5	0	0	5	5	4	0	5	5	5	3	0	0						27
37	Const. of Curator & VAS Qr.	2	0	40																40
38	Extn. Of Food Godown	1	15	0	0	5	0	3	0	0	0	0	0	0						23
39	Const. Of perimeter Boundary	1632	8.46	0	0	0	0	0	0	0	0	0	0	0						8.46
40	Impv of foot paths in the Zoo	800 MT	28.7	0	0	0	0	0	0	0	0	30	0	0						58.7
41	Installation of underground electric line	5.5 Km	0	60	60	0	0	0	0	0	0	0	0	0						120
42	Installation of incinerator(wood based)	1	1.12	0	0	0	0	0	0	0	0	0	0	0						1.12
43	provision of drainage system in the Zoo	2000 MT	0	0	10	15	0	5	0	0	0	0	0	0						30
44	Installation of Iron removal plant	1	0	0	0	85														85
45	Collection of animals on exchange	3	10	5	5	5	5	5	5	5	5	1.5	2							48.5

46	Const of drinking water tank for visitors	2	6	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	10	
47	Awareness programmes among various groups/ publishing educational materials	50 groups	1	3		3	3	3	3		3	3	3	3					26	
48	Const. Of toilets for visitors	8	5	5	8	5	5	5	5		5	5	5	5					45	
49	Up-gradation of nature interpretation centre	1	0	20	0	0	0	0	0		0	0	10	0	0	0	0	0	30	
50	Const. of RCC seats for visitors inside Zoo	20	0	2	1.5	2	0	2	3		1	0	0	0					11.5	
51	Setting up of a Eco-park	1	0	0	15	0	0	0	0		2	0	0	0					17	
52	Impv. Of signage & display boards	40	0	2	2	1	2	2	2		1	0	0	0					10	
53	Cost of refrigerator for vety. Hospital	1	0	0	0	0	0.5	0	0		0	0	0	0					0.5	
54	Research Related Works & documentation	10	3	2	1	2	2	2	2		2	2	2	2					20	
55	Cost of DLV projector, Digital camera, bianacoloour	1 set	4	0	0	4	0	3	0		2	0	0	0					13	
56	Purchase of computer & accessories	3 set	251	0	3	0	4	0	3		2	0	0	0					14.51	

57	Cost of Maruti Gypsy	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
58	Battery Operated VAN In/C Mtc.	1	12	0	0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	12.8
59	Cost of Battery operated vehicle in/c Mtc.	2	0	0	0	0	32	0	0	2	1	2	37					
60	Const. of a library	1	3	0	0	0	0	0	0	0	8	0	11					
61	Mtc. Of Water supply line in the Zoo	2000 Mt	2	1	1	1	1	2	1	1	4	1	15					
62	Up-gradation of skill of staff & worker through training & capacity building.	Curator-1, Forest Ranger-1, VAS-1, Forester-5, Forest Guard-5, Zoo keeper-33, Vety Assistant-3, Education Officer-1, Education Assistant -1, Biologist-1	1.1	1.85	1.3	0.9	2	2	2	2	2	2	17.15					
64	Solid waste management		15	1	2	2	2	2	2	2	2	2	32					
65	Butterfly Park	1	0	0	85	0	0	5	0	0	3	2	95					
TOTAL			440.89	495.85	698.8	509.85	240.3	143.1	140.1	196.1	187.6	111.1	3163.74					

(Krishna Gopal Roy, TFS)  
Director, Sepahijala Zoo

## **PART-III**

### **Chapter-XI**

#### **MANAGEMENT PLAN OF SEPAHIJALA ZOO.**

The instant Master Plan is the first of its kind prepared for Sepahijala Zoological Park. As per the proposed Master Plan, the Zoo administration would be separated from the Sanctuary Administration and the Director Sepahijala Zoological Park would be independent Head of Office as well as DDO. Administrative order has already been issued in this regard. Allotment of D.D.O's Code No has already been made. Posting of required nos ministerial staff also been posted.

Sepahijala Zoo has been identified as National Coordinator Zoo for taking up Conservation Breeding Programme for Clouded Leopard, Spectacled langur, Pig tailed macaque and Binturong. Four Conservation Breeding projects for the above species were submitted to CZA and CZA has approved for release of fund towards construction of enclosures. Fund for constructions of enclosures (partly) been released by CZA prior to 2011-12. Balance fund towards construction was proposed during 2012-2013 covering the period for ten years. Towards maintenance and running the Conservation Breeding Projects (four nos) fund provision has been made in the Plan as per the projects already submitted to CZA. These are five years Projects where costs towards running the Conservation Breeding Works are component of the total fund proposed. The expert team

of CZA lead by Dr. P. C Taygi of WII visited Sepahijala Zoological Park on 27-1-2011 and evaluated the Conservation Breeding Projects . Subsequently an amount of Rs. 126.31 lakhs were released for the year 2011-12 by CZA against Conservation Breeding Project. Copy of four projects has also been attached as appendix in this Master Plan. Further requirement fund for the year 2012-13 for Conservation Breeding project has been submitted to CZA for Rs. 127.99 lakhs

Posting of field and other staff would be required as per requirement shown in the Master Plan. As proposed in the Plan, the dedicated staff would require at least for running the Conservation Breeding Programme. Officer specially trained on Breeding & conservation of endangered species would be required to have over all monitoring for Conservation Breeding Projects. Capacity building and development of skill for the entire staff & workers have been shown in the Plan. This Plan would require to be implemented for up gradation of skill of existing and newly posted staff, workers and officials.

Provision has been kept for installation of wood based incinerator for disposal of solid wastes and fund in this regard has already been received from CZA and the same has already been constructed during the year 2011-12.

To ensure uninterrupted power supply, laying of underground electric line cable up to Sepahijala Zoological Park has been proposed in the Plan.

Central Zoo Authority, Govt. of India gives 100% financial assistance for some developmental works related to animal housing and animal health care and 50% share on other infrastructural development works. Department of Forests, Govt. of Tripura also

give some funds from state plan for different developmental activities like staff housing etc., in addition to 50% share of the infrastructural work (50% share CZA).

For development of Sepahijala Zoo as per Master Plan following activities would be taken up during next five years prioritizing the works:

### **2012-2013:-**

(1) CZA has already approved the Ist phase in respect of construction for Conservation Breeding Enclosures of Clouded Leopard/ Pig tailed macaque/ Spectacled Langur -part-1 and part II phase for the above constructions would be taken up during 2011-12 for which technically approved estimate for Rs. 85.0 Lakhs would be implemented with the fund from CZA. Fund to the extend of Rs.80.0 lakhs for the said const. Have already been released by CZA. An amount of Rs. 5.0 Lakhs would require more from CZA . In all an amount of Rs. 180 lakhs has been proposed more for CB project for the year 2012-13 along with recurring & Non-recurring expenditures. (2) Construction of Porcupine enclosure would be taken up during this financial year for which an amount of Rs.7.5 lakhs would be required for which CZA fund would be required. (3) Providing chainlink mesh wire fencing around Conservation Breeding Project would require 20.0 Lakhs (4) Const. Of visitor shed 7 nos would be taken up during this financial year with the involvement of Rs.15.0 Lakhs from CZA . (5) Impv. Of tiger enclosure would be taken up for housing the tiger with the involvement of Rs.20.0 Lakhs during the year from CZA fund. (6)Const of four horned antelope enclosure- 8.0 lakhs. (7)Extn. Of food godown – 15.0 lakhs (8) One set of DLV projector, Digital camera & binocular would be procured during this year involving an amount of Rs.4.0 Lakhs (9) Const. of Binturong exhibit enclosure would require 30.0 lakhs (10)

const. of clouded leopard exhibit enclosure would further require 27.50 lakhs (11) Impv of foot path in the Zoo- 28.70 lakhs (12) Cost of Maruti Gypsy- 7.0 lakhs (13) Cost of Battery operated van- 12.0 Lakhs (14) Const. of a liabrary- 3.0

### **2013-2014:**

(1) Expenditure related to CB project- 185 – lakhs (2) Const. of Zoo Counter date with waiting room/ soveniour house and cloak room- 15.0 Lakhs. (2) Const. of nocturnal house for slow loris & civets – 6.0 lakhs (3) Impv. Of open moated enclosures for primates- 84.0 lakhs. (5) Impv. Of small Indian civet enclosure- 5.0 lakhs, (6) Setting up of a rescue center- 50.0 lakhs, (7) Const of Curator & VAS Quarter- 40.0 lakhs (8) Installation of underground electricity line- 60.0 lakhs (9) Const of toilets for visitors- 5.0 lakhs (9) Up- gradation of nature interpretation center- 20.0 lakhs (10) Up-gradation of skills of staff & workers- 1.85 lakhs

### **2014-2015:**

(1) Expenditure related to CB projects -190 Lakhs (2) Const. of walk through aviary- 50.0 lakhs (3) Const. of reptile house- 40.0 lakhs, (4) Const. of giraffe enclosure- 40.0 lakhs (5)- Const. of Hyaena enclosure- 10.0 lakhs, (6)- Const of jackal enclosure- 10.0 lakhs, (7) Impv. Of open moated enclosure for primates- 60.0 lakhs, (8) Impv of existing Birds parabolic enclosures- 28.0 lakhs, (9 ) setting up of Rescue center- 50.0 lakhs, (10) Impv of Rhino enclosure with night shelter- 10.0 lakhs, (11) Installation of

underground electricity line- 60.0 lakhs, (12) Const of toilets for visitors- 8.0 lakhs (13) setting up of a Eco- Park- 15.0 lakhs

### **2015-2016:-**

1) Expenditure related to CB project- 173 lakhs. (2) Const. of Vulture enclosure- 25.0 lakhs (3) Const. Nocturnal house for civets and slow loris- 45.0 lakhs (4) Construction of sloth bear enclosure- 20.0 lakhs (5) Const of pangolin enclosure- 20.0 lakhs, (6) Const. of visitor shed- 3.0 lakhs (7) renovation of deer park- 5.0 lakhs (8) Impv. Of existing parabolic birds enclosure- 20.0 lakhs (9) Impv. Of big bird enclosure for pheasants- 15.0 lakhs (10) Impv of Rhino enclosure- 10.0 lakhs, (11) Impv of Himalayan Black bear enclosure- 20.0 lakhs, (12) Provision of drainage system in the Zoo- 15.0 lakhs, Installation of iron removal plant- 85.0 lakhs

### **2016-2017:-**

(1) Expenditure related to CB project- 92.7 lakhs, (2) Const. of Zebra enclosure- 30.0 lakhs (3) Const. of Hippo enclosure- 40.0 lakhs (4) Maints. Of leopard , lion enclosure- 8.0 lakhs (5) Construction of toilet 2 nos for visitor with involvement of Rs.8.0 Lakhs (6) Cost of battery operated vehicle- 32.0 lakhs

In brief, the above noted items are the major items to be implemented / procured during the first five year of the Plan period. In addition, from the state maintenance budget, fund would flow to meet up the day to day works. Review would be done so as to assess for implementation of targeted works in the prescribed time schedule.

Most of the existing animals of zoo are either very old and have exceeded their reproductive age or do not have partner. It is thus proposed to procure animals for pairing of existing animals as listed below:

#### **Conservation Breeding programme:-**

Some of the species found in Tripura are endangered and have very restricted in distribution in India. Helping in relocation and population in the Forests is going to be very important function of the Zoo. To achieve this, we have to take up the captive breeding Programmes for some such species, which can be rehabilitated.

Central Zoo Authority, Govt. of India, identified 61 critically endangered species (whose numbers in the wild gone down below 2500 nos) all over India and decided to take up Conservation Breeding Programme in 35 coordinating Zoos. Sepahijala Zoo has been selected as Coordinating Zoo for four species viz. Spectacled langur , Binturong, Clouded leopard, Pig tailed macaque and participating zoo for Hoolock gibbon. Therefore, to start with, Captive breeding programmes for the following species detailed proposals have to be formulated.

- Spectacled langur (*Trechypithecus phayrei*)
- Binturong (*Arctictis binturong*)
- Clouded leopard (*Neopfelis nebulosa*)
- Pig tailed macaque(*Macaca nemestrina*)

➤ Hoolock (*Hylobates hoolock*)

The detailed programme for Conservation Breeding mentioned above have already been made by the Director, Zoo and forwarded to CZA.. These are ten years proposals and includes construction of enclosures (off display), day to day up keepment and future reintroduction after building a viable stock in the captivity.

It is suggested that the release of these animals should be continuous process and Wildlife Sanctuaries in Tripura should be initial target areas for such release. Marking of 50 individuals out of 56 of above five species involved in conservation breeding have been done and blood samples have also been collected for testing genetically healthy & physical health of every individuals and send to LaCONES, Hyderabad and IVRI , Izatnagar and on receipt of testing reports , individuals would be selected for taking up Conservation Breeding Programme. CZA have already provided fund for construction of enclosures which are to be constructed during the year 2008-09. A team of dedicated staff have to be posted under the disposal of Director Zoo to take up such huge conservation projects and for ensuring their brilliant success. These staff should not be transferred till completion of the project. An Officer specially trained in captive breeding of endangered species in the zoos should be entrusted with the work of managing the Conservation Breeding programme.

A committee would be constituted by the Department involving the officials and public representatives to monitor the project. The committee would consist of following members:

1. Chief Wildlife Warden, Tripura	Chairman
2. Sri Pradesh Roy, Vice Chairperson, Bishalgarh Panchayat Samiti	Member
3. Pradhan, Chandranagar Panchayat	Member
3. The VAS, Sepahijala Zoo	Member
4. Pradhan Kasba Panchayat	Member
5. The Curator, Sepahijala Zoo	Member
6. Director Sepahijala Zoological Park	Member Secretary.

The committee would meet once in six months to review the implementation of the programme and settle all sorts of disputes if any arises during implementation of the projects.

#### **Education Section:**

This is a very important component of zoo management. The visitors after their visit go back with empathy for wild animals in captivity and also in the wild besides getting information about different aspects of biology and ecology of the wild animals. Hence the next steps need to be taken up in years to come.. Already one nature Interpretation centre has come up in the Ist gate of Sanctuary to cater the need of visitors and the same needs to be up graded. School groups are brought at the Sanctuary and the Zoo for the whole day and they are explained various ongoing activities in the zoo and Sanctuary and the need for keeping the animals in the captivity and to take up conservation breeding programme in the zoo.. This is being done on regular basis. The existing Nature interpretation Center is of double storied and the Ist floor of the building

will be developed exclusively for Zoo education and accordingly models and other programmes will be set there in a befitting manner highlighting all important aspects of Zoo management on scientific way. The ground floor is already developed for in-situ conservation.

As such no section is maintained by name of Education Section. Display boards in front of the animal enclosures containing the brief description of the particular species are put. Major events like Vanamotshava, Environment day, Wildlife Week are celebrated which are also part of education awareness programme in the Sanctuary. More informative leaflets are required to be published to convey conservation messages to the young generation. One Education Officer needs to be posted who will take care of Conservation Education and awareness programmes.

**Research Section:** As such no separate section functioning as Research section in the Zoo but the existing sections (animal, Veterinary) are performing the required works in the shape of recording behavioural data in the zoo so as to form a part of research activities in the Zoo. One scientific officer is required to be appointed for carrying out research activities in the zoo. This is being felt the need of the hour for maintaining the zoo on scientific line and accordingly five Research proposal have already been sent to CZA who have already sanctioned one such proposal and we would request CZA to approve other proposals also. On completion of appointment of Biologist, the Research activities in the zoo shall get its due course. The Research project would be implemented in corroboration with Tripura University. It is a two-year project initially to

be taken up for behavioral study of clouded leopard and thereafter for other species involved in Conservation Breeding Programme at Sepahijala Zoo. Fund in this respect have already been received from CZA. Appointment of biologist would be made soon and required study would be taken up in consultation with the Tripura University. Research on visitor management would also be taken up by carrying out visitor survey on regular basis and proper planning would be made from time to time to provide excellent visitor facility. A Research cell shall be constituted comprising of the following:

- |                             |                   |
|-----------------------------|-------------------|
| 1. Director, Sepahijala Zoo | Chairman          |
| 2. The VAS, Sepahijala Zoo  | Member            |
| 3. Curator, Sepahijala Zoo  | Member            |
| 4. Fr. I/c of all sections  | Member            |
| 5. Biologist of the Zoo     | Member Secretary. |

The committee shall finalize animal calendar of all activities for every individual species and would ensure recording required data and arrange documentation.

## **Ex-situ Conservation**

### **Need and role of Zoos:**

Given the scale of global habitat destruction, climate change and increasing human population, it is more important than ever to ask, if Zoos are having anything more than a minimal impact on conservation.

Has captive breeding made the difference between survival and extinction for endangered species? In some cases, yes, it definitely has. Can more be done? Yes, and it should be. Can Captive breeding solve all conservation problems or preserve endangered species? No, of course not. No one should think it can, nor promote it as such.

Zoos are working against the tide of extinction, one species at a time. Because the focus of zoos is primarily individual species, this is where they have the greatest impact. Zoos, especially have recognized that they have limited space and resources, and have directed those resources to considerable effect in specific cases. In some cases, zoos are almost the only institutions directing any conservation effort to critical situations. In effect, the success of zoos as the refuge of last resort for critically endangered species is an indication of the staggering failure of the agencies responsible for conservation, where it really should happen, at the habitat and ecosystem levels.

Zoos are not Noah's Arks-they are much more like the lifeboats on the titanic. Yes, some species will be saved by lifeboats/zoos. Sadly many more will die than will be save, and more could be saved if there were more/bigger life boats/zoos. However, no matter how many life boats/zoos are on hand, their use is an emergency response forced upon them by deeper crisis for which they are not responsible and for which they can offer only temporary salvation. The real responsibility for the present extinction crisis rests at human society's collective feat for putting our magnificent ship/planet on an unsafe path in the first place

We are all a little like the Titanic's Captain, Smith, charging at full speed into the darkness, oblivious to the risks posed by our actions and ultimately unable to be "responsible" for the consequences. Smooth, of course, went down with his ship----

### **Capacity, space, limitations and choice of species**

Captive breeding and the work of zoos on behalf of conservation has its limits. Zoos even the best of them are limited by financial, physical and human resources. Practical limits to the number of individuals that can be supported within captive facilities are increasingly forcing Zoos to make difficult decisions about their collections. Space within zoos that may be occupied by popular display animals may be needed for endangered species.

Considering the Zoo area located inside the Sanctuary there may be no space constraint like other Zoos at least in case of Sepahijala Zoo. Species which are comfortable can only be housed in the zoological park.

There is no concept of fodder cultivation around Sepahijala zoo even in private lands for domestic cattle. The availability of green fodder for large nos of ungulates is very limited and the present practice of collecting green fodders from the sanctuary would damage the natural growth of the Sanctuary. There is proposal to house limited nos of herbivores in the park.

### **Variability, fitness and adaptability**

The Zoological Park always maintain very small captive populations, there are always chances of in-breeding. To avoid such eventualities, it is proposed to continue to add new blood in the form of animals from different stock or from wild to maintain variability and genetic heterozygosity.

As the ultimate objective of ex-situ conservation is restocking of zoo bred animals backing the wild, all efforts should be made to keep these animals fit and adaptable to the wild conditions for which efforts should be made to make and keep the animal enclosures more naturalistic, large and appropriately furnished where all the biological, physiological, and psychological needs can be fulfilled. It is added that the animals species to be released in the wild should be bred and kept in the off display areas to keep them away from human gazes.

#### **Stud book and pedigree**

It is being done and the animal history cards for all the animals kept in zoological park should be maintained, updated on regular basis. Regional /National/International stud books for the members of endangered animal species should be maintained, up dated as is being done.

#### **Artificial reproduction and Cryo preservation**

As availability and exchange of animals is very limited; and transportation of animals from European or other far off places is financially prohibitive, it will be more

worthwhile to try artificial reproduction with single sexed animals or where natural reproduction is scarce or could not have been achieved, Cryo preservation though it has already started coming up in the western zoos should also be given a try for which necessary infrastructure is required to be created.

### **Reintroduction and re-stocking**

The primary objective of ex-situ conservation should be to assist the national or global efforts in the conservation of these highly endangered species. There should be some objective of keeping each and every animal in the zoological park. The zoo bred animals of these identified targeted animal species can be released in the wild to augment the dwindling population of these animal species where they still exist or can be reintroduced in the areas where these were found in recent past if the habitat is still found to be suitable for the purpose.

## CHAPTER-V

### Personal Planning

Personal Planning and requirement of minimum infrastructure were decided on the basis of concept plan suggested by the CZA and also after consultation with Mr. R. S Bhaduria, PCCF(Rtd.) of UP an expert Committee member who visited Sepahijala during June 2011 in presence of Chief Wildlife Warden, Tripura.

Name of Post	Post sanctioned	Post filled up	Proposed
1	2	3	4
Director	Sanctioned as ACF	Filled up as ACF	To be filled up as DCF
Veterinary Surgeon			1
Curator	Sanctioned as FR	As FR	Proposed as ACF
Forest Ranger	0	0	1
Vety Asstt. Surgeon	1	1	1
Vety Assistant	1	1	3
Pathologist	0	0	1
X-ray technician	0	0	1
Forester	3	2	5
Forest Guard	4	4	5
Zoo Keeper	0	0	33
Head keeper	0	0	1
Sweeper	0	0	22
Attendant	0	0	11
Security personal	0	0	15
Welder	0	0	1
Pump operator	2	2	2
Electrician	0	0	2
Carpenter	0	0	1
Mason	0	0	1
Personal Assistant	1	1	1
Driver	1	1	3
Ministerial staff	6	6	6
Group- D	2	2	3
Casual labourer	0	0	20
Education Officer	0	0	1
Education assistant	0	0	1
Biologist	0	0	2
Ticket Booking Clerk	0	0	3
<b>Total</b>	<b>23</b>	<b>20</b>	<b>149</b>

## 2. General responsibility of the department:

To conserve and breed endangered & rare fauna, particularly the primates of Tripura , Clouded Leopard, Binturong for subsequently restoring the biological attributes and diversity of wildlife in the forests of Tripura in particular and India in general.

Ø To generate database about the behavior, breeding, population dynamics and veterinary care of the animals kept in the zoo for helping the conservation of these animals in the long run.

Ø To educate people about the faunal richness of the state & the country, for their support for conservation of biodiversity in the state and the country.

Ø To develop Eco-tourism potential for the people of the state.

- Wildlife education and interpretation for the purpose of communicating conservation values to the visiting public for better understanding and appreciation of wildlife and its role in the ecosystem.
- Captive breeding for the purpose of display and exchange with other zoos and rehabilitation of endangered and threatened species.
- Scientific study and research on animal behavior, nutrition, reproduction disease etc.

**Assessment of degree of subjectivity of the zoo to each type of crisis and list of crisis which are encountered in the zoo more frequently:**

There are two type of disaster one is natural disaster and the other is man made disaster which may cause serious damage to the life and property of the Zoo. The natural disaster are cyclone, earthquake, thunder storm, flood, draught , fire, animal escape, out

Animal escape	Medium
Anthrax	Medium
Flood	Low
Draught	Low
Strike	Low

**History & Impact of disaster, loss of life/loss of property, and any other damages:-**

**Earthquake:** Tripura falling within the high intensity zone of earthquake, we need to keep provisions for protecting the lives and properties so as to encounter the earthquakes in future. In the past no serious incident of earthquake recorded at Sepahijala Zoo.

**Thunderstorm:** It seriously affects the Zoo every year by way of breaking down the tree branches, up rooting the trees, which fall over the enclosures, and damaging the enclosures ultimately creates the animal escape routes. This has a serious impact on captive animal management at Sepahijala Zoo.

**Animal Bird flue:** It has serious impact on captive birds and animals. We experienced such incident during April'2008 which out broke in the adjoining areas of Zoo and we had to take series of measures as per the guide line of Central Govt. and the State ARDD Deptt.

**Vandalism:** This is a regular and serious threat from the visitors mainly during peak visiting season i.e from November to Mid of February every year. This mostly hurts the captive animal as well as the unruly visitors also gets injured from the captive animals due to their furious act.

**Water supply stoppage:-** It is regular phenomenon in the zoo which often occurs due to disruption of power supply as well as the break down of machinery parts. It affects the entire Zoo area and Qr complex as with out water no animal survives.

**Power supply disruption :-** This is common phenomenon during rainy season as existing the power line is passing under the Forest area and the branches of trees often strikes the power line due to stormy wind and the power supply disrupts and at times such disruption continues for days together which seriously affects the water supply as well as for carrying out official works with computer etc.

**Animal feed supply stoppage:** It also happens due to non supply be the regular supplier and in such emergent cases the animals can not be kept unfed and the Department has to arrange procurement of huge items immediately which becomes very much problem as there is no such infrastructure developed in this regard.

**Accidents /attack by captive animals:** Such accidents happen due to not following security codes by the keeper and the visitors. Such incidents occurred in case of bear, Rhino, leopard etc in the past.