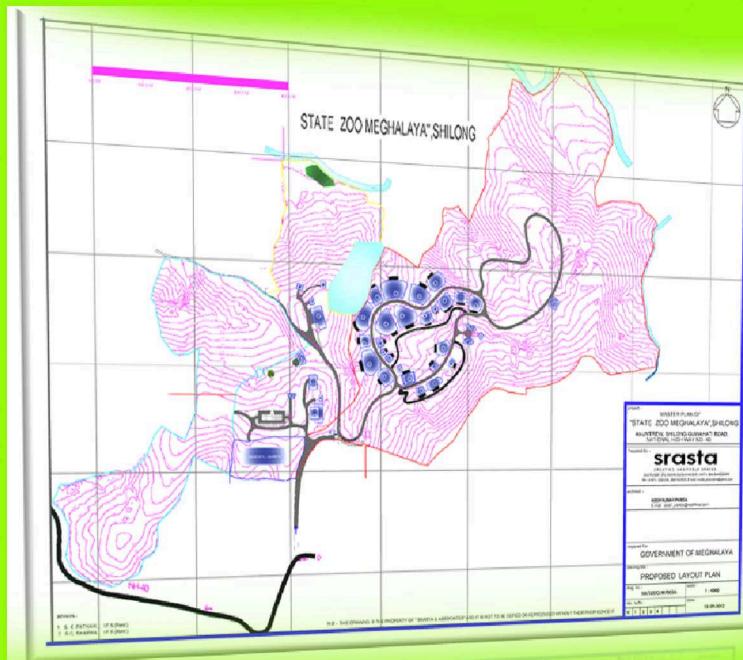


FINAL MASTER PLAN STATE ZOO, MEGHALAYA 2013-14 to 2022-23

Approved by CZA vide

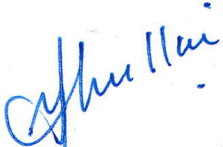
Letter No. F. No. 19-169/93-CZA(189)(Vol. II)(M)/5889
Dt. 25.09.2014




**DIVISIONAL FOREST OFFICER
KHASI HILLS WILDLIFE DIVISION, SHILLONG
MEGHALAYA
2013-2014**

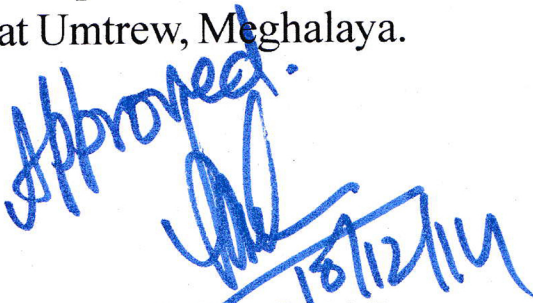
CERTIFICATE

This is to certify that the Master Plan (2013-14 to 2022-23) for Scientific and long term Management of the State Zoo at Umtrew, Meghalaya has been prepared by the Director State Zoo at Umtrew, Meghalaya, in consultation with the expert group on Zoo Designing of Central Zoo Authority (CZA) and Chief Wildlife Warden, Meghalaya, Shillong.


Chief Wildlife Warden
Meghalaya, Shillong
Additional Principal Chief
Conservative of Forests, Wildlife,
&
Chief Wildlife Warden
Meghalaya, Shillong


Director
State Zoo, Meghalaya
Shillong
Divisional Forest Officer
Khasi Hills
Wildlife Division
Shillong

Master Plan is approved subject to the condition that the responsibility of the Mobilizing the Financial resources for implementation of the Master Plan will be sole responsibility of State Zoo at Umtrew, Meghalaya.


Approved.
18/12/14

B.S. BONAL
Member Secretary
Central Zoo Authority
New Delhi
B. S. BONAL IFS
Member Secretary
Central Zoo Authority
Ministry of Environment, Forests & Climate Change
Govt of India, New Delhi-110001

TO WHOM IT MAY CONCERN

This is to certify that the Master Plan of State Zoological Park at Umtrew in Ri-Bhoi District of Meghalaya has been prepared by Shri Asish Kumar Parida, Architect, Plot no-270, Madhusudan Nagar, Unit-4, Bhubaneswar, Odisha, whose signature is attested below.

Shri Asish Kumar Parida, Architect, _____



Signature Attested:-



Divisional Forest Officer
Khasi Hills Wildlife Division
Meghalaya, Shillong

Divisional Forest Officer
Khasi Hills
Wildlife Division
Shillong

Countersigned by:-

Member Secretary
Central Zoo Authority

| CONTENTS |

Certificate for Mobilizing the Financial resources	i
Certificate of Preparation of Master Plan	ii
Acknowledgement	vii
Preface	viii
Foreword	ix

PART – I

Chapter - 1

Meghalaya State Profile

Introduction	2
1.1 History of the Zoo – Lady Hydari Park	3
Current Status of the Mini Zoo	5
Details of Birth of young ones	6
1.2 Vision of the Zoo	8
1.3 Mission of the Zoo	8
1.4 Strategic consideration for planning the State Zoo	9
1.5 Objectives of the Zoo	9
Activities to achieve the objectives	10
1.6 Location of the Area	10
Topography of the Area	12
1.7 Geology of the Area	12
1.8 Rock and Soil	13
1.9 Flora and Fauna	13
1.10 Climate	13
1.11 Rainfall	13
1.12 Season	14
1.13 Approach	14
1.14 Demography of the surrounding area	14
1.15 Legal Status of the land	14
1.16 Sources of pollution	14

Chapter - 2

Appraisals of the Present Arrangement & Constraints

2.1 Development of the new Zoo	15
2.2 Section Plans	15
2.3 Animal Collection Plan (Existing)	15
2.4 General Zoo Administration Section	16
2.5 Research	17

2.6 Conservation breeding	17
2.7 Education and Awareness	17
2.8 Any Other activity peculiar/Unique to the zoo	17

PART –II

Chapter - 3

Future Objective

Vision, Mission Statement /Theme and Strategy	19
---	----

Chapter - 4

Future Action Plan

General Principles	22
Upkeep and Management of Zoo animals	22
4.1 Proposed Animal Collection Plan (NEW)	24
Propose Phasing of Development	26
4.2 Description of the Layout Plan of the Zoo	27
4.3 Director Arrow on the Layout Plan	27
4.4 Legend on the Layout Plan	27
a) <i>The Layout Plan of the Zoo</i>	27
b,c & d) <i>Visitor & Service Circulation etc.</i>	27
e) <i>Power supply facilities</i>	28
f & h) <i>Solid & Liquid waste Disposal & Sewerage line</i>	28
g) <i>Water supply facilities</i>	28
<i>Communication facilities</i>	28
j) <i>Designing of Animal enclosures</i>	29
4.5 Land Stabilization & Prevention of Soil Erosion	30

Chapter - 5

Personnel Planning

5.1 Construction Phase	31
5.2 Operation Phase	31
5.3 Requirement of Zoo personnel	31
5.4 Operation Phase	35
5.5 Chain of Command	36
5.6 Outsourcing some of the services	37
5.7 Promotion opportunities	37

Chapter - 6

Disaster Management

6.1 Bomb Threat	38
6.2 Civil Disobedience	38
6.3 Evacuation of the visitors	39
6.4 Emergency contact	39
6.5 Equipment required for dealing with the Disaster	39

Chapter - 7

Contingency Plans

7.1	Rescue of injured/sick animals	40
7.2	Escape of Zoo animals from the enclosure	40
7.3	The Monkey and Dog Menace	41
7.4	Arrangement of food for animals during no supply	41
7.5	Snake bite	42
7.6	Visitors getting injured by zoo animals	42
7.7	Visitor falling inside the animal enclosure	42
7.8	Fighting amongst animals	42
7.9	Epidemic	42
7.10	Breakup of Power supply	43
7.11	Free ranging animals/feral animal menaces	43

Chapter - 8

Capacity Building

8.1	Amenities to zoo staff	44
-----	------------------------------	----

Chapter - 9

E-Governance

E-Governance	46
--------------------	----

Chapter -10

Budget Estimate

Budget Estimate	47-50
-----------------------	-------

PART –III

Chapter -11

Management Plan

Management Plan	52-58
-----------------------	-------

PART –IV

Annexures to the Master Plan

Annexure -I	CZA's Approval letter for Master Layout Plan & Master Layout Plan of the State Zoo at Umtrew & Animal section zoning	61
Annexure -II	CZA's Approval letter for Master Plan of State Zoo	63
Annexure -III	Water Supply Layout	64
Annexure -IV	Sewerage Layout	65
Annexure -V	Circulation Layout	66
Annexure -VI	Electrical Layout	67
Annexure -VII	List of existing animal collection	68
Annexure -VIII	List of Flora and Fauna	70
Annexure -IX	List of existing and proposed staff	72
Annexure -X	List of Buildings other than enclosures	74
Annexure - XI	Notification of Zoo Society	75-76

| ACKNOWLEDGEMENT |

No good works come without putting efforts on it. And such good efforts taken in making this Master Plan too shall be appreciated right from those who have insisted, instructed, guided, acted to make it in this present form.

I am grateful to all my senior officers who have insisted in all matters relating preparation of this Master Plan. Thanks goes to Shri V.K. Nautiyal, IFS, Retd. PCCF & HoFF, Shri C. Budnah, IFS, Addl. PCCF & ex Chief Wildlife Warden, Meghalaya, Shri S. Kumar, IFS, PCCF & HoFF Meghalaya & ex-Chief Wildlife Warden, Shri T.T.C. Marak, IFS, Retd. PCCF & HoFF, Shri Y.S. Shullai, IFS, Addl. PCCF (Wildlife) and Present Chief Wildlife Warden, Meghalaya and Shri P.H.S. Bonney, IFS Chief Conservator of Forests I/c Wildlife for all day to day inspirations.

I am grateful also to the valuable guidance and suggestions made by Shri S.K. Patnaik, Retd. IFS, who spared his valuable time to visit the site of the State Zoo and also Shri Asish Kumar Parida, Architect who meticulously carried out the preparation of this Master Plan, on behalf of the Department. So my heartfelt thanks to both of them.

This Master Plan came into form with the assistance rendered by my subordinate staffs also. I therefore appreciate the efforts made by Shri P. Mazumdar, Retd. ACF, Shri D.L. Langstieh, FR, Shri P. Doonai, FR, and Shri K.L.M Nikhla, FR. I would fail in my duty if I did not acknowledge the contribution made by all staff especially Shri D.K. Das, Civil Overseer, Shri A.S. Pde, Fgd, Shri A.C. Swer, Fgd, Shri K.S. Lyngdoh, Fgd, Shri Den Kharsyntiew, Shri Abetneko Shabong in collection of various field data and Shri Khrawbok Nongrum, Computer Assistant who compile the finishing work to materialize this Master Plan.

(Shri P.S. Nongbri, IFS)
Divisional Forest Officer
Khasi Hills Wildlife Division
Shillong
Divisional Forest Officer
Khasi Hills
Wildlife Division
Shillong

| PREFACE |

The State of Meghalaya has notable forests for the biodiversity of mammals, birds, and plants. In the recent past, it was known as one of the state where most of the forests area is available. So, within these forests, variety species of flora and fauna comfortably sheltered themselves.

Professor Donald Broom said, “Animal welfare is the physical and psychological state of an animal as it regards its attempt to cope with its environment”. With the gradual extinction of different species in the entire globe day by day, the Forests and Environment Department, Government of Meghalaya is highly concerned to enhance more future protection & preservation on the rare and endangered species within the state and the entire region as a whole. Therefore, setting up of State zoo is proposed and a plot of land at Umtrew, Ri-Bhoi District was acquired for the purpose. Meanwhile, the Master Plan for running the State Zoo was prepared.

This Master Plan will shape the purposes and developments to be taken up at the State Zoo. It covers the guidelines, steps and activities to ensure future success. This Master Plan for the period of 10 (ten) years carries the necessary management of all works within this period of time. Besides it define all the particulars pertaining for the new zoo, it is also highlighted the tentative expenditure in the budget estimate section to be incurred while implementing this project. In fact, this document is a pre-plan project where most of the works shall probably follow and be taken into proper consideration.

Definitely the second Master Plan will come up after the limited period of this document is over, but that will be for better improvement of this first Master Plan. I am therefore happy and welcome any suggestions from any ends, to improve the future standard and systematic action in the Plan. No doubt, the farther we plan, the better we improve and the more we improve, the more we advance ourselves. This perhaps raises the standard and eases the system of working.

I am hopeful that this Master Plan will serve to the best of its purposes, though it is just a black and white but it shall master all the matter to be taken up physically and mentally in the final outcome.

(Shri P.S. Nongbri, IFS)
Divisional Forest Officer
Khasi Hills Wildlife Division
Shillong

Divisional Forest Officer
Khasi Hills
Wildlife Division
Shillong

FOREWORD

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

Human exploitation of the forests for timber, shifting cultivation, agriculture, development of towns and villages have tremendously affected the natural resources of the State. There is shrinkage of habitats for wild animals and loss of valuable flora. Most wildlife habitats has become fragmented in the State. The faunal life existed mostly in well protected forest and efforts were being put in to conserve and preserve the wild animals in other places as well. During the mid seventies, an animal land was developed in the Lady Hydari Park, Shillong with the objective of keeping the rescued animals. With the passage of time the Mini Zoo was not found to be conducive for the health of the animals due to inadequacy of space and was also not in accordance with the modern concept and guidelines of the Central Zoo Authority.

Based on the recommendation of the Central Zoo Authority, a need was felt that the State should have a Zoological Park where the animals kept in the Mini Zoo could be shifted. The new Zoo will be provided with all modern facilities for future expansion including breeding programme of a few endangered species. The Park shall be a centre of recreation, conservation, research and education.

The Government of Meghalaya has acquired a plot of land measuring 74.30 hectares at Umtrew for this purpose. The concept of development of all infrastructural facilities on a holistic basis was referred to the Central Zoo Authority which approved the same and directed that a detailed Master Plan should be prepared to accommodate all the ingredients of a modern Zoo. The task was

entrusted to Sri.S.K.Patnaik,IFS (Retd) assisted by Sri S.C.Sharma,IFS (Retd) and Sri A.K.Parida.

Sri.V.K.Nautiyal,IFS, Principal Chief Conservator of Forests & HoFF, Meghalaya,Shillong and Sri.S.Kumar,IFS,Additional Principal Chief Conservator of Forests, Research & Training, Monitoring and District Council Affairs, Meghalaya, Shillong were the key persons who gave important suggestions from time to time in all matters pertaining to the establishment of the Zoo. Sri.P.S..Nongbri,IFS, Divisional Forest Officer, Khasi Hills Wildlife Division, Shillong along with his field staff were actively involved in providing necessary technical details for preparation of the Master Plan.

It is expected that the Master Plan document will cater to the needs of the Central Zoo Authority and culminate in the form of formal approval. Thereafter, further exercises like preparation of detailed estimates and actual execution of works shall start.

The State has received a sum of Rs.12 Crores from the Twelfth Finance Commission Award. It is also expected that grants from the Central Zoo Authority as per their commitment would be forthcoming soon for completion of all works. With the co-operation of all concerned it is hopeful that the Zoo will come up as per prescription of this Master Plan to be finally approved by the Central Zoo Authority.



(C. Budnah, IFS)

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

PART – I

MEGHALAYA STATE PROFILE

INTRODUCTION

The word “Meghalaya” in Sanskrit means abode of clouds and signify lofty mountains of the State getting high rainfalls. The annual average rainfall received by Meghalaya State is 1200 mm. It has also the unique distinction of having two of wettest places in the world namely Sohra (Cherrapunjee) and Mawsynram. In its natural beauty and charm, the State can compare favourably with any other State in the country. The lush green landscapes, interspersed with large number of gurgling natural streams, the dancing waterfalls, the picturesque lakes with crystal clear water and the unique caves make the State a tourist paradise.

Geographically, the State of Meghalaya is also known as “Meghalaya Plateau”. The Central part of the plateau comprises of ‘Khasi Hills’ and has the highest elevation, followed by ‘Jaintia Hills’ where the hill slopes are more moderate. The western part of the State, the Garo Hills have minimum elevation. The highest point in Meghalaya is the “Shillong Peak” which is at an altitude of 1961 meters. Next in altitude is the Nokrek Peak which is at an elevation of 1515 meters. The land area of the State comprises of mountainous slopes interspersed with gorgeous and small valleys of varying sizes. The elevation of the lowest area of the State is 150 meters only.

Due to diverse climatic and topographical conditions, the State has several “Forest Types” like Topical Wet Evergreen Forests, Tropical Semi Evergreen Forests, Tropical Moist Deciduous Forest and Assam Sub Tropical Pine Forests. Sacred groves located in Khasi and Jaintia Hills represent climax vegetation of the area. The forests of Meghalaya are considered one of the richest biological habitat and support large number of plant species and animal species endemic to the North Eastern Region of the country. It is estimated that more than 325 species of orchid are found in the State. The State supports large number of parasitic and epiphytic species. The forests of the State are store house of large number of succulent plants, variety of fruit species, vegetable species and medicinal plants. *Nepenthes Khasiana* (Pitcher Plant) an insectivorous plant is endemic to the Khasi Hills. Important animal species found in tropical and subtropical region include Elephants, Gaur, Wild buffalo, Sambar, Barking deer, hog deer, wild boar, Leopard, Himalayan black bear, Assamese Macaque, Pig tailed macaque, Stump Tailed Macaque, Rhesus Macaque, Common Langur, Hoolock Gibbon, Slow Loris, Leopard cat, Jungle cat, Golden cat, Spotted Linsang, Common Palm Civet, Himalayan Palm Civet, Binturong, jackal, claw less otter, yellow throated marten, hog badger, ferret badger, small Indian mongoose, crab eating mongoose and variety of bats. Clouded leopard and serow are localized to upper reaches of the State.

Meghalaya is quite rich in Avian Fauna. Important avian species found in the State include Great Indian hornbill, large pied hornbill, Indian peafowl, red jungle fowl, peacock pheasant, collared scops owl, brown wood owl, brown fish owl, Khaleej pheasant, serpent eagle, honey buzzard, several kite species, red-vented bulbul, hill mynah, green pigeon and blue jay. The prominent reptile species found in the State include pythons, monocelated cobra, monitor lizard, Malayan box turtle, Assam roof turtle, Asian leaf turtle, elongated tortoise.

The State has unique distinction of having 250 species of butterflies (25% the species found in the country).

The floral and faunal diversity of the State has, over the years, declined both quantitatively and qualitatively under the pressure of excessive withdrawal from the forest areas by the local people for their own consumption. The keenness of the people to consume the meat of every species/ any species found in the State has further compounded the problems and is adversely impacting the population of wild animals further. Unprecedented increase in open pit mining, establishment of cement factory and unplanned commercial activities being under taken around important tourist places have further aggravated the situation and have adversely affected the natural landscapes. The government of Meghalaya and the State Forest Department however are endeavoring hard to reverse the trend of decline in the status of biodiversity. According to the latest report from “Forest Survey of India”, there has been an increase of 73 sq. km. in the area under dense forests and increase of 22 sq. km. under the moderate density forests, which has been partly offset by decrease of 32 sq. km. in low density forests.

The increase in the forest area has been achieved due to re-growth of tree species in the areas under shifting cultivation, which is a welcome trend. Achievements in this regard can be increased manifold through “Public Education and Awareness Programmes” in massive scale so that all the citizens of the State get sensitized not only about the need of conserving the flora and fauna of the State but also protecting the natural landscapes. Restoration of damage done to areas around Sohra and Mawsynram and other star tourist attractions can be done only if local people are convinced about the long term gains of keeping these areas unpolluted and undisturbed.

It needs no highlighting that well planned zoos displaying representative animals of the area under healthy condition and naturalistic setting is a very potent tool for sensitizing the visitors about the causes and ill effects of environmental degradation and depletion of the biodiversity of the area. It is in this background that the Meghalaya Government have decided to set up a “State Zoo” under sylvan surroundings in a patch of forest located about 28 km. down the main city of Shillong along Shillong-Guwahati National Highway No. 40 near village Umtrew.

This Master Plan is detailed blue print for construction of the State Zoo in a planned manner and carrying out the operations of the zoo efficiently. The plan also contains detailed road map for future expansion of the zoo. I am confident that Master Plan, if approved and supported by the State Government and the Central Zoo Authority, has the potential to make the “State Zoo” one of the finest zoos in the country dedicated to conserve the endemic species of the region.

1.1 HISTORY OF THE ZOO – LADY HYDARI PARK MINI ZOO

A pleasure park was established near Assam Government Secretariat in the year 1937. Since Sir Robert Neil Reid was the Governor of the State of Assam at that point of time the Park was named Lady Reid Pleasure Park after the lady Governor. After Independence the name of the park was changed to Lady Hydari Pleasure Park, after the name wife of first Indian Governor of the State of Assam, Sir Akbar Ali Hydari. As is evident from the name of the park, the primary object of the park was to provide the people working in the Assam Secretariat and the citizens

of Shillong an opportunity to pass their leisure time in an area with naturalistic settings and with lot of greenery and colourful flowers. The objective remained unchanged till 1973, when the administrative control of the park was transferred from the administrative control of Deputy Commissioner Khasi Hills to the State Forest Department. All these years, the park was also used for organizing important public functions viz. keeping the ashes of Mahatma Gandhi for public *darshan*, organizing address by Sardar Patel to the public of Shillong and organizing the “All India Cattle Show”. The park was a regular venue of cultural events like celebration of Hill and Plain Week and organizing the flower shows.

After the creation of the wildlife wing with the State Forest Department in the year 1977, a decision was taken to use the park area for establishing a mini zoo, the rescued wild animals, which were no longer fit to be released back in the wild. Accordingly, a detailed master plan for the mini zoo was prepared by the Zoological Survey of India and executed by the Forest Department.



The perusal of the master plan prepared by the Zoological Survey of India reveals that despite all the enthusiasm of the wildlife wing and the Zoological Survey of India for creation of a good zoo, they could not muster the courage to use the entire area of the park for establishment of the mini zoo, perhaps on account of the fear of public displeasure. Out of the total area of the park of 3.5 hectares, only an area of 1.5 hectare was allocated for construction of the mini zoo. Of 1.5 hectare availed for establishing the mini zoo, the “Master Plan” allocated an area of one hectare for housing the deer species, 0.2 hectares for construction of an aviary and a meager area of 0.3 hectares for housing the endangered mammalian species found free in nature. The list of the species to be displayed in the mini zoo, as given in the master plan, besides deer park, included clouded leopard, leopard, golden cat, leopard cat, jungle cat, leopard

cat, Himalayan Black Bear, Binturong, slow loris, yellow throated marten and the Malayan giant squirrel. The wish list also included Rhesus Macaque, Assamese Macaque, Pig tailed monkey, Golden langur and capped langur. The natural outcome of such a large wish list and availability of meager area of 0.3 hectares led to construction of animal enclosures which stock, rare and endangered species like clouded leopard, leopard, and leopard cat, jungle cat etc were quite dingy and too small to make the animals housed there in comfortable and have the opportunity of expressing their natural behaviour.

CURRENT STATUS OF THE MINI ZOO

The “Mini Zoo” which is officially designated as ‘Animal Land’ in accordance with the terminology used in the Master Plan (ZSI) and the area under the formal pleasure park are under the administrative control of Divisional Forest Officer, Khasi Hills Wildlife Division, Shillong. The “Animal Land” is supervised by the Range Officer with the assistance of the field staff. The staff engaged for the upkeep and maintenance of the park and mini zoo comprises of *malis* and animal keepers etc. Curatorial and scientific inputs appear to be inadequate. The educational signage needs lot of improvement. Regular health care facilities for the zoo animals are inadequate for want of veterinary staff. Services of Assistant Veterinary Surgeon are availed whenever any animal is seriously sick.



The analysis of the inventory of the various species of wild animals held in the stock of the “Animal Land” for the year 2003-04 to 2012-13 reveals that the animal besides housing 3 species of deer viz. sambar, barking deer and hog deer and stump tailed macaque and rhesus macaque, the Animal Land has been acquiring and keeping jungle cat, Himalayan black bear, hoolock gibbon, slow loris, ferret badger, yellow throated marten, serow, jackal and civet cat there. The main source of acquisition has been the rescue operation. Animals of quite a few

species have remained without mate for long years. No effort appears to have been made for providing mates to them. The inappropriate sizes of enclosures, high mortality rates and non availability of suitable mates has impacted the breeding of various species. But for prolifically breeding species like the 3 deer species and Rhesus Macaque the breeding of the other species has been quite minimal as will be evident from the following table:

DETAILS OF BIRTHS OF YOUNG ONES

Name of the species	2000-01	2004-05	2005-06	2010-11	Total births
Slow Loris	1	2	-	-	3
Leopard Cat	1	-	-	-	1
Civet Cat	-	-	2	-	2
Barking deer	-	-	-	2	2
Hog Deer	-	-	-	2	2
Rhesus Macaque	-	-	-	2	2

No breeding success has been reported in respect of endangered avian species housed by the Mini Zoo namely Great Indian hornbill, large pied hornbill, Indian peacock, brown fish owl, brown wood owl, crested serpent eagle and hill myna. This is no surprise because the position in most of the Indian zoos in respect of breeding of endangered species is more or less similar in respect of breeding of endangered species of avifauna

The rate of mortality in respect of endangered species of mammals has far acceded the number of births and acquisitions of animals of such species, as would be evident from the table given below:

Number of animals that have died between 2003-04 to 2012-13

Sl. No.	Species	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	TOTAL
1.	Clouded Leopard	-	1	-	-	-	-	-	-	-	-	1
2.	Leopard	-	-	1	-	-	-	-	-	-	-	1
3.	Himalayan Black Bear	1	1	-	-	-	-	-	-	-	-	2
4.	Slow Loris	-	2	3	1	-	-	-	-	1	-	7
5.	Hoollock Gibbon	-	-	1	-	1	-	-	-	-	-	2
6.	Serow	-	-	1	-	1	-	-	-	-	-	2
7.	Ferret Badger	-	-	-	-	-	-	1	-	-	-	1
8.	Leopard Cat	-	-	-	2	-	-	-	-	-	3	5
9.	Civet Cat	1	2	3	-	-	-	-	-	1	-	7
10.	Jackal	-	-	-	-	-	-	-	1	-	-	1

Table Cont....

Sl. No.	Species	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	TOTAL
11.	Stump Tailed Macaque	-	-	-	-	-	-	-	-	1	1	2
12.	Hog Deer	-	-	-	-	-	-	-	-	3	1	4
13.	Sambar Deer	-	-	-	-	-	-	1	-	-	2	3
14.	Barking Deer	-	-	-	-	-	-	1	-	-	1	2

The number of Bird species kept in the Animal Land has been quite limited. The list of mortality of important species is as follows:

Sl. No.	Species	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	TOTAL
1.	Owl Brown Wood	2	-	-	-	-	-	1	-	-	-	3
2.	Owl Brown Fish	-	-	-	-	1	-	-	-	-	-	1
3.	Hill Mynah				2	1	2	-	1	-	-	6
4.	Khaleej pheasant	-	-	-	-	-	1	-	-	-	-	1
5.	Morhen Purple	-	-	-	-	-	-	1	-	-	-	1
6.	Peafowl	-	-	-	-	-	-	-	1	-	-	1
7.	Parakeet Blossom Headed	-	-	-	-	-	-	-	2	-	-	2
8.	Crested Goshawk	-	-	-	-	-	-	-	-	-	1	1
9.	Night Heron	-	-	-	-	-	-	-	-	-	1	1

The mortality appears to be insignificant in terms of absolute numbers. However, in terms of percentage of the stock held by the Animal Land, the mortality rate is quite high

The mortality of common mammals like Sambar, Barking deer, Hog deer, Rhesus macaque and common birds have also been quite high and more or less offset the births and acquisitions

From the forgoing details it is evident that the mini zoo has not contributed to conservation in terms of augmentation of the number of endangered species. Its contribution towards creation of amongst visitors an empathy for wildlife and mustering their support in conservation of rich and endangered biodiversity of the state has been quite limited, despite the mini zoo being visited by more than 2 lakh person annually, because of the fact that in its present form the mini zoo neither appears to be good display of animals nor provides visitors requisite biological and ecological information.



It is in this background that the Central Zoo Authority and the State Government are being requested to complete the construction of proposed “State Zoo” on priority basis and shift all the animals of endangered species to the new zoo at an early date

1.2 VISION OF THE ZOO

- (i) State Government of Meghalaya aims at making the zoo as one of the most naturalistic and green zoo in the country. No activity that disturbs the natural landscape of the area would be undertaken by the zoo. The design of animal enclosures and the support infrastructure would be such that they can merge fully in the environment of the zoo.
- (ii) Zoo shall house only such species which can be provided quality life of adequate longevity so that they can procreate and lead to self sustaining and genetically and behaviourally viable population at the zoo.
- (iii) Zoo shall maintain highest standards of educative signage and interpretation facilities at the animal enclosures to enable the visitors in having a rewarding experience at the zoo.
- (iv) Zoo shall endeavor to enhance the naturalistic and aesthetic value of the zoo to increase the representation of broad leaved species in the tree canopy and the under story through phased removal of pine with appropriate broad leaved species.
- (v) Soil conservation and land stabilization will be the area of highest priority. Cooperation and help of experts on soil conservation and structural designing would also be needed.

1.3 MISSION OF THE STATE ZOO

To create an awareness and to develop an understanding about the ecological linkages with the life supporting processes of nature and the need for keeping them intact by adopting sustainable lifestyles and living in harmony with nature. The zoo should encourage visitors to have empathy for wildlife and motivate them to support the cause of conservation of wildlife and protection of their habitat.

To act as a rescue centre for seized, rescued, orphaned and injured wild animals, also as a research centre for captive breeding and behaviour etc.

1.4 STRATEGIC CONSIDERATION FOR PLANNING THE STATE ZOO

- (i) Safeguarding the refractory and steep hill slopes against soil erosion and landslides, by keeping the excavation/ cutting of such slopes to barest minimum level and providing breast walls and retaining walls at all places where cutting/ excavation of earth is done.
- (ii) Preventing the flow of debris and boulders in the rivulets and water streams through construction of check dams/spurs.
- (iii) Limiting the number of hooved animals within carrying capacity to safeguard against the denudation of the enclosure area.
- (iv) Provision of boundary wall and green buffer belt between the village land and zoo.
- (v) Safeguarding the water being harnessed for supply to the zoo animals against infection/ pollution by the local population and their livestock.
- (vi) Improvement of the accessibility of the zoo to the visitors through introduction of bus services terminating at and starting from the zoo.
- (vii) Provision of prophylactic treatment to the livestock and poultry by the local people against infectious diseases.
- (viii) Augmenting the plain and mild slope area available for construction of animal enclosure by acquisition of village land through appropriate relocation package.

1.5 OBJECTIVES OF THE ZOO

As already stated in earlier chapters, in the contemporary world, the main objective of the management of zoos in the country is to aid and assist in conservation of wild animals and their habitat. The “Meghalaya State Zoo” shall, in conformity with the aforesaid trend, shall work for conservation of the rich bio-diversity of the State through following sub- objectives:

- (i) To create amongst the visitors empathy towards wild animals through better understanding of the linkages of long term survival of various species of wild animals and availability of fertile soil, potable drinking water and pollution free environment.
- (ii) Conservation breeding of endangered species of wild animals, available within the bio-geographical range of the State of Meghalaya.
- (iii) To provide housing and upkeep to the orphaned animals of endangered species rescued from the wild.
- (iv) To collect and collate the scientific data on the biology, behaviour and health care of various species of wild animals housed at the zoo and use the same in future management of the zoo.
- (v) To assist in conservation of the in-situ population of various species of endangered species of wild animals and their habitat by sensitizing the people about the benefits of adopting sustainable life styles and shunning off affluent way of living which involves wastage of natural research centre for identification and cultivation of various species of plants and orchids naturally occurring in Meghalaya.

ACTIVITIES TO ACHIEVE THE OBJECTIVES

- (i) Housing, upkeep and display of various species of wild animals in naturalistic enclosures that confirm to their biological and behavioral requirement and are congenial to their health, longevity and breeding.
- (ii) Maintaining genetically and biologically viable group of each species in the collection of the zoo.
- (iii) Ensuring for the animals in the collection of the zoo the availability of highest quality of upkeep, feeding and health care.
- (iv) Maintaining the number of animals in each enclosure within carrying capacity of the enclosure.
- (v) Limiting the collection of the wild animals at the zoo only to such species which can thrive well and live comfortably with in the climatic conditions prevailing at the zoo.
- (vi) Collaborating and cooperating with other zoos, particularly those in North Eastern States in exchange, loaning and transfer animals for providing compatible mates to the animals of all the species of wild animals housed at the zoo.
- (vii) Collection and collation of data on the animal upkeep, health care and breeding of endangered species from various zoos and reputed institutions working in this field.
- (viii) Seeking help of veterinary colleges and universities in diagnosis and treatment of diseases affecting the animals housed in the zoo.
- (ix) Setting up conservation centre for planned breeding of Slow Loris and Hill Mynah, Hoolock of Gibbon.
- (x) Ensuring availability of necessary finances and infrastructural facilities necessary for carrying out the activities listed above.

1.6 LOCATION OF THE AREA

The area earmarked by the State Government for construction of the “STATE ZOO, MEGHALAYA, Shillong lies between the longitude 90°40’ -92° East and the latitude 23°30’ to 25°-45’ North. The area is located near the village Umtrew, 28km down the State capital Shillong along National Highway No. 40 (Shillong-Guwahati Road).



It falls under Ri Bhoi Civil district and is 23 Km away from the district headquarter Nongpoh. “Gopinath Bordoloi Airport” and Guwahati Railway junction are respectively 97 km and 72 km away from the proposed zoo site. State Transport Corporation buses Tourist Taxis and buses ply regularly on the State Highway No.40 which run adjacent to the boundary of the zoo. One can avail these buses to reach the zoo site both from Guwahati, Shillong and

other state capitals of North-East. Hired Taxis are also available at reasonable rates.



NATIONAL HIGHWAY -40 (SHILONG-GUWAHATI ROAD)

TOPOGRAPHY OF THE AREA

The proposed zoo area comprises of steep hill slopes having an altitude of 755 meters level to 900 meters from mean sea level. Out of the total extent of the area of 72.5Ha, the extent of flat land or area with gentle slopes may not exceed 5-6 hectares. The hilly slopes are interspersed with deep gorges and large number of perennial water streams flowing in north south direction. Umtrew stream which flows towards the northern boundary of the area gets quite a significant quantity of water and is one of the major sources of water supply to the Hydro Electric Projects of Meghalaya Electricity Board.

1.7 GEOLOGY OF THE AREA

The area comes under the Upper Shillong plateau, a remnant of the Pre-Cambrian Indian Peninsula Shield and comprises of Shillong group of rocks (quartzite, phyllite, Achean, gneiss and conglomerate), with quartzite as a predominant stone. However sand stone at a number of places have weathered yielding grains of sand suitable for building and construction works. The soil is mostly loamy, where in some places is as thick as 180cms. However the soil is acidic in nature.



1.8 ROCK & SOIL

The extent rocky out crops is quite minimal. The surface of the hill slopes is covered primarily with lateritic soil varying from sandy loam to clayey red loam. The vegetation and the crop standing in the area are playing a crucial role in stabilizing the steep hill slopes. Removal of the vegetation whether deliberate or by way of denudation is fought with the danger of heavy soil erosion or landslides.

1.9 FLORA & FAUNA

The area earmarked for the construction of the “State Zoo” falls under the tropical and sub-tropical Pine forests. The forest crop of the area comprises of pure pine crop (*Pinus Kesiya*) except on cooler aspects where broad leaved species like *Castanopsis indica*, *Albizia lebbeck*, *Alstonia scholaris*, *Embllica officinalis*, *Eugenia species*, *Sterculia species*, *Litsea species*, *Callicarpa arborea*, *Careya arborea*, *Engelhardtia spicata* and *Schimma wallachii*. The hill slopes with higher altitude have substantial number of oak trees viz *Quercus fenestrata*, *Quercus serrata* and *Gmelina arborea*. The under story crop, where it exists, comprises of *Hollarhena*, *Lea chinensis*, *Clerodendondron bracteatum*, *Oroxylum indicum*. Fires affected and over grazed area have been taken over by *Lantana* and *Eupatorium*. The ground story comprises mainly of grasses like *Saccharum spp* and herbs like *Curcuma*.

Fauna: The area earmarked for the zoo is not very rich in mammalian species and the avifauna. The species commonly seen in the earmarked area for the zoo and its surrounding include Jungle cat, leopard cat, barking deer and the common bird species like hoopoe, long tailed broad bill, Scarlet minivet, Burmese roller, Red vented bulbul, Himalayan black bulbul, Himalayan whistling thrush, spotted fork tail, Hill mynah and turtle dove.

1.10 CLIMATE

The proposed area lies at much lower altitude than Shillong, the climate at the site is much milder. The average maximum and minimum temperature of the area is about 24°C and 9°C respectively. The mean winter temperature of the area is 7°C minimum and 21°C maximum.

1.11 RAINFALL

The annual average rainfall received by Meghalaya State is 1200 mm. The average rainfall received in the proposed area is between 250 cm to 300 cm and around 50% of average relative humidity is experienced.



1.12 SEASON

The zoo is approachable throughout the year but the most appropriate season would be from September upto April.

1.13 APPROACH

The zoo is 28km down from the State capital, Shillong along National Highway No.40 (Shillong-Guwahati Road). It falls under Ri Bhoi Civil district and is 23 Kms. away from the district headquarter Nongpoh. “Gopinath Bordoloi Airport” and Guwahati Railway junction are respectively 97 kms. and 72 kms. away from the proposed zoo. State Transport Corporation buses Tourist Taxis and buses ply regularly on the State Highway No.40 which run adjacent to the boundary of the zoo. One can avail these buses to reach the zoo, both from Guwahati, Shillong and other state capitals of North-East. Hired Taxis are also available at reasonable rates.

1.14 DEMOGRAPHY OF THE SURROUNDING AREA

The proposed zoo area comprises of forest area owned by the State Government and does not have any human habitation. Two villages located in the vicinity of the zoo area viz Mawleiñ – Mawkhan and Umtrew have 115 and 65 households respectively with a population of around one thousand. Agriculture is the main stay of activity of the people here. Villagers also take up poultry upkeep for their own consumption and augmenting their meager income out of marginal farming. Most of the residents of the area fall in the ‘below poverty line’ category.



1.15 LEGAL STATUS OF THE LAND

The whole area of the zoo is a government land under the Department of Forests and Environment, Meghalaya. Any legal action is within the ambit of the Wildlife Protection Act and other Forest Acts.

1.16 SOURCES OF POLLUTION IF ANY

The area is hilly and undulating and there is no source of pollution.

APPRAISAL OF THE PRESENT ARRANGEMENT AND CONSTRAINTS

2.1 DEVELOPMENT OF THE NEW ZOO

The zoo will be constructed in the new site to shift the animals from the Mini Zoo at Shillong. The Master Plan for development of new State Zoo has been prepared giving due regard to the climate, topography and the demographic condition prevailing at the zoo site. The concept plan for the zoo prepared by the State Government and approved by the Central Zoo Authority has been incorporated in the Master Plan in letter and spirit. Utmost priority has been given in the Animal Collection Plan to the species already held in stock by the Lady Hydari Mini Zoo, Shillong and the endemic species of North Eastern region of the country. Due regard has also been given to the popularity of the animals amongst the visitors.

As the area earmarked for the zoo is quite refractory, numbers of ungulates have been kept at barest minimum level, as a safeguard against the denudation of the area of enclosures by the impact of hoofs of the excessive number of prolifically breeding species of ungulates like Sambar and hog deer. Digging of the soil to make water pool for housing water birds can accentuate the soil erosion within the zoo area. Hence the water birds have also been kept out of collection plan of the zoo. Sambar, Hog deer and water birds would be housed and put on display in the zoo if the State Government augments the area with moderate slope available for construction of animal enclosure by acquiring the agricultural land of the villages adjoining the area of the zoo as well as the water body down the zoo area.

Since the zoo has been designated as the State Zoo, the number of species to be housed and displayed in the zoo has to be much larger to cover all the representative species endemic to the State of Meghalaya and the North Eastern region of the country, acquisition of additional land as proposed in the forgoing Para is crucial for developing the zoo to the desired status which is in progress with the District Collector.

2.2 SECTION PLANS

At present Animal section is located in a small area at Lady Hydari Park. Veterinary Section, Store and Feed supply sections are functioning at the Range office building. The whole set up of all sections will be shifted to the newly Proposed State Zoo at Umtrew as per the approved Master Layout Plan.

2.3 ANIMAL COLLECTION PLAN (EXISTING)

Giving due regard to the suitable area available for construction of appropriately designed enclosures, the number of species housed and displayed in the zoo, in the first phase would be limited to following existing species:

Mammals

- | | |
|--------------------------|--------------------------------------|
| 1. Clouded Leopard | 2. Leopard |
| 3. Jungle Cat | 4. Leopard Cat |
| 5. Himalayan Bear | 6. Civet Cat |
| 7. Rhesus Macaque | 8. Assamese Macaque |
| 9. Stump Tailed Macaque. | 10. Hoolock Gibbon |
| 11. Slow Loris | 12. Himalayan Yellow Throated marten |
| 13. Ferret badger | 14. Serow |
| 15. Barking deer | 16. Jackal |
| 17. Sambar deer | 18. Hog deer |

Birds

- | | |
|--------------------------|--------------------------|
| 1. Crested Serpent Eagle | 2. Peacock |
| 3. Night Heron | 4. Pied Hornbill |
| 5. Hill Mynah | 6. Hume's Pheasant |
| 7. Alexandrine Parakeet | 8. Red breasted Parakeet |

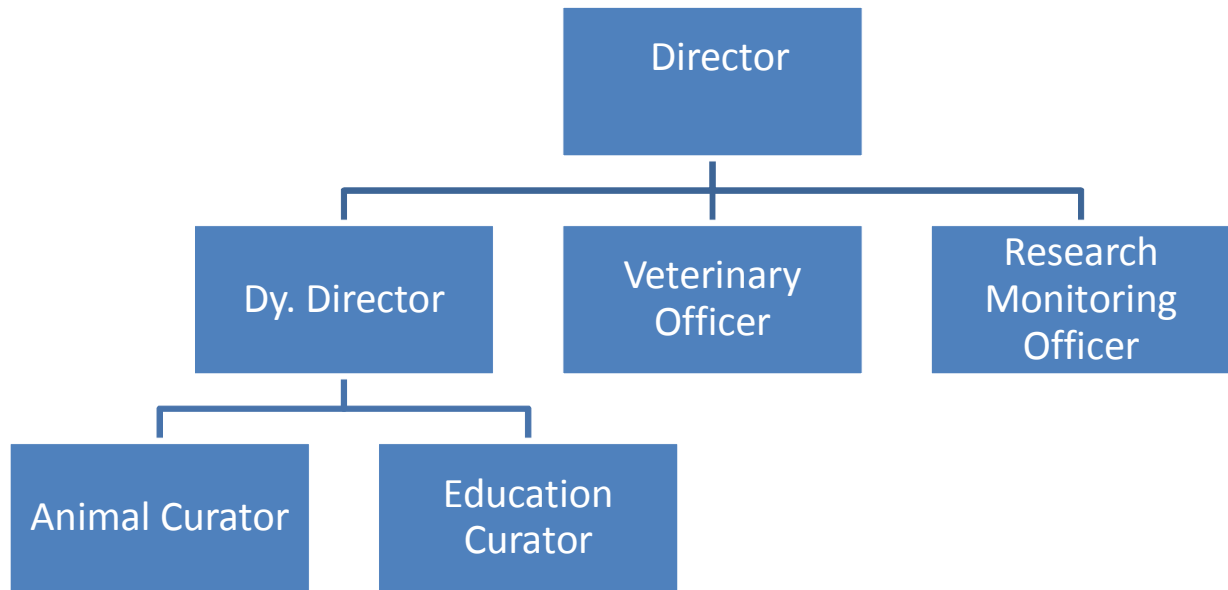
2.4 GENERAL ZOO ADMINISTRATION SECTION

First and foremost requirement of the zoo is appointment of zoo Director who shall be having adequate administrative and financial powers to get various zoo operations effectively. No officer who has a status lower than a Deputy Conservator of Forests can fulfill this role effectively. However, the size of animal collection and the expected number of visitors suggest that there would not be enough work in the zoo to warrant the posting of a whole time Dy. Conservator of Forests as Director of the zoo. It is therefore, proposed that Dy. Conservator of Forests, Wildlife Division, Khasi Hills may be designated as Director of the zoo, who could oversee and ensure effective development, maintenance and operation of the zoo.

In the construction phase, Dy. Conservator of Forests, Khasi Hills can oversee the planning and construction work with the assistance of following existing skeletal staff:

(i) Range Officer	-	1
(ii) Junior Engineer	-	1
(iii) Forester/Store keeper	-	1
(iv) Forest Guards	-	1
(v) Peon/Attendant	-	1
(vi) Museum Caretaker	-	1
(vii) Feeder	-	2
(viii) Grass cutter and Mali	-	3
(ix) Chowkidar	-	2
Total	=	13

However, for the smooth administration of the proposed zoo the following chain of command is to be administrated.



2.5 RESEARCH

At present there are no research facilities in the Mini Zoo, however, with the coming up of the new Zoo the research aspects on behaviour, captive breeding, rehabilitation of rescued and endangered species etc. with the following proposed staff:

Veterinary Officer	1
Zoo Biologist	1 (Scientific Officer Grade C)
Research Asstt.	2
Keeper	2
Attendant	2
Total	8

2.6 CONSERVATION BREEDING

Conservation breeding and in-situ conservation of endangered and indigenous species will be taken up as a research project.

2.7 EDUCATION AND AWARENESS

Education and awareness will be manned by a Range Officer with Deputy Ranger as Education Supervisor along with trained foresters. The Interpretation centre will be well-equipped for the purpose of education and awareness.

2.8 ANY OTHER ACTIVITY PECULIAR/UNIQUE TO THE ZOO

The botanical garden earmarked in the zoo will cater to the preservation of endangered and endemic species of the state. The area will also include a medicinal plant garden available in the state of Meghalaya.

It will also act as a rescue and rehabilitation centre.

PART –II

FUTURE OBJECTIVE INCLUDING VISION, MISSION STATEMENT/THEME AND STRATEGY

VISION

- (i) State Government of Meghalaya aims at making the zoo as one of the most naturalistic and green zoo in the country. No activity that disturbs the natural landscape of the area would be undertaken by the zoo. The design of animal enclosures and the support infrastructure would be such that they can merge fully in the environment of the zoo.
- (ii) Zoo shall house only such species which can be provided quality life of adequate longevity so that they can procreate and lead to self sustaining and genetically and behaviourally viable population at the zoo.
- (iii) Zoo shall maintain highest standards of educative signage and interpretation facilities at the animal enclosures to enable the visitors in having a rewarding experience at the zoo.
- (iv) Zoo shall endeavor to enhance the naturalistic and aesthetic value of the zoo to increase the representation of broad leaved species in the tree canopy and the under story through phased removal of pine with appropriate broad leaved species.
- (v) Soil conservation and land stabilization will be the area of highest priority. Cooperation and help of experts on soil conservation and structural designing would also be needed.

Mission: To create an awareness and to develop an understanding about the ecological linkages with the life supporting processes of nature and the need for keeping them intact by adopting sustainable lifestyles and living in harmony with nature. The zoo should encourage visitors to have empathy for wildlife and motivate them to support the cause of conservation of wildlife and protection of their habitat.

To act as a rescue centre for seized, rescued, orphaned and injured wild animals, also as a research centre for captive breeding and behaviour etc.

Theme and Strategy: Theme of display of proposed animals in the zoo will be taxonomic. The broad classification for display animals will be as follows:

- (a) Members of the cat family: (Leopard, Clouded Leopard, Leopard cat and Jungle cat)
- (b) Bear, Bear cat and canids: (Himalayan bear, jackal and weasel and civets)
- (c) Primates: Macaques, Hoolock Gibbon, Slow Loris
- (d) Ungulates: Barking deer and Serow, sambar and hog deer.
- (e) Terrestrial birds including birds of prey
- (f) Off display rescue facilities and breeding centre for Slow Loris and Hill Mynah.



LEOPARD CAT



BARKING DEER



CIVET CAT



HOOLOCK GIBBON



STUMP TAILED MACAUE



HILL MYNAH



PORCUPINE



SLOW LORIS

Exception to display on taxonomic classification could be made in case of species needing special care.

FUTURE ACTION PLAN

GENERAL PRINCIPLES

1. The primary objective of the zoo would be to provide the visitors to the zoo an insight into the natural splendor of Meghalaya forests and in particular the opportunity to witness healthy and agile animals displaying their species specific natural behavior in nature simulating enclosures.
2. To apprise the visitors about the linkages between the conservation of various species of wild animals and their habitat while keeping the life supporting processes of nature intact through appropriate interpretation facilities and the signage providing relevant information on the biological behavior and ecological importance of various species of wild animals.
3. Making the stay of visitors at the zoo comfortable through provision of basic civic amenities like potable drinking water, neat and clean toilets, and comfortable rest sheds, canteen and restaurants catering local cuisines and delicacies including products of locally grown fruits in hygienic environment.
4. Making the visit of the zoo more informative and rewarding through use of multimedia facilities and Interpretation Centre.
5. Maintaining zoo campus free of plastic bags and plastic wares, with a view to maintain neat and clean environment in the zoo.
6. To ensure safety of visitors against injury from wild animals, untoward accidents and attack by the undesirable persons.

UPKEEP AND MANAGEMENT OF ZOO ANIMALS

- (i) Zoo animals would be provided four fundamental freedoms viz freedom from thirst and hunger, freedom from physical discomfort caused by various climatic factors, freedom to express their natural behavior in the company of the other animals pertaining to the same or compatible species and freedom from pain and agony caused by injuries and sickness.
- (ii) To achieve the objectives mentioned in sub Para:
The enclosures shall be so designed that animals get adequate space and appropriate substrate to express their natural behavior as well as round the clock supply of potable water. It shall be ensured that every animal of each species housed in the zoo gets an opportunity to remain in the outdoor enclosure for adequate time every day. No animal shall be kept locked in the feeding cell/ night shelter for unreasonably long period, unless confining the animal in the feeding cell/ night shelter is necessary for making close observation on the physical health of the animals and provision of intensive health care. The enclosure barriers and other safety equipments provided at the animal enclosures shall be so designed that the chances of the animal escaping from the enclosure are completely ruled out. The number of animals of each species in the respective animal enclosures shall be such that the group becomes socially and genetically viable. The number would not be allowed to exceed the carrying capacity of the enclosure, in the interest of the safety of the animals and availability of requisite physical space to each individual animal.

- (iii) Every animal enclosure would have requisite screening and withdrawal area to safeguard the animals getting unduly stressed by the close proximity of visitors and visibility of animals in the adjoining enclosures. However, due regard would be given to visitor getting unobstructed view of the animals from the designated view points.
- (iv) Zoo shall constantly endeavor to infuse new blood into its animal collection to safeguard against the excessive inbreeding leading to development of congenital defects in the animals. Zoo shall keep a constant vigilance to prevent physical handling of animals either by the zoo keepers or by the visitors as a safeguard against the animals getting unnatural traits.
- (v) Every enclosure would be provided physical environment and other infrastructure that facilitates the animals getting ample opportunity to display species specific behavior.
- (vi) All the animals in the zoo shall be provided food which meets their nutritional and behavioral requirement fully. It shall be ensured that feed given to the animal is fresh, infection free and of high quality. Feeding would be done at a clean and hygienic surface in a kraal / cell free from pests, feral/ wild animals.
- (vii) The health of every animal shall be closely monitored round the clock. Appropriate treatment / medical attention shall be provided as soon as it is found that the animal is sick.
- (viii) Zoo shall take due precautions against the left over feed/ animal droppings/ urination impacting the environment of the enclosure/ kraal/ feeding cell. The same should be removed, disposed off, and surfaces washed in a manner that no adverse impact is caused on the natural environment of the zoo and the water streams/ water bodies in the vicinity of the zoo.
- (ix) All the operations enumerated above should be carried out in such a manner that all the animals have quality life of adequate longevity and can procreate and help in developing a self sustaining population of all the species housed in the zoo. Acquisition of wild animals by the zoo shall be limited to rescued animals and the founder animals for planned breeding programme.
- (x) Zoo shall keep meticulous records of the daily upkeep, feeding, behavior sickness, health care and postmortem findings in a manner prescribed by the Central Zoo Authority. The data so collected would be regularly monitored and analyzed to evolve suitable animal care practices.
- (xi) It need not be highlighted that the operation of the zoo and the management and upkeep of the zoo animals and provision of facilities to the visitors involved scientific and technical inputs from the personnel of various disciplines. Therefore, very specific and detailed chain of command and strong coordination mechanism would be necessary. Regular training programmes/ workshops would be necessary to upgrade the scientific and technical skills of the subordinate staff who would be play main role in the operation and management of the zoo.
- (xii) Last but not the least, the various section heads and the Director of the zoo need to have very strong public relations and communication skills and should be able to lead the staff of their section from the front. Motivated and enthusiastic staff is sine-qua-non for the success of the operational plan of the zoo.

4.1 PROPOSED ANIMAL COLLECTION PLAN

Giving due regard to the suitable area available for construction of appropriately designed enclosures, the number of species housed and displayed in the zoo, in the first phase would be limited to following existing species:

PROPOSED ANIMAL COLLECTION PLAN FOR MEGHALAYA STATE ZOO AT UMTREW

Sl. No	Species	Present stock with the zoo				Proposed Collection				Animals to be acquired or removed				Remarks	
		M	F	U.S	Total	M	F	U.S	Total	M	F	U.S	Total		
MAMMALS															
1.	Leopard Cat	<i>Felis bengalensis</i>	1	2	1	4	2	4	-	6	1	2	-	3	
2.	Slow Loris	<i>Nycticebus bengalensis</i>	2	1	-	3	2	3		5		2		2	
3.	Rhesus Macaque	<i>Macaca mulatta</i>	3	5	-	8	3	5		8					
4.	Stump Tailed Macaque	<i>Macacaspeciosa</i>	-	1	-	1	2	3		5	2	2		4	
5.	Palm Civet Common Toody-Cat	<i>Hermophroditus paraduxurus</i>	-	1	-	1	2	3		5	2	2		4	
6.	Himalayan Black Bear	<i>Salenarctus thibetanus</i>	4	2	-	6	3	2		5	1	-	-	1	To be removed
7.	Jackal	<i>Canis aureus</i>	-	2	-	2	1	2	-	3	1	-	-	1	
8.	Himalayan Yellow Throated Marten	<i>Martes flavigula</i>	1	-	-	1	2	3		5	1	3		4	
9.	Serow	<i>Capricornis sumatreansis</i>	1	-	-	1	2	3		5	1	3		4	
10.	Clouded Leopard	<i>Neofelis nebulosa</i>	-	1	-	1	2	3		5	2	2		4	
11.	Deer Barking	<i>Muntiacus muntjak</i>	5	3	1	9	5	4	1	10		1		1	
12.	Deer Hog	<i>Axis porcinus</i>	4	2	1	7	4	3	1	8		1			
13.	Deer Sambar	<i>Cervus unicolor</i>	4	1	-	5	4	4	-	8		3		3	
14.	Indian Porcupine	<i>Hystrix indica</i>	1	1	-	2	2	3		5	1	2		3	
15.	Hoolook Gibbon	<i>Hylobates hoolock</i>					2	3		5	2	3		5	
16.	Hog Badger	<i>Arctonyx collaris</i>					2	3		5	2	3		5	Enclosure shall be proposed
17.	Jungle Cat	<i>Felis chaus</i>					2	3		5	2	3		5	
18.	Assamese Macaque	<i>Macaca assamensis</i>					2	3		5	2	3		5	
19.	Ferret Badger	<i>Melogale moschata</i>					2	3		5	2	3		5	
20.	Leopard	<i>Panthera pardus</i>					2	3	-	5	2	3	-	5	

Table Contd...

Sl. No	Species		Present stock with the zoo				Proposed Collection				Animals to be acquired or removed				Remarks
			M	F	U.S	Total	M	F	U.S	Total	M	F	U.S	Total	
BIRDS															
1.	Indian Pied Horn Bill	<i>Antheracocerus malabaricus</i>	-	1	-	1	2	3	-	5	2	2	-	4	
2.	Heron Night	<i>Nycticora nycticorax</i>	-	-	-	-	2	3		5	2	3	-	5	
3.	Eagle Crested Serpent	<i>Spilornis cheela</i>	3	2	-	5	3	2	-	5					
4.	Hill Myna	<i>Gracula religeosa</i>	1	1	-	2	1	1	-	2	-	-	-	-	
5.	Indian Peacock	<i>Pavo cristatus</i>					2	3		5	2	3		5	
6.	Land Bird Aviary	<i>Assorted land birds occurring in the area</i>											Up to 50	Indigenous land birds	
7.	Hume's Pheasant	<i>For conservation breeding purposes when facility will be developed</i>					3	5	-	8	3	5	-	8	

PROPOSE PHASING OF DEVELOPMENT

Once the additional plain land and the water body has been acquired following additional species could be acquired and put on display in the zoo.

Sl. No.	Common Name	Zoological Name
A. MAMMALS		
1.	Malayan Sun bear	<i>Helarctos malayanus</i>
2.	Binturong	<i>Artictis binturong</i>
3.	Pig tailed macaque	<i>Macaca nemestrina</i>
4.	Capped langur	<i>Presbytis pileatus</i>
5.	Golden langur	<i>Presbytis geei</i>
6.	Black giant squirrel	<i>Ratufa macroura</i>
7.	Bat species	
8.	Hog badger	<i>Arctonyx collaris</i>
9.	Orange bellied Himalayan Squirrel	<i>Dremomys lokriah</i>
10.	Goral	
11.	Wild boar	<i>Sus scrofa</i>
12.	Crab eating mongoose	<i>Herpestes urva</i>
13.	Large Indian Civet	<i>Viverra zibetha</i>
B. BIRDS		
1.	Common Coot	<i>Fulica atra</i>
2.	Peacock pheasant	<i>Polyplectron bicalcaratum</i>
3.	Great Indian Hornbill	<i>Buceros bicornis</i>
4.	Red Jungle fowl	<i>Gallus gallus</i>
5.	Blyth's Tragopan	<i>Tragopan blythii</i>
6.	Bamboo Partridge	<i>Bambusicola fytchii</i>
7.	Long billed vulture	<i>Gyps indicus</i>
8.	White rumped vulture	<i>Gyps bengalensis</i>
9.	Grey leg goose	<i>Anser Anser</i>
10.	Brahminy Duck	<i>Tadorna ferruginea</i>
11.	Spot bill pelican	<i>Pelecanus philippensis</i>
12.	Himalayan whistling thrush	<i>Myiophoneus caeruleus</i>
13.	Green imperial pigeon	<i>Ducula aenea</i>
14.	Turtle dove	<i>Streptopelia turtur</i>
C. REPTILES		
1.	Malayan Box turtle	<i>Cuora amboinesis</i>
2.	Keel box turtle	<i>Pyxidea mouhotii</i>
3.	Asian brown turtle	
4.	Assam roof turtle	
5.	Elongated tortoise	<i>Indotestudo elongata</i>
6.	Python	<i>Genus python</i>
7.	Moncelated cobra	
8.	Monitor lizard	<i>Varanus Indicus</i>
9.	Gharial	<i>Gavialis gangeticus</i>
10.	Mugger	<i>Crocodylus palustris</i>

4.2 DESCRIPTION OF THE LAYOUT PLAN OF THE ZOO

Layout map on a scale of 1:4000 with details contour drawn, submitted and the same was approved by the Central Zoo Authority. Detailed approved layout plan of the zoo is at annexure –I.

4.3 DIRECTOR ARROW ON THE LAYOUT PLAN

Director arrow of the layout plan indicated in the approved Master Layout plan as per annexure –I.

4.4 LEGEND ON THE LAYOUT PLAN

Legend showing different sections of the layout plan indicated in the approved Master Layout plan as per annexure –I.

a. THE LAYOUT PLAN OF THE ZOO

Existing features of the layout plan is shown as per the approved Master Layout plan appended at annexure –I.

The conceptual layout plan for the services such as water supply, electricity and sewage disposal pipelines is at annexure-III, annexure-IV, Annexure-V and Annexure-VI respectively.

b,c & d. VISITOR AND SERVICE CIRCULATION, OTHER AMENITIES AND DISPOSAL OF CARCASS

The entrance gate for the zoo is proposed to be constructed near the saddle falling on the approach road to the zoo from the national highway through the village road. The Ticket counter and the security room will be constructed few meters west of the gate. The vehicle parking lot would be located few meters west of the ticket counter. From the saddle one road goes towards the North West side and other to the north east side. The road leading to the North-West side will lead to the visitor amenities centre like Restaurant, Administrative Block, Multi Media room, and Interpretation Centre. To the west from this road there is a Rescue Centre. Rest of the entire area in the west is a proposed botanical garden.

The animal display enclosures will be located on both sides of the road going to the north-east side, which would turn first towards west then to north and ultimately merge back into same road much before reaching the saddle. Visitors moving on the north east road would first pass through the primate enclosures on both sides i.e. hoolock gibbon, rhesus macaque, and Assamese macaque, and on the other road side there is a Peafowl, slow loris, and a resting place. While tuning west in this road, to the left there is Sambar deer enclosure, Stump tailed macaque, Barking deer, Crested Serpent Eagle and Land bird aviary where as on the right side, there is a Hog Deer, Himalayan black bear, Serow, Night heron, Himalayan yellow throated marten, Ferret badger and Porcupine. At this point, visitors are to move down through the leading road to the south, which leads again to the display area. As they proceed forward they will come to the resting and a refreshment place. Moving ahead, wild cat section is on both sides of the road like, Clouded Leopard, Jungle cat, Civet cat, Loepard and Leopard cat. Finally before they reach the end of displaying place, visitors pass through the Jackal enclosure. Conservation and Breeding centre would be located at the eastern part from the Porcupine enclosure by passing through the road proposed for future expansion.

From the junction where Porcupine enclosure is displayed, there is one road that leads to the north and comes down to meet the other end. This is the area for future expansion of display enclosures as and when necessary. The layout plan has earmarked areas for future expansion of the zoo but these locations could be changed depending upon the additional land acquired by the State Government for the future expansion of the zoo. Similarly, carcass shall be disposed hygienically on the free land area available on the north eastern side of the zoo.

Feed Store section is located in between Administrative building and Interpretation Centre and Multi-media room. Post Mortem, Quarantine, Incinerator and Veterinary Hospital Complex would be located to the northern side of the administrative block and the parking lot would be located opposite to the Administrative block. Building section would be separated from the animal section by a boundary wall of 2.5 meters height. The residential complex would be constructed on the west side of the point where the approach road enters the zoo boundary and would be separated from the zoo by a boundary wall of with a minimum height of 2.5 meters.

A space of approximately 15 Hectares has been earmarked on the sloping land of western and north western part of the zoo for setting of a botanical garden. This will be approachable with a checking point from the parking lot. The area for the botanical garden will be fenced up with a compound wall to ensure the security of the animals.

e. Power supply facilities: To meet the requirement of electricity in the zoo, a substation would be constructed by the Meghalaya State Hydro Electricity Board. The exact location, where the sub-station will be constructed, would be decided by the Board. However a tentative location has been indicated in the layout plan. The layout plan of power cables/ power lines has also been shown in the service layout plan as per annexure-VI enclosed.

f & h. Solid and liquid Waste Disposal and Sewerage line: Sewerage from various enclosures, residential complex, administrative block, hospital, feed store shall be carried through pipelines of appropriate dimension to septic tanks and soak pits constructed at appropriate places. The detailed lay out plan of the sewerage pipelines and the location of soak pits have also been demarcated in the service lay out plan appended at Annexure-IV enclosed.

g. Water supply facilities: Five nos. of deep bore well would be provided at the lower contours for getting requisite quantity of water for drinking, cleaning and gardening purpose in the vicinity of the water body, below the zoo area. The water taken from the well would be lifted with the help of pump and supplied to overhead tanks constructed in the residential area, administrative block, hospital, feed store and animal display area. The display area would have overhead tanks at a higher elevation in relations to the different facilities where water shall be used. The detailed layout of water supply pipe line to each animal enclosure has been indicated in the service layout plan as per enclosed Annexure-III

Communication facilities: The zoo will have internal communication system in the form of field telephones and VHF communication, through which communication can be established with all the keepers, supervisors, security room, ticket counter, store room etc. from the administrative office and veterinary hospital.

j DESIGNING OF ANIMAL ENCLOSURES

1. Because of the refractory nature of the topography earmarked for the zoo and availability of limited plain land/area with gentle slope it is not proposed to construct moated enclosure for display of any species other than Himalayan Black Bear, which can not only easily climb on the chain link but can also damage it.
2. The enclosures of various species would be designed to have maximum carrying capacity as per details given below:

(i) Clouded leopard, leopard and Himalayan Black bear	6
(ii) Barking deer/ Serow (with two paddocks for each species)	20
(iii) Smaller cats, Civet, jackal	10
(iv) Primates	10
(v) Other smaller species of mammals	20
(vi) Avian species	20

Appropriately designed feeding cells for each individual animal of every species would be provided. It would be ensured that every feeding cell unit has adequate aeration and natural light. However, in case of serow and ungulates, appropriately designed kraals would be provided for feeding the animals and segregating sub adult males. However, 3-4 feeding cells should be provided with the enclosures of serow and barking deer for treating.

- (i) Appropriate fittings/structures for enrichment of the environment would be provided in each enclosure to meet the behavioural requirement of the species housed/ displayed.
- (ii) Round the clock potable water supply would be made available at each enclosure.
- (iii) Appropriate arrangement for power supply at every feeding cell/ night shelter unit would be provided.
- (iv) Highest standards of sanitation and hygiene would be maintained at each enclosure in general and the feeding kraals and feeding cells. The flooring and fittings in the kraal and feeding cells shall be so designed that facilitates achieving this objective.
- (v) Planting of appropriate tree species in requisite number would be done to protect the animals from hot sun by providing adequate shade. Ground flora and shrubs would be nurtured in each enclosure in such a manner that the animals are not unduly exposed to visitors, but the visitors must get adequate opportunity to get the unrestricted view of the animals.
- (vi) Each feeding cell/night shelter would be provided with an in built squeeze in cage.
- (vii) The enclosure barriers, and all the fitting in the paddocks and feeding shall be made of such design and material that no animal can damage/tear off/break down the fittings.

- (viii) Feeding cells/ night shelters should be properly fenced/screened and would be beyond the reach of visitors.

4.5 LAND STABILIZATION AND PREVENTION OF SOIL EROSION

- (1) Wherever the construction of road/ building/ enclosure involves any cutting of hills slopes, provision of appropriately designed retaining wall and breast wall would be provided.
- (2) Provision of series of check dams would be made across each water stream passing through the zoo area, particularly above the levels where any building/ enclosures/ walls are made.
- (3) The vegetation across the hill slopes within the zoo area particularly the ground cover and under storey would be planted with appropriate herb and shrub species.
- (4) Plantation of bamboo and *Sacchaurm* species would be done along the high bank of the water streams.
- (5) As far as possible, no structure should be constructed at such location where the regular water flow of the stream is obstructed. However, when construction of any structure across a water stream is unavoidable, provision of culverts of adequate size and requisite strength would be constructed to ensure that adequate waterway is available to accommodate the flow of water in the stream even in peak flood time. Appropriate arrangement to arrest the debris and silt load should be made on the uphill side of such structures.

PERSONNEL PLANNING

The job requirement of zoo personnel in the construction phase and operation phase would involve following major components:

5.1 CONSTRUCTION PHASE

- (i) Landscaping and zoo designing.
- (ii) Procurement of construction material and its safe storage.
- (iii) Construction of animal housing, upkeep and health care facilities and other support infrastructure.
- (iv) Provision of civic amenities, education and awareness facilities including organization of museum exhibits
- (v) Procurement and distribution of water and power and making arrangements for the disposal of sewage and solid wastes including arrangements of recycling of water and paper.
- (vi) Procurement and transport of zoo animals.

5.2 OPERATION PHASE

- (i) Housing, upkeep and feeding of zoo animals including maintenance and upkeep of animal enclosures, transport of zoo animals including their movement from one enclosure to the other, maintenance of water and power supply and zoo sanitation.
- (ii) Animal health care.
- (iii) Zoo Education and amenities for visitors: maintenance of visitor amenities like roads, paths, multimedia room, toilets, ticketing counter, monitoring movements and circulation of visitors and redressing their grievances, visitor education and awareness, maintaining of lawns and gardens and ensuring the security of visitors and zoo animals and maintenance of educational signage and interpretation facilities.
- (iv) Monitoring and Research including execution of conservation breeding plan and preparation of advisory for improvement of various zoo practices.

5.3 REQUIREMENT OF ZOO PERSONNEL

First and foremost requirement of the zoo is appointment of zoo Director who shall be having adequate administrative and financial powers to get various zoo operations effectively. No officer who has a status lower than a Deputy Conservator of Forests can fulfill this role effectively. However, the size of animal collection and the expected number of visitors suggest that there would not be enough work in the zoo to warrant the posting of a whole time Dy. Conservator of Forests as Director of the zoo. It is therefore, proposed that Dy. Conservator of Forests, Wildlife Division, Khasi Hills may be designated as Director of the zoo, who could oversee and ensure effective development, maintenance and operation of the zoo.

In the construction phase, Director or Dy. Conservator of Forests, Khasi Hills Wildlife Division, Shillong can oversee the planning and construction work with the assistance of following existing skeletal staff:

(i)	Range Officer	-	1
(ii)	Junior Engineer	-	1
(iii)	Forester/Store keeper	-	1
(iv)	Forest Guards	-	1
(v)	Peon/Attendant	-	1
(vi)	Museum Caretaker	-	1
(vii)	Feeder	-	2
(viii)	Grass cutter and Mali	-	3
(ix)	Chowkidar	-	2
Total		=	13

Whereas for the smooth and complete functioning of the establishment, posts in different field is necessary as shown in table below:

Name of post	No. of Post required	Post sanctioned	Filled up posts	Proposed
(a) General Administration:				
Director	1	1	1	Nil
Dy. Director (ACF)	1	-	-	1
Range Officer	2	1	1	1
Driver	3	-	-	3
Attendant/Night Chowkidar	4	2	2	2
(b) Animal Upkeep & Care:				
Zoo supervisor/Forester	1	1	1	Nil
Animal Keeper/Forest Guard	6	1	1	5
Asst. Animal Keeper/Grass cutter	8	1	1	7
(c) Maintenance of animal Enclosures and other support infrastructure:				
Junior Engineer	1	1	1	Nil
Mason	1	-	-	1
Carpenter	1	-	-	1
Blacksmith	1	-	-	1
Plumber	1	-	-	1
Electrician	1	-	-	1
(d) Food supply				
Store keeper/Forester	1	-	-	1
Store Asst./Forest Guard	1	-	-	1
Kitchen attendant/Feeder	2	2	2	Nil
(e) Zoo Sanitation				
Sanitary supervisor/Forester	1	-	-	1
Sanitary Attendants/Cleaner	6	-	-	6

Table Contd...

Name of post	No. of Post required	Post sanctioned	Filled up posts	Proposed
(f) Veterinary Hospital/Health Care Unit				
Veterinary Officer	1	-	-	1
Compounder	1	-	-	1
Laboratory Assistant	1	-	-	1
Asst. Animal keeper/Attendants cum Peon	3	-	-	3
(g) Zoo Education, Security and State Management				
Security supervisor/Forester	2	-	-	2
Ticket clerk	2	-	-	2
Security Guards	20	-	-	20
Horticulture supervisor/Forester	1	-	-	1
Museum Care taker	1	1	1	-
Mali	6	2	2	4
Dy. Range officer/Education Supervisor	1	-	-	1
Education Assistant/Forest Guard	2	-	-	2
Zoo Guide/Forest guard	2	-	-	2
Painter	1	-	-	1
Carpenter	1	-	-	1
(h) Research and Monitoring Unit:				
R& M Officer/Zoo Biologist	1	-	-	1
Research Assistant	2	-	-	2
Zoo Keeper	2	-	-	2
Attendant/Peon	2	-	-	2
(i) Office Staff				
Head Clerk	1	-	-	1
Accountant	1	-	-	1
Data Processor/Clerk	4	-	-	4
Attendant/Peon	2	1	1	1
Grand total	103	-	14	89

It is the top priority that the proposed posts come into immediate effect as soon as the State Zoo starts its general administration. Therefore proposed posts of different categories are showing below with their respective present basic scale of pay.

Name of post	Total No. of Post	Filled up posts	Pro - posed	Scale of Pay
Director/DFO	1	1	Nil	
Dy. Director (ACF)	1	-	1	17000-470-20290-EB-560-25330-760-33690
Veterinary Officer	1	-	1	18300-500-21800-EB-650-27000-810-35100
Junior Engineer	1	1	Nil	

Table Contd...

Name of post	Total No. of Post	Filled up posts	Pro - posed	Scale of Pay
Range Officer	2	1	1	14100-350-16550-EB-460-20690-620-27510
Dy. Range officer/Education Supervisor	1	-	1	9900-250-11650-EB-320-14530-440-19370
R& M Officer/Zoo Biologist	1	-	1	14100-350-16550-EB-460-20690-620-27510
Accountant	1	-	1	13100-330-15410-EB-420-19190-580-25570
Head Clerk	1	-	1	13100-330-15410-EB-420-19190-580-25570
Data Processor/Clerk	4	-	4	9200-230-10810-EB-300-13510-410-18020
Foresters	6	1	5	8300-210-9770-EB-270-12200-370-16270
Education Assistant/Forest guard	11	1	10	7100-180-8360-EB-230-10430-310-13840
Research Assistant	2	-	2	8300-210-9770-EB-270-12200-370-16270
Laboratory Assistant	1	-	1	6500-160-7620-EB-210-9510-290-12700
Museum Care taker	1	1	Nil	
Driver	3	-	3	7700-190-9030-EB-250-11280-340-15020
Compounder	1	-	1	6500-160-7620-EB-210-9510-290-12700
Mason	1	-	1	6500-160-7620-EB-210-9510-290-12700
Carpenter	2	-	2	6500-160-7620-EB-210-9510-290-12700
Painter	1	-	1	6500-160-7620-EB-210-9510-290-12700
Blacksmith	1	-	1	6500-160-7620-EB-210-9510-290-12700
Plumber	1	-	1	7100-180-8360-EB-230-10430-310-13840
Electrician	1	-	1	7100-180-8360-EB-230-10430-310-13840
Ticket clerk	2	-	2	7100-180-8360-EB-230-10430-310-13840
Kitchen attendant/Feeder	2	2	Nil	
Asst. Animal Keeper/Grass cutter	8	1	7	6500-160-7620-EB-210-9510-290-12700
Asst. Animal keeper/Attendants cum Peon	3	-	3	6500-160-7620-EB-210-9510-290-12700

Table Contd...

Name of post	Total No. of Post	Filled up posts	Pro - posed	Scale of Pay
Sanitary Attendants/Cleaner	6	-	6	6500-160-7620-EB-210-9510-290-12700
Attendant/Night Chowkidar	4	2	2	6500-160-7620-EB-210-9510-290-12700
Zoo Keeper	2	-	2	6500-160-7620-EB-210-9510-290-12700
Attendant/Peon	4	1	3	6500-160-7620-EB-210-9510-290-12700
Mali	6	2	4	6500-160-7620-EB-210-9510-290-12700
Security Guards	20	-	20	6500-160-7620-EB-210-9510-290-12700
Total	103	14	89	

State Government would have to hire a person/ firm well versed with animal behaviour, designing and architecture as zoo consultant and reputed construction agency for execution of the construction work.

5.4 OPERATION PHASE

The Asstt. Conservator of Forests would be designated as Dy. Director of the zoo and would be whole time in charge for overseeing the operations of the zoo. The support infrastructure for carrying out various operations of the zoo should be as follows:

- (1) **Animal housing and upkeep section:** Forest Ranger/Animal Curator would be over all in charge of upkeep of zoo animals and maintenance of animal housing of the zoo. Other zoo personnel would be required to assist the Forest Ranger/Animal Curator for various functions forming part of his responsibility
- (2) **Veterinary Hospital/ Health Care Unit:** This section will facilitate time to time necessary care and medication of the animals within the zoo. The Veterinary Officer will be the head of this section alongwith the assistance of Compounder, Lab Assistant and Assistant animal keeper/attendants.
- (3) **Zoo Education, Security and State Management:** Public relation education and awareness, visitor management and maintenance of visitor amenities would be supervised by an officer of the rank of Forest Range officer. He will run his supervision to the lower staff for necessary functioning in all fields like ticketing management, Horticulture, Education supervision etc.
- (4) **Research and Monitoring Unit:** This section will monitor the functioning of the zoo. The Zoo Biologist as a Research and Monitoring Officer shall function the necessary works with the assistance of the Research Assistant, Keeper, Attendants etc. and fulfill the works as and when necessary.

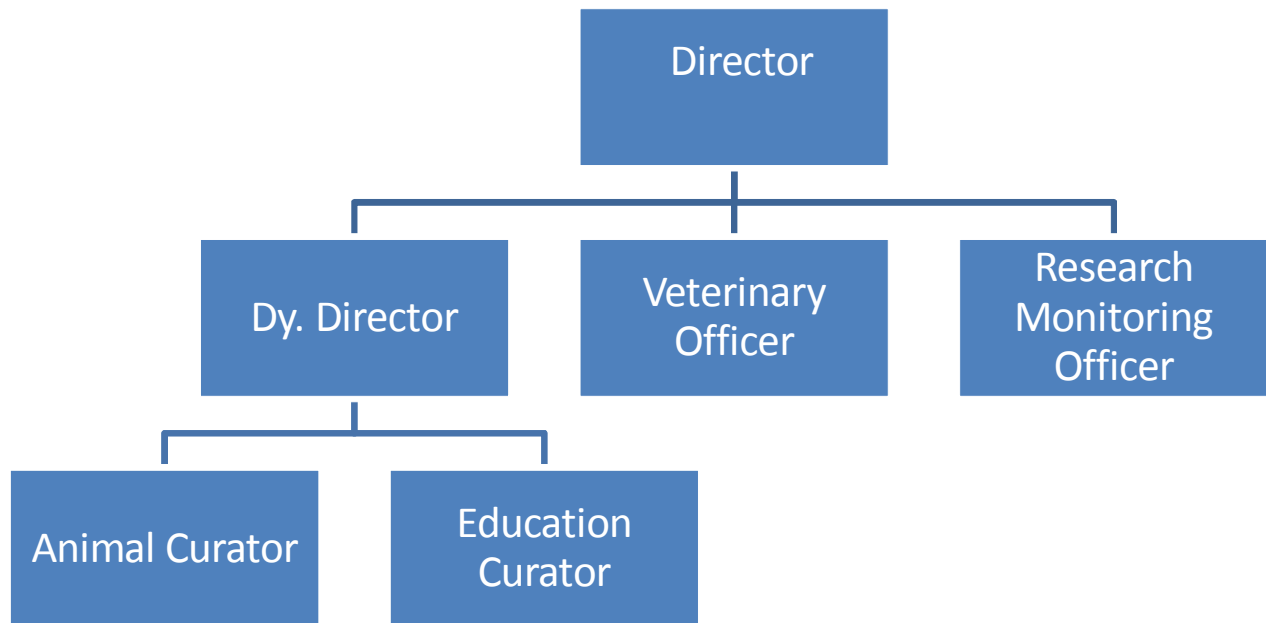
(5) Brief Resume of personnel required for operation of the zoo:

Name of post	Basic Qualification
Director/DFO	IFS Cadre
Dy. Director (ACF)	State Forest Service cadre
Veterinary Officer	B.V.Sc. with 5 years experience
Junior Engineer	Diploma in Civil Engineering
Range Officer	B.Sc.
Dy. Range officer/Education Supervisor	Graduate
R& M Officer/Zoo Biologist	MSc Biology
Accountant	B.Com
Head Clerk	Graduate
Data Processor/Clerk	BCA/Graduate with computer knowledge
Foresters	H.S.S.L.C. Passed
Education Assistant/Forest guard	Matriculate
Research Assistant	M.Sc.
Laboratory Assistant	XII Science
Museum Care taker	H.S.S.L.C. Passed
Driver	Matriculate
Compounder	V.F.A trained from Veterinary
Mason	CL-VIII with ITI certificate in Masonry
Carpenter	CL-VIII with ITI certificate in Carpentry
Painter	CL-VIII
Blacksmith/Welder	CL-VIII with ITI certificate in Welding
Plumber	CL-VIII with ITI certificate
Electrician	CL-VIII with ITI certificate in electrical
Ticket clerk	Matriculate
Kitchen attendant/Feeder	Matriculate
Asst. Animal Keeper/Grass cutter	Matriculate
Asst. Animal keeper/Attendants cum Peon	Matriculate
Sanitary Attendants/Cleaner	Matriculate
Night Chowkidar	Matriculate
Zoo Keeper	Matriculate with computer knowledge
Attendant/Peon	Matriculate
Mali	Matriculate
Security Guards	Matriculate

5.5 Chain of Command

Since operation of zoo involves personnel from several disciplines, a clear cut chain of command is necessary and a protocol for inter sectional communication is crucial for effective operation of the zoo. Since Director of the Zoo would not be always available in the zoo premises, Dy. Director would be responsible for coordinating activities of every section/unit and submitting a daily progress report to the Director. Copy of every correspondence made by Veterinary

Officer and Research and Monitoring Officer with Director would be made available to the Dy. Director. He would be chief spokesperson of the zoo to the media and other government departments.



5.6 Outsourcing some of the services

Some zoos have out sources maintenance of security and sanitation (other than cleaning of animal enclosures) and the practice has not only reduced the staff component but yielded better quality of service. The possibilities of out sourcing security and sanitation may be explored by the zoo. In such cases the staff component shall reduce accordingly.

5.7 Promotion opportunities

Most of the supervisory posts in the zoo shall be manned by forest official who have already in built promotion prospects, the zoo personnel working as Research and Monitoring Officer, Research Asstt. Zoo Guides may be given scales as sanctioned by Government of India on the basis of Recommendations of VIth Pay Commission, as adopted by the state, where larger pay bands are available or else time bound promotion should be given to them. For each post, there should be a selection grade (available after completion of 13 years service) and supertime scale admissible after completion of 26 years of service. However, these scales should be given only to such personnel who have been rendering good quality of service. The same principles should apply to animal keepers and other subordinates.

DISASTER MANAGEMENT

State Zoo Meghalaya being located in a forest area with very refractory topography falling in high rainfall zone the most common disaster confronted by zoo could be damage to various zoo facilities by landslides, floods, collection of huge quantity of debris and boulders in certain areas, uprooted trees damaging enclosure barriers. Forest fire could also pose a serious threat during summer season. Of course, the threat of catastrophic events like earthquake always exists.

It is important that the zoo always remains in the state of preparedness to tackle the emergencies/disruptions caused by these catastrophic events and restoring normalcy within shortest possible time. The zoo should have in its stock portable generator, pumping sets, chain saws, shovels, spades, sickles for clearing the area of the zoo after the catastrophic event quickly. Zoo should have alternative modes for supply of food and water during the period of crisis. Regular interaction should be maintained with local community and they should always feel integral part of zoo management, ever willing to render all possible help in tackling the situation caused by the disaster. Zoo should maintain a buffer stock of chain link, angle iron and clamps etc. for emergency repair of animal enclosures.

Zoo should acquire necessary fire extinguishing equipments in consultation with the fire services of the State. The gates and roads should be so designed and maintained that fire brigades can reach the spot affected with fire without any hindrance. Fire hydrants should be available at every facility/ service unit in the zoo.

Regular cutting of fire lines should be done before on set of summer all along the boundary of the zoo. Fire lines should be kept clean of leaves and fallen branches all the time throughout the summer.

Mock drills to tackle various disasters mentioned above should be done periodically and ever zoo personnel should be well aware of the duty to be performed by him during the disaster. No time should be lost waiting for orders from senior officers. A signaling system like siren should be in place to alert the staff regarding any disaster so that they can take up their assigned responsibilities.

6.1 BOMB THREAT

Bomb threat should be referred immediately to the nearest police station and no visitor should be allowed to touch or temper the object supposed to be dangerous/ posing threat.

6.2 CIVIL DISOBEDIENCE

During the event of any civil disobedience, the senior most officers present in the zoo premises should try to have a dialogue/ negotiate with miscreants and keep them engaged until the police enforcement arrives. The rest of the staff should endeavor to take the zoo visitor particularly children and women to safer places.

6.3 EVACUATION OF THE VISITORS

The zoo should have a detailed written protocol for evacuating visitors in hour of every crisis. There should be provision of emergency exhibits and a public address system to communicate to the visitors the routes to be followed to get out of the zoo in the event of any disaster/ crisis. Zoo guides and security guards should ensure that visitors do not panic and get out of the zoo safely through the routes earmarked for the purpose.

6.4 AVAILABILITY OF PHONE NOS. TO BE CONTACTED AT THE TIME OF DISASTER

The number of zoo Director, police control room, fire brigade station, hospital/ ambulance and the SHO of the nearest police station should be notified at important points i.e. Security Room, Administrative Block, Hospital, Stores and the animal enclosures.

6.5 EQUIPMENTS REQUIRED FOR DEALING WITH THE DISASTER

- | | |
|---|---|
| (i) Alarm system | (ii) Public address system |
| (iii) Radio communication | (iv) Rubber boots |
| (v) Helmets | (vi) Shovels |
| (vii) Pick Axe | (viii) Welding cutting machine and gas cutter |
| (ix) Portable chain saw | (x) Portable generator |
| (xi) Portable pumping set | (xii) Ropes & nets |
| (xiii) Portable cages | (xiv) Construction material |
| (xv) Chain link, angles, clamps, iron rods and cement | |
| (xvi) Tractor-trolley and portable earth removing equipment | |
| (xvii) Fire-proof dress and goggles | |
| (xix) Wooden planks & bamboos | |

CONTINGENCY PLAN

Zoo should be well equipped and in a state of total preparedness to tackle with any contingency that may arise in the zoo. There should be detailed written plan of operation for dealing with each contingency with the responsibility of each zoo personnel clearly spelt out. Shortage of resources should be no excuse for any laxity in implementation of the plan. Absence of particular officer should not lead to any delay in tackling the situation. There should always be alternate decision taking authority in absence of the officer designated for decision making. The contingencies that may arise in the zoo from time to time are briefly summarized below:

7.1 RESCUE OF INJURED/SICK ANIMALS

There are no large carnivores/ ungulates that may pose serious threat to the security of local people in the forest area adjoining the zoo. Therefore, the possibilities of zoo staff being required to carry out detailed rescue operations of wild animals are minimal. Therefore, no special plan is required for the purpose. Tranquilizing gun and cages maintained for dealing with escape of zoo animals could be used for the purpose. Rehabilitation centre will act as a temporary quarantine for injured and rescued animals etc.

7.2 ESCAPE OF ZOO ANIMALS FROM THE ENCLOSURE

The best strategy for dealing with the escape of zoo animals from the enclosures is to exercise constant vigilance to ensure that the doors, shutters, locks, enclosure barriers are appropriate specifications and are strong enough to keep the animal confined in the enclosure. The latch and lock of the feeding cells in primate enclosures and bear enclosure should be beyond the reach of the animal.

Any weak points/ gaps identified during the inspection should be repaired/replaced immediately.

Constant vigil should be kept on the burrow made by zoo animals particularly jackal, porcupine to check that there is no likelihood of these animals escaping out through these burrows. Deeper foundation of parapet/ toe wall would be of much use in safeguarding such events.

Chain link barriers, doors, windows should be painted and repaired once every year to prevent rusting and snapping and to replace the parts and portions/ individual fittings that have weakened immediately.

Despite all precautions, some animals may escape the animal enclosures sometime or the other. These animals have to be captured on priority basis and put in enclosures strong enough to contain them. The equipments required to capture the animal are:

- | | |
|------------------------------|---------------------------------|
| (i) Tranquilizing gun | (ii) Blow dart |
| (iii) Jab sticks | (iv) Squeeze cage |
| (v) Cages of different sizes | (vi) Transport crates |
| (vii) Nets and ropes | (viii) Plastic Face Mask |
| (ix) Poles, ropes | (x) Gunny bags and plastic bags |

All rescue operations should be carried out in the physical presence of veterinary officer and animal curator.

7.3 THE MONKEY AND DOG MENACE

Monkey Menace: The best safeguard to eliminate monkey menace is feeding all the zoo animals in feeding cells/ kraals covered from the top and putting the leftover food by animals in the bins with cover and lock. The eating houses and restaurant shall also put the garbage/half eaten food in the bins covered from the top. The visitor should not be allowed to take out eatables outside the restaurant/ cafeteria.

2. Visitors should not be allowed to take any food item in to the zoo.
3. Monkey population, if tending menacing dimensions, the monkeys should be captured vasectomised/ tubectomised and treated for tuberculosis. Once these are infection free, they can be released in the nearby forests.

Dog menace: Proper maintenance of the boundary fence and immediate repair of breach if any is an effective measure for controlling the dog menace.

- (ii) Security staff at gate duty should exercise strict vigilance to prevent dogs from entering the zoo.
- (iii) Dogs if any entering the zoo should be captured on priority basis and handed over to the NGOs/ Municipal Corporation.
- (iv) Any dog which is sickly and poses threat of infection of zoo animals should be eliminated.

7.4 ARRANGEMENT OF FOOD FOR ANIMALS IN CASE OF INABILITY OF CONTRACTOR TO SUPPLY FOOD

The contractor either may fail to supply food for animals because of public strike, which break down or natural calamity or decide to not to supply for some legal dispute, non finalization/ expiring of contract, non availability of food item in the market. The food in such cases can be made available to the animals by:-

- (i) Maintaining adequate buffer stock of non perishable food items.
- (ii) Maintaining buffer stock of perishable food items for one or two days in deep freeze.
- (iii) Authorizing animal Curator to procure the food supply from open market against cash.

7.5 SNAKE BITE

- (i) Maintaining enough stock of anti snake venom at the zoo.
- (ii) Carrying the patient to hospital without loss of time after injecting the anti- snake venom.
- (iii) Providing First Aid including tying of bands.

7.6 VISITORS GETTING INJURED BY ZOO ANIMALS

- (i) Putting signboards on every enclosure to keep away from the enclosures.
- (ii) Providing effective standoff barriers.
- (iii) Keeping first aid kit at zoo hospital for attending and providing the patient preliminary care.
- (iv) Transport the patient to nearest hospital if so required.

7.7 VISITOR FALLING INSIDE THE ANIMAL ENCLOSURE

It is proposed to have only one open moated enclosure in the zoo i.e. Himalayan Black Bear enclosure. It would not be very difficult for the security staff to ensure that no visitor climbs the parapet wall of the enclosure. However, if despite all precautions any visitor jumps to any animal enclosure, the keeper shall attempt to take the bears in to the feeding cells by putting food there. If the trick does not work, the animal would be chemically immobilized. In the mean while, attempt would be made to keep the animal away from the visitor by shouting, pocking with bamboo stick and throwing stones. Visitor would be taken out of the enclosure with the help of ladder/ ropes. The animal Curator would be physically present at the site during rescue operation.

7.8 FIGHTING AMONGST ANIMALS

Effort would be made to drive back the fighting animals to the feeding cells. If that does not work, chemical immobilization can be resorted to. Fighting amongst some species is part of breeding behaviour. Zoo personnel would take care that they do not disrupt the breeding activity of the animals in their enthusiasm to stop fighting between the animals. Possibilities of infighting amongst animals can be minimized through gradual and planned introduction of a new animal in a group and only keeping such animals in a group which compatible.

In species like Barking deer and Primates, killing of sub-adult reaching adulthood by the dominant male are quite high. Such sub adults would be removed from the group and kept in kraals.

The security staff shall inform the Dy. Director/Curator about any such incidents occurring at night.

7.9 EPIDEMICS

Zoo shall ensure that all the animals in the zoo and the animals in the adjoining villages are provided prophylactic treatment including vaccination as per advice of the zoo veterinarian. The diseases requiring vaccination are:

- | | | |
|--------------------|------------------------------|-----------------------------|
| Ungulates: | (i) Anthrax | (ii) Foot and mouth disease |
| | (iii) Hemorrhagic Septicimia | (iv) Trypanosomiasis |
| | (v) Babesiosis | |
| Carnivores: | (i) Feline Panleucopemia | (ii) Canine distemper |
| | (iii) Rhino tracheites | (iv) Feline calcivirus |

As soon as some animal shows symptoms of an infectious disease, it should be removed immediately from the group and kept in isolation ward for treatment. En-masse vaccination and panic herding the animal at a time should invariably be avoided. In case of doubt that some animal has died of anthrax, no postmortem should be done and the carcass buried intact, to safeguard against other animals/keepers/ vets being infected by anthrax.

7.10 BREAKUP OF POWER SUPPLY

Zoo should keep back-up generator at the Administrative Block, zoo hospital and the water pumping house to meet the crisis created by break up of power supply.

7.11 FREE RANGING ANIMALS/FERAL ANIMAL MENACES

As the periphery of the zoo fully secured with high wall fencing, the possibility of feral animals entering the zoo premises is minimal.

CAPACITY BUILDING

The up gradation of the knowledge and technical skills of the zoo personnel is most crucial for effective functioning of the zoo. Training of all zoo personnel therefore has to be ongoing/ continuous process. There would be weekly/ monthly in house seminars. Zoo could also organize workshops using expertise available with other zoos in the country.

Zoo should depute the zoo personnel to the training programmes and workshops being organized for different level staff being organized under the aegis of the Central Zoo Authority.

In the inception stages of the zoo, the Director, Dy. Director, Zoo Ranger, Zoo Supervisor and Animal Keeper should visit some of the good zoos of the country. It would be appropriate that the Conservator of Forests, Director, Dy. Director, and Forest Ranger visit Arignar Anna Zoological Park, Nehru Zoological Park, Nandankanan Biological Park and National Zoological Park to apprise themselves with concepts of zoo planning. A workshop could be organized at Shillong inviting few zoo experts of the country. The zoo veterinarian should have at least 15 days attachment at one of the following zoos Kolkata Zoo, Arignar Anna Zoological Park, Chennai, Nehru Zoological Park, Hyderabad and Nandankanan Zoo, Orissa. Education Curator could undergo 15 days attachment at CEE, Ahmedabad and the Research and Monitoring Officer could go for 15 days attachment at WII.

- Zoo personnel handling animals should be ensured against communicable diseases and injury. They should be paid appropriate amount as risk allowance.
- A system of periodic evaluation should be put in place and the performance of each personnel should be reflected in ACR.
- Incentive for up gradation of educational qualification / technical skills should also be implemented.
- Constant visits of eminent people working in zoo related disciplines in veterinary colleges/ Agriculture universities should be arranged to give hands on training to zoo staff.

8.1 Amenities to zoo staff

All the zoo personnel are expected to stay at zoo site where no civic amenities i.e. shopping place, school, hospital and recreation facilities, the zoo therefore, need to have a decent bus which should move between Shillong and zoo site at fixed timings as per requirement of the family members of the zoo personnel. The bus could also be used by the visitors to the zoo on payment of fare fixed by the zoo.

- The wives of zoo subordinates could be encouraged to form cooperative society to run a departmental store in the residential colony and a souvenir shop within the zoo complex.

- Zoo should have a visiting doctor who sits in the dispensary in the residential colony for 3-4 hours daily and provide preliminary health care and vaccination facilities.
- A small guest house/community centre may be provided in the residential colony where zoo personnel could have social and religious functions.

E-GOVERNANCE

The E-governance is a potent tool for bringing efficiency, transparency and reliability in the zoo management. The Director, Dy. Director, Animal Curator, Education Curator and the Research and Monitoring Officer would have computers, which will be networked with a LAN and the data in the entire computer would be accessible to every officer. Important data on management of the zoo, the inventory of animals, details of housing facility, feeding schedule, births and deaths of animals, causes of death would be made accessible on the website of the zoo. Scientific or behaviour and biology of important animal species and their conservation status would also be made available on the website. Visitors should have the facility of booking their ticket at home. The zoo ticketing system should also be computerized.

All the zoo workers could be given smart card through which time of their arrival and departure from the zoo could be entered in the computer. CCTVs could be provided for monitoring the visitor movement in the zoo and the functioning of security guards and zoo guides.

BUDGET ESTIMATE

The broad budget analysis for implementing the State Zoological Park at Umtrew will highlight the approximate expenditure to be incurred. This budget Estimate may take into consideration at the present schedule rate and increasing of rate may effect in the years to come. Therefore minor changes in the budget estimate may apply as and when necessary. Randomly the statement of budget estimate showing against each work to be taken up is shown in the Table below:

BUDGET ESTIMATE FOR ESTABLISHMENT OF STATE ZOO AT UMTREW, MEGHALAYA

A. Construction:

RUPEES IN LAKHS

Sl No	Item of works	Approx. Amount Proposed	Remarks
1	Construction of Entrance gate	8.00	
2	Construction of Ticket Counter & visitors cloak room	20.00	
3	Construction of Security room	4.00	
4	Construction of Restaurant	45.00	
5	Construction of Administrative Block	80.00	
6	Construction of Garage for departmental vehicle	8.00	
7	Construction of Multi Media room	60.00	
8	Construction of Interpretation Centre	90.00	
9	Construction of Rescue & Quarantine house	65.00	
10	Construction of Veterinary Hospital	45.00	
11	Construction of Observation room	60.00	
12	Construction of Post Mortem room	15.00	
13	Construction of Feed store including kitchen to prepare food for zoo animals	18.00	
14	Construction of Incinerator	8.00	
15	Construction of Parking lot	28.00	
16	Construction of Staff Accommodation	350.00	
17	Construction of Clouded Leopard enclosure	52.00	
18	Construction of Leopard enclosure	52.00	
19	Construction of Civet Cat enclosure	20.00	
20	Construction of Jungle Cat enclosure	20.00	

Table Contd...

Sl No	Item of works	Approx. Amount Proposed	Remarks
21	Construction of Leopard Cat enclosure	20.00	
22	Construction of Jackal enclosure	15.00	
23	Construction of Resting places	12.00	
24	Construction of Public Toilets (2 places)	30.00	
25	Construction of public Drinking water (2 places)	10.00	
26	Construction of snack shop	15.00	
27	Construction of Sambar deer enclosure	22.00	
28	Construction of Hog Deer enclosure	20.00	
29	Construction of Himalayan Black Bear (2 pairs) enclosure	40.00	
30	Construction of Barking Deer enclosure	23.00	
31	Construction of Land Bird aviary	24.00	
32	Construction of Night Heron enclosure	15.00	
33	Construction of Serow enclosure	35.00	
34	Construction of Crested Serpent Eagle enclosure	18.00	
35	Construction of Stump Tailed Macaque enclosure	20.00	
36	Construction of Assamese Macaque enclosure	22.00	
37	Construction of Slow Loris enclosure	38.00	
38	Construction of Peacock enclosure	18.00	
39	Construction of Rhesus Macaque enclosure	25.00	
40	Construction of Hoolock Gibbon (3 Nos) enclosure	40.00	
41	Construction of Ferret Badger enclosure	18.00	
42	Construction of Himalayan Yellow Throated Marten enclosure	50.00	
43	Construction of Porcupine enclosure	10.00	
44	Construction of Conservation and Breeding centre	60.00	
45	Construction of Bore well	10.00	
46	Construction of pump house	9.00	
47	Construction of Over Head Tank and Pipe Connections	45.00	
48	Construction of Septic Tank & Soak pit	23.00	
49	Botanical Garden	30.00	
50	Electrification	40.00	
51	Entrance to Botanical Garden	20.00	
52	Construction of Bench/Sitting place	8.00	

Table Contd...

Sl No	Item of works	Approx. Amount Proposed	Remarks
53	Construction of Boundary wall	384.00	
54	Construction of Internal Boundary Wall for separation of animal and administrative/residential section.	60.00	
55	Construction of Retaining wall along the Boundary of zoological park and Botanical garden	98.00	
56	1.50 metres wide cement concrete/cobble stone foot path cum visitors trail along with CC drain along the periphery of the park.	110.25	
57	1.50 metres wide cement concrete/cobble stone foot path cum visitors trail constructed by way of earth cutting & dressing.	42.00	
58	10 (Ten) m tall M S angle iron watch cum observation tower to keep watch over the park area and to have a bird's eye view of the park	15.00	
59	Construction of 7.50 m wide road cum visitors trail consisting 3.75 m wide black top carriage way complete with side beam etc.	147.00	
60	Construction of retaining wall along the road to stabilize freshly broken surface	35.00	
61	Consultancy and supervisory charge for architecture and structure design of various facilities proposed to be developed	30.00	
62	Landscaping and environment amelioration works	20.00	
63	Margining for cost escalation and estimate correction (provision for actual details estimates being higher than the preliminary estimated amount)	31.00	
64	Construction of inspection cum arterial link road to facilities carriage of materials for construction of boundary wall and to act as visitor trails etc	20.00	
65	Topographical and control survey including mapping etc	2.25	
66	Furniture & visual equipments and other office store and equipments for Office, Restaurant, Interpretation Centre, feeding utensils etc.	27.00	

Table Contd...

Sl No	Item of works	Approx. Amount Proposed	Remarks
67	Cost of Veterinary equipments for Veterinary Hospital etc.	29.50	
68	Disaster Management equipments	5.00	
69	Purchase of office vehicle, Bolero, Mini truck & camper	38.60	
70	Generator 62.5 KVA	11.00	
71	Cost of CCTV with 32 channel Digital video recorder, Professional DVR etc.	36.50	
72	Cost of sign and signage	10.00	
73	Cost of office computers/Laptops	5.50	
	Total of A	2990.60	

B. Recurring expenditure 2013-14 to 2022-23

RUPEES IN LAKHS

Sl No	Item of works	Approx. Amount proposed	Remarks
1.	Salary of officers and Staffs	5327.71	
2.	Cost of POL/Diesel for vehicle generator, electric bill etc.	64.53	
3.	Cost of other day to day maintenance of pipe lines/ electrical line/ garden tools etc.	10.00	
4.	Cost of Feed bills for animals	789.10	
5.	Office expenditure, computer accessories and other Miscellaneous expenditure	8.25	
6.	Cost of Wireless sets, battery backup, inverter, antennae etc. with cost of maintenance etc.	11.40	
7.	Cost of shifting of animals from Lady Hydari Park to the New Zoo	5.00	
	TOTAL of B	6215.99	
	Grand total (A+B) 2990.60 + 6215.99	9206.59	
(Rupees Ninety two Crore six lakh fifty nine thousand) only			

Countersigned by

[Signature]
Chief Wildlife Warden
 Meghalaya, Shillong

[Signature]
 Additional Principal Chief
 Conservator of Forests, Wildlife,
 &
 Chief Wildlife Warden
 Meghalaya, Shillong

[Signature]
(Shri P.S. Nongbri, IFS)
 Divisional Forest Officer
 Khasi Hills Wildlife Division
 Shillong
 Divisional Forest Officer
 Khasi Hills
 Wildlife Division
 Shillong

PART –III

MANAGEMENT PLAN

The State Zoological Park at Umtrew, Meghalaya shall initiate all works step by step with in this Period of ten years. As this will start functioning the Director shall administrate and supervise all these works. He is responsible in all matter including financial and administrative power. Details of different items of works to be taken up year wise within this period are as listed below:

BUDGET ESTIMATE FOR ESTABLISHMENT OF STATE ZOO AT UMTREW

Sl. No.	Item of Works	Years w.e.f 2013-14 to 2022-23										Total Each yr	Funding Agency
		1 st Yr	2 nd Yr	3 rd Yr	4 th Yr	5 th Yr	6 th Yr	7 th Yr	8 th Yr	9 th Yr	10 th Yr		
1	Construction of Entrance gate	-	3.00	5.00	-	-	-	-	-	-	-	8.00	ThFC & SP
2	Construction of Ticket Counter & visitors cloak room	-	10.00	10.00	-	-	-	-	-	-	-	20.00	ThFC & SP
3	Construction of Security room	-	-	4.00	-	-	-	-	-	-	-	4.00	ThFC & SP
4	Construction of Restaurant	-	10.00	15.00	20.00	-	-	-	-	-	-	45.00	ThFC & SP
5	Construction of Administrative Block	-	20.00	30.00	30.00	-	-	-	-	-	-	80.00	ThFC & SP
6	Construction of Garage for departmental Vehicles.	-	-	-	8.00	-	-	-	-	-	-	8.00	
7	Construction of Multi Media room	-	20.00	20.00	20.00	-	-	-	-	-	-	60.00	ThFC & SP
8	Construction of Interpretation Centre	-	30.00	30.00	30.00	-	-	-	-	-	-	90.00	ThFC & SP
9	Construction of Rescue & Quarantine house	-	20.00	20.00	25.00	-	-	-	-	-	-	65.00	ThFC & SP
10	Construction of Hospital	-	10.00	20.00	15.00	-	-	-	-	-	-	45.00	ThFC & SP
11	Construction of Observation room	-	20.00	20.00	20.00	-	-	-	-	-	-	60.00	ThFC & SP

Table Contd...

Sl. No.	Item of Works	Years w.e.f 2013-14 to 2022-23										Total Each yr	Funding Agency
		1 st Yr	2 nd Yr	3 rd Yr	4 th Yr	5 th Yr	6 th Yr	7 th Yr	8 th Yr	9 th Yr	10 th Yr		
12	Construction of Post Mortem room	-	5.00	10.00	-	-	-	-	-	-	-	15.00	ThFC & SP
13	Construction of Feed store including kitchen to prepare food for zoo animals	-	10.00	8.00	-	-	-	-	-	-	-	18.00	ThFC & SP
14	Construction of Incinerator	-	-	8.00	-	-	-	-	-	-	-	8.00	ThFC & SP
15	Construction of Parking lot	-	10.00	18.00	-	-	-	-	-	-	-	28.00	ThFC & SP
16	Construction of Staff Accommodation	-	100.00	150.00	100.00	-	-	-	-	-	-	350.00	ThFC & SP
17	Construction of Clouded Leopard enclosure	-	20.00	32.00	-	-	-	-	-	-	-	52.00	ThFC & SP
18	Construction of Leopard enclosure	-	20.00	32.00	-	-	-	-	-	-	-	52.00	ThFC & SP
19	Construction of Civet Cat enclosure	-	10.00	10.00	-	-	-	-	-	-	-	20.00	ThFC & SP
20	Construction of Jungle Cat enclosure	-	10.00	10.00	-	-	-	-	-	-	-	20.00	ThFC & SP
21	Construction of Leopard Cat enclosure	-	6.00	14.00	-	-	-	-	-	-	-	20.00	ThFC & SP
22	Construction of Jackal enclosure	-	4.00	6.00	5.00	-	-	-	-	-	-	15.00	ThFC & SP
23	Construction of Resting place	-	-	6.00	6.00	-	-	-	-	-	-	12.00	ThFC & SP
24	Construction of public Toilets	-	-	10.00	10.00	10.00						30.00	ThFC & SP
	Construction of public Drinking water (2 places)	-	-	-	5.00	5.00	-	-	-	-	-	10.00	
25	Construction of snack shop	-	-	-	8.00	7.00	-	-	-	-	-	15.00	ThFC & SP
26	Construction of Samber deer enclosure	-	7.00	10.00	5.00	-	-	-	-	-	-	22.00	ThFC & SP
27	Construction of Hog Deer enclosure	-	6.00	8.00	6.00	-	-	-	-	-	-	20.00	ThFC & SP
28	Construction of Himalayan Black Bear (2 pairs) enclosure	-	15.00	15.00	10.00	-	-	-	-	-	-	40.00	ThFC & SP

Table Contd...

Sl. No.	Item of Works	Years w.e.f 2013-14 to 2022-23										Total Each yr	Funding Agency
		1 st Yr	2 nd Yr	3 rd Yr	4 th Yr	5 th Yr	6 th Yr	7 th Yr	8 th Yr	9 th Yr	10 th Yr		
29	Construction of Barking Deer enclosure	-	7.00	9.00	7.00	-	-	-	-	-	-	23.00	ThFC & SP
30	Construction of Land Bird aviary	-	10.00	10.00	4.00	-	-	-	-	-	-	24.00	ThFC & SP
31	Construction of Night Heron enclosure	-	10.00	5.00	-	-	-	-	-	-	-	15.00	ThFC & SP
32	Construction of Serow enclosure	-	10.00	15.00	10.00	-	-	-	-	-	-	35.00	ThFC & SP
33	Construction of Crested Serpent Eagle enclosure	-	6.00	6.00	6.00	-	-	-	-	-	-	18.00	ThFC & SP
34	Construction of Stump Tailed Macaque enclosure	-	10.00	5.00	5.00	-	-	-	-	-	-	20.00	ThFC & SP
35	Construction of Assamese Macaque enclosure	-	8.00	8.00	6.00	-	-	-	-	-	-	22.00	ThFC & SP
36	Construction of Slow Loris enclosure	-	10.00	15.00	13.00	-	-	-	-	-	-	38.00	ThFC & SP
37	Construction of Peacock enclosure	-	6.00	6.00	6.00	-	-	-	-	-	-	18.00	ThFC & SP
38	Construction of Rhesus Macaque enclosure	-	8.00	9.00	8.00	-	-	-	-	-	-	25.00	ThFC & SP
39	Construction of Hoolock Gibbon (3 Nos) enclosure	-	15.00	15.00	10.00	-	-	-	-	-	-	40.00	ThFC & SP
40	Construction of Ferret Badger enclosure	-	6.00	6.00	6.00	-	-	-	-	-	-	18.00	ThFC & SP
41	Construction of Himalayan Yellow Throated Marten enclosure	-	10.00	25.00	15.00	-	-	-	-	-	-	50.00	ThFC & SP
42	Construction of Porcupine enclosure	-	3.00	3.00	4.00	-	-	-	-	-	-	10.00	ThFC & SP
43	Construction of Conservation and Breeding centre	-	20.00	20.00	20.00	-	-	-	-	-	-	60.00	ThFC & SP

Table Contd...

Sl. No.	Item of Works	Years w.e.f 2013-14 to 2022-23										Total Each yr	Funding Agency
		1 st Yr	2 nd Yr	3 rd Yr	4 th Yr	5 th Yr	6 th Yr	7 th Yr	8 th Yr	9 th Yr	10 th Yr		
44	Construction of Bore well	-	-	10.00	-							10.00	ThFC & SP
45	Construction of Pump houses				9.00							9.00	
46	Construction of Over Head Tank and Pipe Connection	-	-	25.00	20.00							45.00	ThFC & SP
47	Construction of Septic Tank & Soak pits	-	-	-	13.00	10.00						23.00	ThFC & SP
48	Botanical Garden	-	-	10.00	10.00	10.00						30.00	ThFC & SP
49	Electrification	-	-	-	40.00							40.00	ThFC & SP
50	Entrance to Botanical Garden	-	-	10.00	10.00							20.00	ThFC & SP
51	Construction of Bench/Sitting place	-	-	4.00	4.00							8.00	ThFC & SP
52	Construction of Boundary wall	188.00	100.00	96.00	-							384.00	ThFC & SP
53	Construction of internal Boundary wall for separation of animal and administrative/ residential section				40.00	20.00						60.00	
54	Construction of Retaining wall along the Boundary of Zoological park and Botanical garden	-	-	-	50.00	48.00						98.00	ThFC & SP
55	1.50 metres wide cement concrete/cobble stone foot path cum visitors trail along with CC drain along the periphery of the park.	-	40.00	40.00	30.25							110.25	ThFC & SP
56	1.50 metres wide cement concrete/cobble stone foot path cum visitors trail constructed by way of earth cutting & dressing.	-	14.00	14.00	14.00							42.00	ThFC & SP

Table Contd...

Sl. No.	Item of Works	Years w.e.f 2013-14 to 2022-23										Total Each yr	Funding Agency
		1 st Yr	2 nd Yr	3 rd Yr	4 th Yr	5 th Yr	6 th Yr	7 th Yr	8 th Yr	9 th Yr	10 th Yr		
57	10 m tall MS angle Iron watch cum observation tower to keep watch over the park area and to have a bird's eye view of the park.	-	-	-	15.00							15.00	ThFC & SP
58	Construction of 7.50 m wide road cum visitors trail consisting 3.75 m wide black top carriageway complete with side beam etc.	-	110.00	37.00	-							147.00	ThFC & SP
59	Construction of retaining wall along the road to stabilize freshly broken surface	-	30.00	5.00	-							35.00	ThFC & SP
61	Consultancy and supervisory charge for architecture and structure design of various facilities proposed to be developed	20.00	10.00	-	-							30.00	ThFC & SP
62	Landscaping and environment amelioration works	-	5.00	5.00	5.00	5.00						20.00	ThFC & SP
63	Margining for cost escalation and estimate correction (provision for actual details estimates being higher than the preliminary estimated amount)	-	-	-	31.00							31.00	ThFC & SP
64	Construction of inspection cum arterial link road to facilities carriage of materials for construction of boundary wall and to act as visitor trails etc	-	10.00	10.00	-							20.00	ThFC & SP
65	Topographical and control survey including mapping etc	2.25	-	-	-							2.25	ThFC & SP

Table Contd...

Sl. No.	Item of Works	Years w.e.f 2013-14 to 2022-23										Total Each yr	Funding Agency
		1 st Yr	2 nd Yr	3 rd Yr	4 th Yr	5 th Yr	6 th Yr	7 th Yr	8 th Yr	9 th Yr	10 th Yr		
66	Furniture & visual equipments and other office store and equipments for Office, Restaurant, Interpretation Centre, feeding utensils etc. (Table, chairs, sound system, LCD Projector, Camera, Binocular etc.	-	-	-	-	18.00	6.50	-	1.00	-	1.50	27.00	ThFC & SP
67	Cost of Veterinary equipments for Veterinary Hospital etc.	-	-	-	20.00	1.00	1.00	2.00	1.50	1.50	2.50	29.50	ThFC & SP
68	Disaster Management equipments				2.00	2.00	-	1.00	-	-	-	5.00	ThFC & SP
69	Purchase of office vehicle, Bolero, Mini truck & camper			20.00	18.60							38.60	ThFC & SP
70	Generator 62.5 KVA				11.00							11.00	ThFC & SP
71	Cost of CCTV with 32 channel Digital video recorder, Professional DVR etc.				-	36.50						36.50	ThFC & SP
72	Cost of sign and signage			2.00	8.00							10.00	ThFC & SP
73	Cost of office computers/Laptops				3.00	2.50						5.50	ThFC & SP
74	Salary of officers and Staffs	205.23	246.28	295.54	354.65	425.58	510.70	612.84	735.41	882.49	1058.99	5327.71	ThFC & SP
75	Cost of POL/Diesel for vehicle generator, electric bill etc.	-	-	-	7.00	8.20	8.91	9.40	9.80	10.33	10.89	64.53	ThFC & SP
76	Cost of other day to day maintenance of pipe lines/ electrical line/ garden tools etc.	-	-	-	-	0.85	1.30	1.50	1.85	2.20	2.30	10.00	ThFC & SP
77	Cost of Feed bills for animals	25.00	30.00	36.00	54.00	64.80	77.80	93.40	112.10	134.50	161.50	789.10	ThFC & SP
78	Office expenditure, computer accessories and other Miscellaneous expenditure	0.40	0.45	0.50	1.50	0.80	0.80	0.90	0.90	1.00	1.00	8.25	ThFC & SP

Table Contd...

Sl. No.	Item of Works	Years w.e.f 2013-14 to 2022-23										Total Each yr	Funding Agency
		1 st Yr	2 nd Yr	3 rd Yr	4 th Yr	5 th Yr	6 th Yr	7 th Yr	8 th Yr	9 th Yr	10 th Yr		
79	Cost of Wireless sets, battery backup, inverter, antenna etc with cost of maintenance etc.	-	-	-	10.00	-	-	0.50	-	-	0.90	11.40	ThFC & SP
80	Cost of shifting of animals from Lady Hydari Park to the New Zoo				5.00							5.00	ThFC & SP
	Grand Total	440.88	1100.73	1298.04	1229	675.23	607.01	721.54	862.56	1032.02	1239.58	9206.59	
(Rupees Ninety two crore six lakh fifty nine thousand) only													

NB: ThFC – Thirteen Finance Commission | SP – State Plan

Countersigned by


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


(Shri P.S. Nongbri, IFS)
 Divisional Forest Officer
 Khasi Hills Wildlife Division
 Shillong
 Divisional Forest Officer
 Khasi Hills
 Wildlife Division
 Shillong

PART –IV

| ANNEXURES TO THE MASTER PLAN |

LIST OF ANNEXURES

ANNEXURE-I	CZA's APPROVAL LETTER ON MASTER LAYOUT PLAN, APPROVED MASTER LAYOUT PLAN OF THE STATE ZOO & ANIMAL SECTION -ZONING
ANNEXURE-II	CZA's APPROVAL LETTER ON MASTER PLAN (Main)
ANNEXURE-III	WATER SUPPLY LAYOUT
ANNEXURE-IV	SEWERAGE LAYOUT
ANNEXURE-V	CIRCULATION
ANNEXURE-VI	ELECTRICAL LAYOUT
ANNEXURE-VII	LIST OF EXISTING ANIMAL COLLECTION INVENTORY REPORT
ANNEXURE-VIII	LIST OF FLORA AND FAUNA
ANNEXURE-IX	LIST OF EXISTING AND PROPOSED STAFF
ANNEXURE-X	LIST OF BUILDINGS OTHER THAN ENCLOSURES
ANNEXURE-XI	NOTIFICATION OF ZOO SOCIETY



GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT & FORESTS
Central Zoo Authority

2
14/5



THROUGH REGISTERED POST

F. No. 19-169/93-CZA(189)(Vol. I)(M) / 2732

DATE: 06.05.2013

To

The Divisional Forest Officer
Khasi Hills Wildlife Division,
Shillong (Meghalaya).



Sub:- Approval of Master (layout) Plan of the State Zoo at Umtrew in Ri-Bhoi Hills District, Meghalaya.

Ref:- Your office letter No. FWC/G/87/Pt.II/152 dated 25.04.2013.

Sir,

Reference is invited to the above cited correspondence.

A copy of the approved Master (layout) Plan of the State Zoo at Umtrew in Ri-Bhoi Hills District, Meghalaya duly authenticated by the Member Secretary on behalf of the Central Zoo Authority is enclosed herewith for your records.

You are hereby directed to ensure that all the developmental activities in the State Zoo at Umtrew in Ri-Bhoi Hills District, Meghalaya must be in conformity with the approved Master (layout) Plan.

Yours faithfully,

(B. S. Bonal)
Member Secretary

Encl: Signed Master (layout) Plan

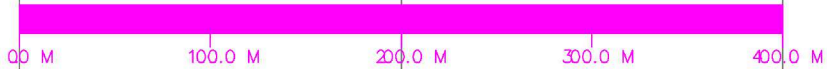
Copy to the Addl. Principal Chief Conservator of Forests & Chief Wildlife Warden, Government of Meghalaya, Shillong for favour of information.

(B. S. Bonal)
Member Secretary

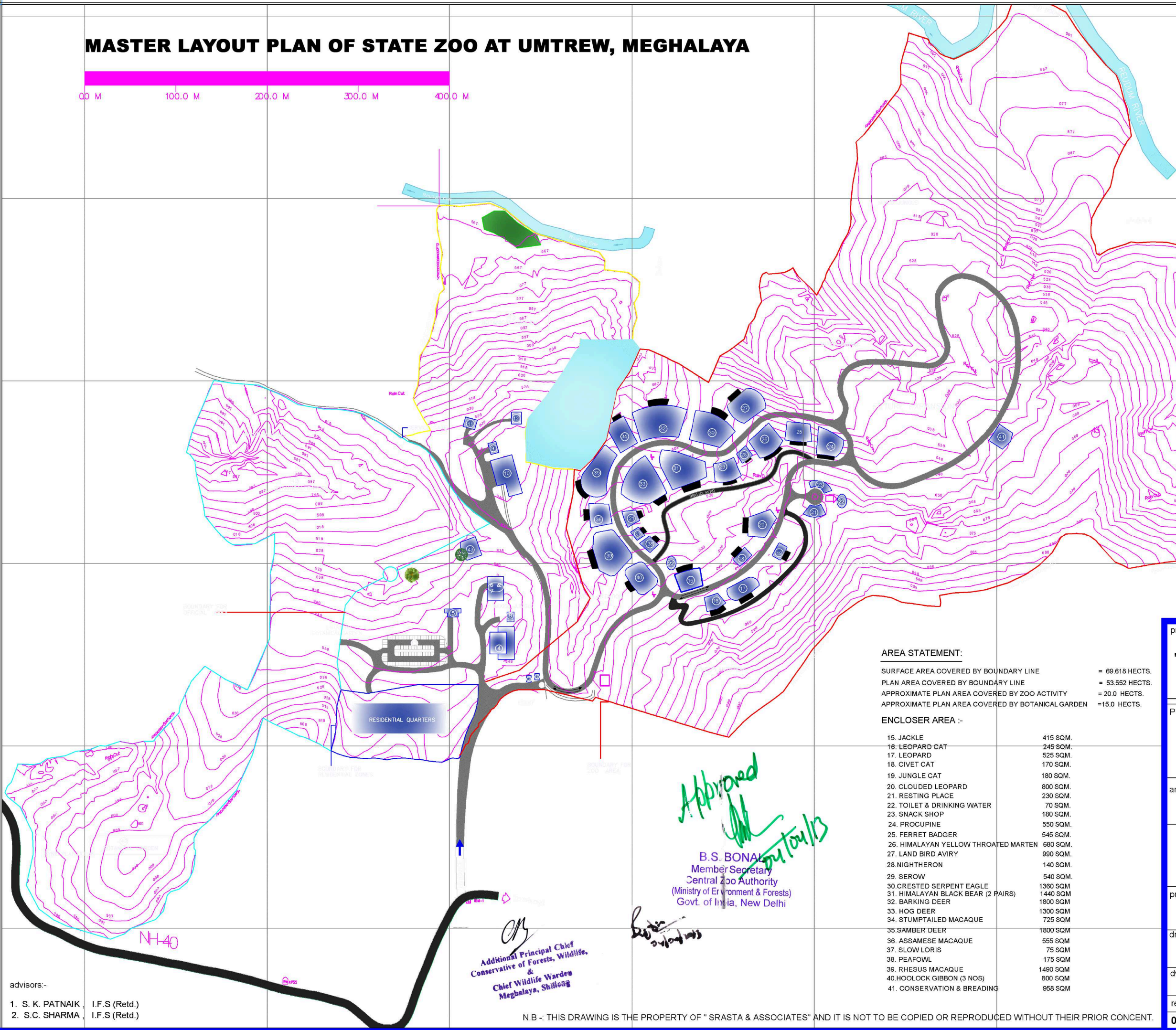
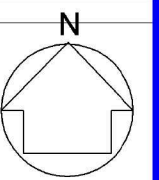
RECEIPT
Rt. Regd. No. 120
Date Dated 14.05.2013
Recvd. From

Bikaner House, Annexe VI, Shahjahan Road, New Delhi-110011
Phone : 011-23381585, 23073072, 23070375 (EPABX), Fax : +91-11-23386012
E-mail : cza@nic.in Website : http://www.cza.nic.in

MASTER LAYOUT PLAN OF STATE ZOO AT UMTREW, MEGHALAYA



ANNEXURE-I



- LEGEND**
1. ENTRANCE
 2. TICKET COUNTER
 3. SECURITY
 4. ADMINISTRATIVE BLOCK
 5. RESTURANT
 6. MULTI MEDIA ROOM
 7. INTERPRETATION CENTER
 8. FEED STORE
 9. QUARATINE
 10. HOSPITAL
 11. POST MORTEM ROOM
 12. INCINERATOR
 13. PARKING
 14. STAFF ACCOMODATION
 15. JACKLE
 16. LEOPARD CAT
 17. LEOPARD
 18. CIVET CAT
 19. JUNGLE CAT
 20. CLOUDED LEOPARD
 21. RESTING PLACE
 22. TOILET & DRINKING WATER
 23. SNACK SHOP
 24. PROCUPINE
 25. FERRET BADGER
 26. HIMALAYAN YELLOW THROATED MARTEN
 27. LAND BIRD AVIRY
 28. NIGHATHERON
 29. SEROW
 30. CRESTED SERPENT EAGLE
 31. HIMALAYAN BLACK BEAR (2 PAIRS)
 32. BARKING DEER
 33. HOG DEER
 34. STUMPTAILED MACAQUE
 35. SAMBER DEER
 36. ASSAMESE MACAQUE
 37. SLOW LORIS
 38. PEAFOWL
 39. RHESUS MACAQUE
 40. HOOLOCK GIBBON (3 NOS)
 41. CONSERVATION & BREADING
 42. BOTANICAL GARDEN
 43. RESCURE CENTER

AREA STATEMENT:
 SURFACE AREA COVERED BY BOUNDARY LINE = 69.618 HECTS.
 PLAN AREA COVERED BY BOUNDARY LINE = 53.552 HECTS.
 APPROXIMATE PLAN AREA COVERED BY ZOO ACTIVITY = 20.0 HECTS.
 APPROXIMATE PLAN AREA COVERED BY BOTANICAL GARDEN = 15.0 HECTS.

ENCLOSER AREA :-

15. JACKLE	415 SQM.
16. LEOPARD-CAT	245 SQM.
17. LEOPARD	525 SQM.
18. CIVET CAT	170 SQM.
19. JUNGLE CAT	180 SQM.
20. CLOUDED LEOPARD	800 SQM.
21. RESTING PLACE	230 SQM.
22. TOILET & DRINKING WATER	70 SQM.
23. SNACK SHOP	180 SQM.
24. PROCUPINE	550 SQM.
25. FERRET BADGER	545 SQM.
26. HIMALAYAN YELLOW THROATED MARTEN	680 SQM.
27. LAND BIRD AVIRY	990 SQM.
28. NIGHATHERON	140 SQM.
29. SEROW	540 SQM.
30. CRESTED SERPENT EAGLE	1360 SQM.
31. HIMALAYAN BLACK BEAR (2 PAIRS)	1440 SQM.
32. BARKING DEER	1800 SQM.
33. HOG DEER	1300 SQM.
34. STUMPTAILED MACAQUE	725 SQM.
35. SAMBER DEER	1800 SQM.
36. ASSAMESE MACAQUE	555 SQM.
37. SLOW LORIS	75 SQM.
38. PEAFOWL	175 SQM.
39. RHESUS MACAQUE	1490 SQM.
40. HOOLOCK GIBBON (3 NOS)	800 SQM.
41. CONSERVATION & BREADING	958 SQM.

Approved
24/09/13
B.S. BONAL
 Member Secretary
 Central Zoo Authority
 (Ministry of Environment & Forests)
 Govt. of India, New Delhi

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

advisors:-
 1. S. K. PATNAIK, I.F.S (Retd.)
 2. S.C. SHARMA, I.F.S (Retd.)

N.B :- THIS DRAWING IS THE PROPERTY OF "SRASTA & ASSOCIATES" AND IT IS NOT TO BE COPIED OR REPRODUCED WITHOUT THEIR PRIOR CONCENT.

project :-
MASTER PLAN OF "STATE ZOO MEGHALAYA", SHILONG
 At-UMTREW, SHILONG GUWAHATI ROAD,
 NATIONAL HIGH WAY NO- 40.

Prepared By :-
srasta
 CREATING HABITABLE SPACES.....
 2ND FLOOR, 270, MADHUSUDAN NAGAR, UNIT-4, BHUBANESWAR
 PH.- 91674 -2393394, 9861043625, E-mail: srasta_associates@yahoo.com

architect :-
ASISH KUMAR PARIDA
 E-mail : asish_parida@rediffmail.com

prepared For :-
GOVERNMENT OF MEGHALAYA

drawing title:-
PROPOSED LAYOUT PLAN

dwg. no.:- SA/SZOO/MP003A	scale:- 1 : 4000
rev. suffix:- 0 1 2 3 4	date:- 12-09-2012



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



Q
16/10

F. No. 19-169/93-CZA(189)(Vol. II)(M) / *5889*

DATE: 25.09.2014



To

The Divisional Forest Officer
Khasi Hills Wildlife Division,
Shillong (Meghalaya).

Sub:- Master Plan of the State Zoo, Umtrew, Ri-Bhoi District, Meghalaya.

Sir,

The Master Plan of the State Zoo, Umtrew, Ri-Bhoi District, Meghalaya by the Members of the Expert Group on Zoo Designing of the Central Zoo Authority and recommended for approval. The same was placed before 71st Meeting of the Technical Committee held on 2nd September, 2014 for its approval. The Technical Committee of the Central Zoo Authority had approved the Master Plan of the State Zoo, Umtrew, Ri-Bhoi District, Meghalaya subject to the condition that:-

- (a) the responsibility of mobilizing the financial resources, for implementation of the Master Plan will be the sole responsibility of the State Government or respective Zoo Operator, and
- (b) the State Government or respective Zoo Operator should quantify the resources available for the implementation of Master Plan.

In order to send you a copy of the duly signed and approved Master Plan of the State Zoo, Umtrew, Ri-Bhoi District, Meghalaya, you are requested to submit final version of Master Plan which should contain the signatures with stamp of the Chief Wildlife Warden, Meghalaya and In-charge of State Zoo, Umtrew, Ri-Bhoi District, Meghalaya incorporating copy of this letter too.

The soft copy of the digitized and amended Master Plan in any of the format i. e. AUTOCAD/ COREL DRAW/JPEG/TIFF/PDF files on a CD/DVD may also be submitted to this office at the earliest for uploading in website.

Yours faithfully,

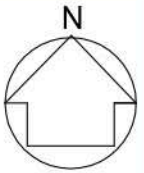
(Signature)
(B. S. Bonal)
Member Secretary

Copy to Chief Wildlife Warden, Government of Meghalaya, Shillong for favour of information & necessary action.

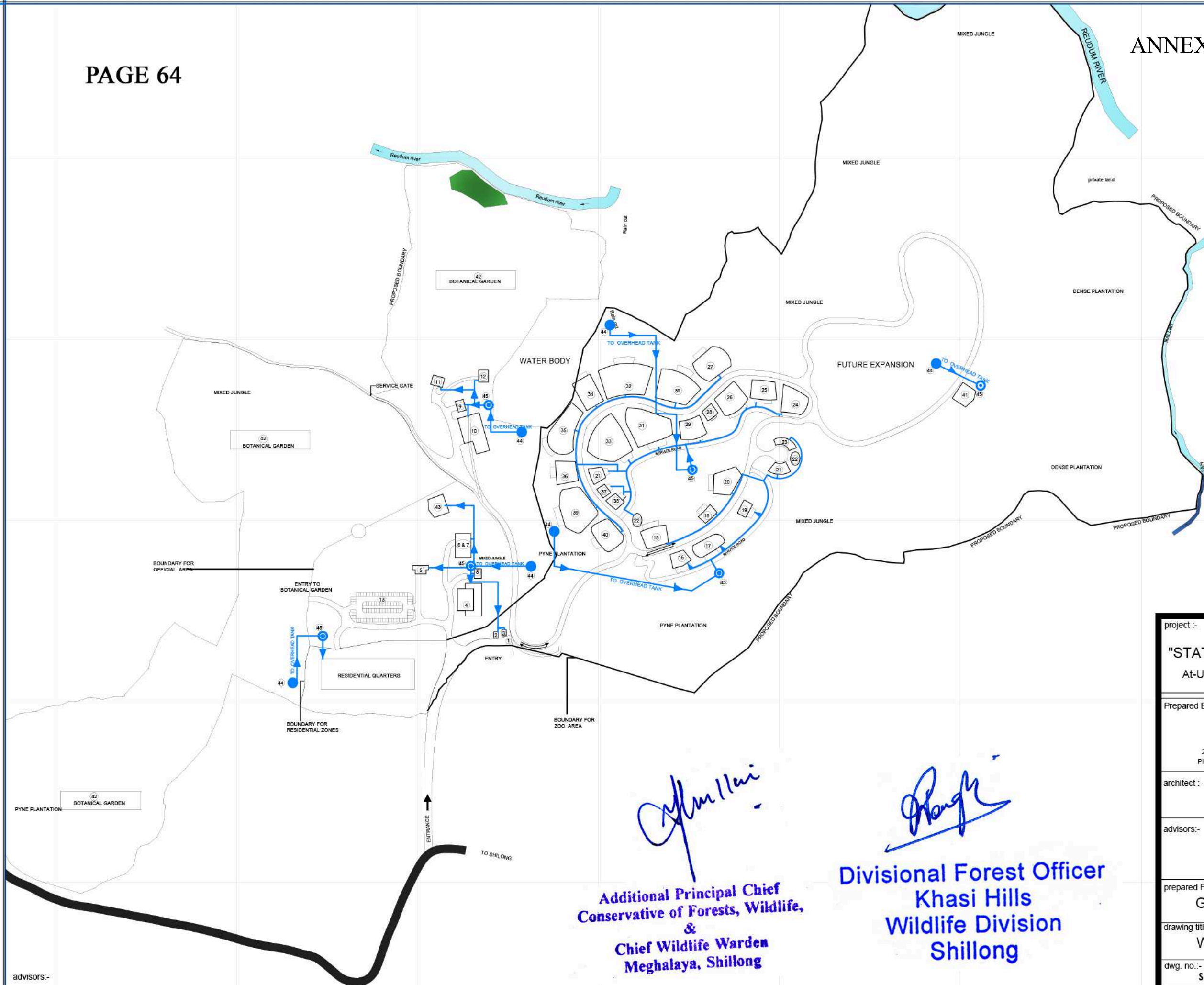
RECEIPT
Regd. No. *617*
Dated *16.10.14*
Recvd. From

(B. S. Bonal)
Member Secretary

E-mail : cza@nic.in Website : <http://www.cza.nic.in>



- LEGEND**
1. ENTRANCE
 2. TICKET COUNTER
 3. SECURITY
 4. ADMINISTRATIVE BLOCK
 5. RESTURANT
 6. MULTI MEDIA ROOM
 7. INTERPRETATION CENTER
 8. FEED STORE
 9. QUARATINE
 10. HOSPITAL
 11. POST MORTEM ROOM
 12. INCINERATOR
 13. PARKING
 14. STAFF ACCOMODATION
 15. JACKLE
 16. LEOPARD CAT
 17. LEOPARD
 18. CIVET CAT
 19. JUNGLE CAT
 20. CLOUDED LEOPARD
 21. RESTING PLACE
 22. TOILET & DRINKING WATER
 23. SNACK SHOP
 24. PROCUPINE
 25. FERRET BADGER
 26. HIMALAYAN YELLOW THROATED MARTEN
 27. LAND BIRD AVIRY
 28. NIGHATHERON
 29. SEROW
 30. CRESTED SERPENT EAGLE
 31. HIMALAYAN BLACK BEAR (2 PAIRS)
 32. BARKING DEER
 33. HOG DEER
 34. STUMPTAILED MACAQUE
 35. SAMBER DEER
 36. ASSAMESE MACAQUE
 37. SLOW LORIS
 38. PEAFOWL
 39. RHESUS MACAQUE
 40. HOOLOCK GIBBON (3 NOS)
 41. CONSERVATION & BREADING
 42. BOTANICAL GARDEN
 43. RESCURE CENTER
 44. BORE WELL
 45. OVERHEAD TANK
 46. SPETIC TANK
 47. ELECTRICAL SUB STATION
 48. SITTING PLACE/ BENCH
 49. SERVICE PATH



project :- **MASTER PLAN OF "STATE ZOO MEGHALAYA", SHILONG**
 At-UMTREW, SHILONG GUWAHATI ROAD, NATIONAL HIGH WAY NO- 40.

Prepared By :- **srasta**
 CREATING HABITABLE SPACES.....
 2ND FLOOR, 270, MADHUSUDAN NAGAR, UNIT-4, BHUBANESWAR
 PH.- 91674 -2393394, 9861043625, E-mail: srasta_associates@yahoo.com

architect :- *Asish Kumar Parida*
ASISH KUMAR PARIDA
 E-mail : asish_parida@rediffmail.com

advisors:-
 1. S. K. PATNAIK
 I.F.S. (Retd.)
 2. S.C. SHARMA
 I.F.S. (Retd.)

prepared For :- **GOVERNMENT OF MEGHALAYA**

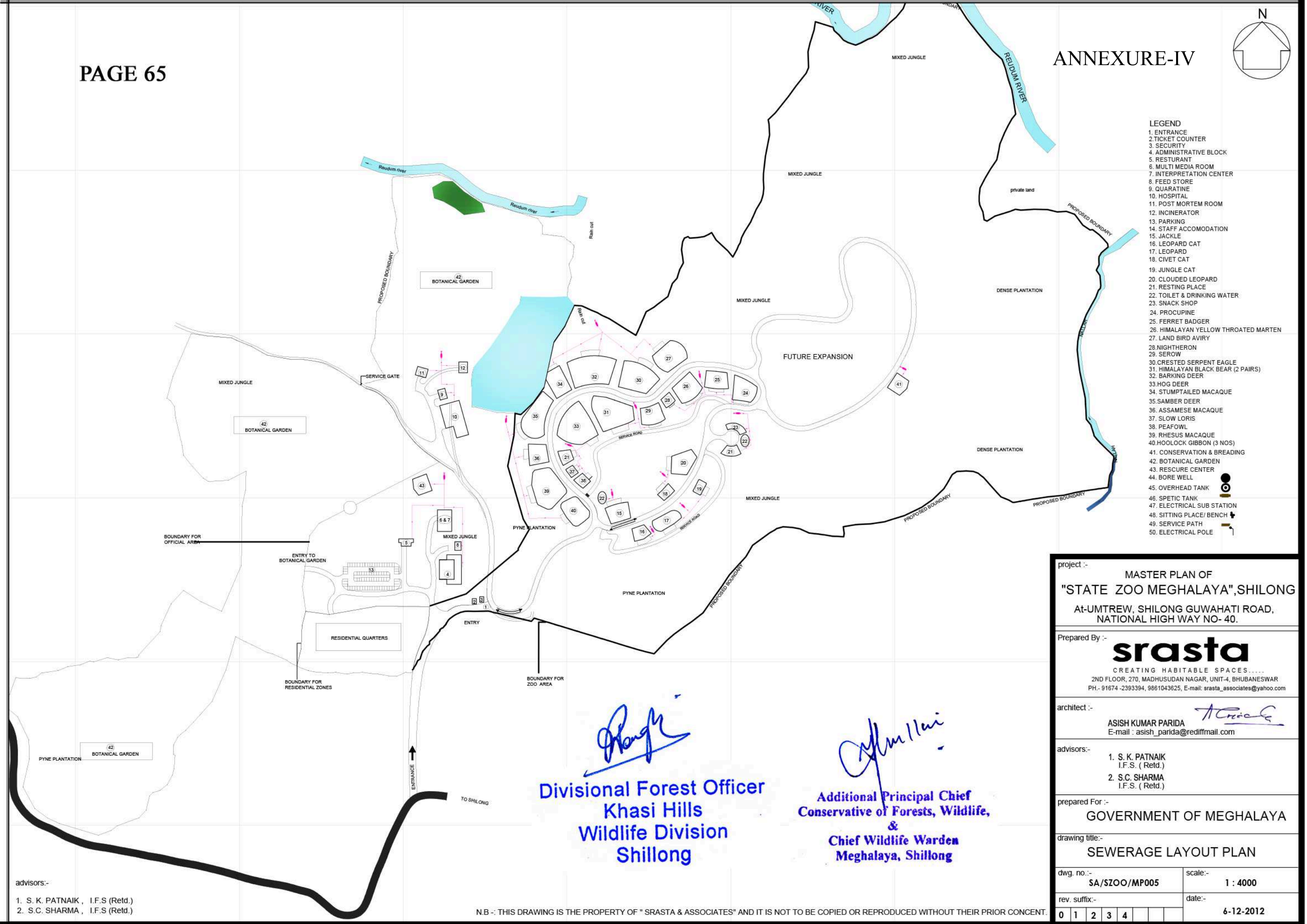
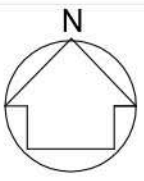
drawing title:- **WATER SUPPLY LAYOUT**

dwg. no.:-	SA/SZOO/MP004	scale:-	1 : 4000
rev. suffix:-		date:-	6-12-2012

Asish Kumar Parida
**Additional Principal Chief
 Conservative of Forests, Wildlife,
 &
 Chief Wildlife Warden
 Meghalaya, Shillong**

Asish Kumar Parida
**Divisional Forest Officer
 Khasi Hills
 Wildlife Division
 Shillong**

- advisors:-
 1. S. K. PATNAIK , I.F.S (Retd.)
 2. S.C. SHARMA , I.F.S (Retd.)



- LEGEND**
1. ENTRANCE
 2. TICKET COUNTER
 3. SECURITY
 4. ADMINISTRATIVE BLOCK
 5. RESTURANT
 6. MULTI MEDIA ROOM
 7. INTERPRETATION CENTER
 8. FEED STORE
 9. QUARATINE
 10. HOSPITAL
 11. POST MORTEM ROOM
 12. INCINERATOR
 13. PARKING
 14. STAFF ACCOMODATION
 15. JACKLE
 16. LEOPARD CAT
 17. LEOPARD
 18. CIVET CAT
 19. JUNGLE CAT
 20. CLOUDED LEOPARD
 21. RESTING PLACE
 22. TOILET & DRINKING WATER
 23. SNACK SHOP
 24. PROCUPIE
 25. FERRET BADGER
 26. HIMALAYAN YELLOW THROATED MARTEN
 27. LAND BIRD AVIRY
 28. NIGHTERON
 29. SEROW
 30. CRESTED SERPENT EAGLE
 31. HIMALAYAN BLACK BEAR (2 PAIRS)
 32. BARKING DEER
 33. HOG DEER
 34. STUMPTAILED MACAQUE
 35. SAMBER DEER
 36. ASSAMESE MACAQUE
 37. SLOW LORIS
 38. PEAFOWL
 39. RHESUS MACAQUE
 40. HOOLOCK GIBBON (3 NOS)
 41. CONSERVATION & BREADING
 42. BOTANICAL GARDEN
 43. RESCURE CENTER
 44. BORE WELL
 45. OVERHEAD TANK
 46. SPETIC TANK
 47. ELECTRICAL SUB STATION
 48. SITTING PLACE/ BENCH
 49. SERVICE PATH
 50. ELECTRICAL POLE

project :- **MASTER PLAN OF "STATE ZOO MEGHALAYA", SHILONG**
 At-UMTREW, SHILONG GUWAHATI ROAD, NATIONAL HIGH WAY NO- 40.

Prepared By :- **srasta**
 CREATING HABITABLE SPACES.....
 2ND FLOOR, 270, MADHUSUDAN NAGAR, UNIT-4, BHUBANESWAR
 PH.- 91674 -2393394, 9861043625, E-mail: srasta_associates@yahoo.com

architect :- **ASISH KUMAR PARIDA**
 E-mail : asish_parida@rediffmail.com

advisors:-
 1. S. K. PATNAIK I.F.S. (Retd.)
 2. S.C. SHARMA I.F.S. (Retd.)

prepared For :- **GOVERNMENT OF MEGHALAYA**

drawing title:- **SEWERAGE LAYOUT PLAN**

dwg. no.:- **SA/SZOO/MP005** scale:- **1 : 4000**

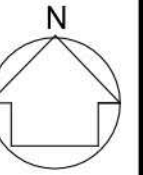
rev. suffix:- date:- **6-12-2012**

0	1	2	3	4
---	---	---	---	---

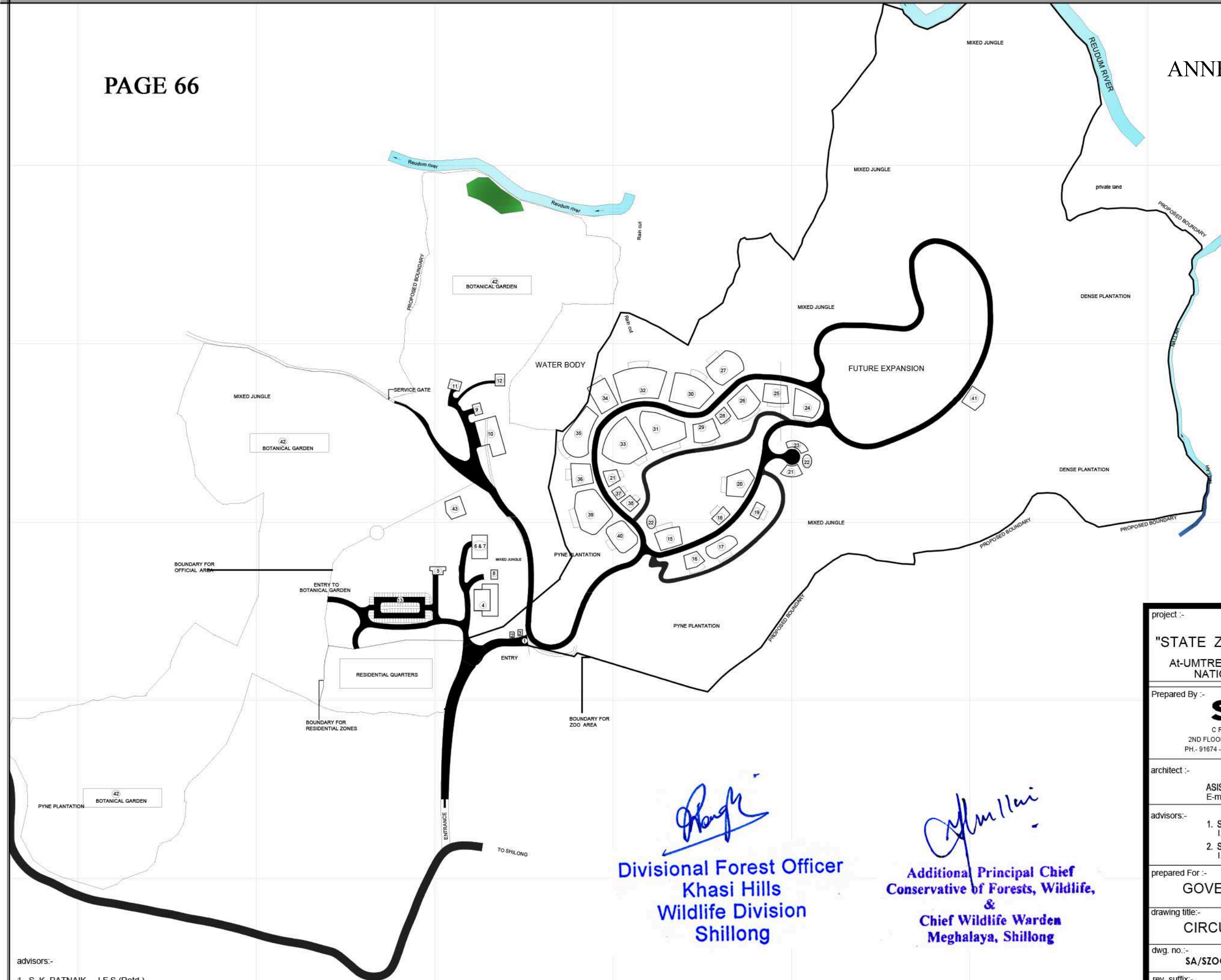
[Signature]
Divisional Forest Officer
Khasi Hills
Wildlife Division
Shillong

[Signature]
Additional Principal Chief
Conservative of Forests, Wildlife,
&
Chief Wildlife Warden
Meghalaya, Shillong

advisors:-
 1. S. K. PATNAIK , I.F.S (Retd.)
 2. S.C. SHARMA , I.F.S (Retd.)



- LEGEND**
1. ENTRANCE
 2. TICKET COUNTER
 3. SECURITY
 4. ADMINISTRATIVE BLOCK
 5. RESTURANT
 6. MULTI MEDIA ROOM
 7. INTERPRETATION CENTER
 8. FEED STORE
 9. QUARATINE
 10. HOSPITAL
 11. POST MORTEM ROOM
 12. INCINERATOR
 13. PARKING
 14. STAFF ACCOMODATION
 15. JACKLE
 16. LEOPARD CAT
 17. LEOPARD
 18. CIVET CAT
 19. JUNGLE CAT
 20. CLOUDED LEOPARD
 21. RESTING PLACE
 22. TOILET & DRINKING WATER
 23. SNACK SHOP
 24. PROCUPINE
 25. FERRET BADGER
 26. HIMALAYAN YELLOW THROATED MARTEN
 27. LAND BIRD AVIRY
 28. NIGHTERON
 29. SEROW
 30. CRESTED SERPENT EAGLE
 31. HIMALAYAN BLACK BEAR (2 PAIRS)
 32. BARKING DEER
 33. HOG DEER
 34. STUMPTAILED MACAQUE
 35. SAMBER DEER
 36. ASSAMESE MACAQUE
 37. SLOW LORIS
 38. PEAFOWL
 39. RHESUS MACAQUE
 40. HOOLOCK GIBBON (3 NOS)
 41. CONSERVATION & BREADING
 42. BOTANICAL GARDEN
 43. RESCURE CENTER
 44. BORE WELL
 45. OVERHEAD TANK
 46. SPETIC TANK
 47. ELECTRICAL SUB STATION
 48. SITTING PLACE/BENCH
 49. SERVICE PATH



[Signature]
Divisional Forest Officer
Khasi Hills
Wildlife Division
Shillong

[Signature]
Additional Principal Chief
Conservative of Forests, Wildlife,
&
Chief Wildlife Warden
Meghalaya, Shillong

project :- **MASTER PLAN OF "STATE ZOO MEGHALAYA", SHILONG**
 At-UMTREW, SHILONG GUWAHATI ROAD, NATIONAL HIGH WAY NO- 40.

Prepared By :- **srasta**
 CREATING HABITABLE SPACES.....
 2ND FLOOR, 270, MADHUSUDAN NAGAR, UNIT-4, BHUBANESWAR
 PH.- 91674 -2393394, 9861043625, E-mail: srasta_associates@yahoo.com

architect :- **ASISH KUMAR PARIDA**
 E-mail : asish_parida@rediffmail.com

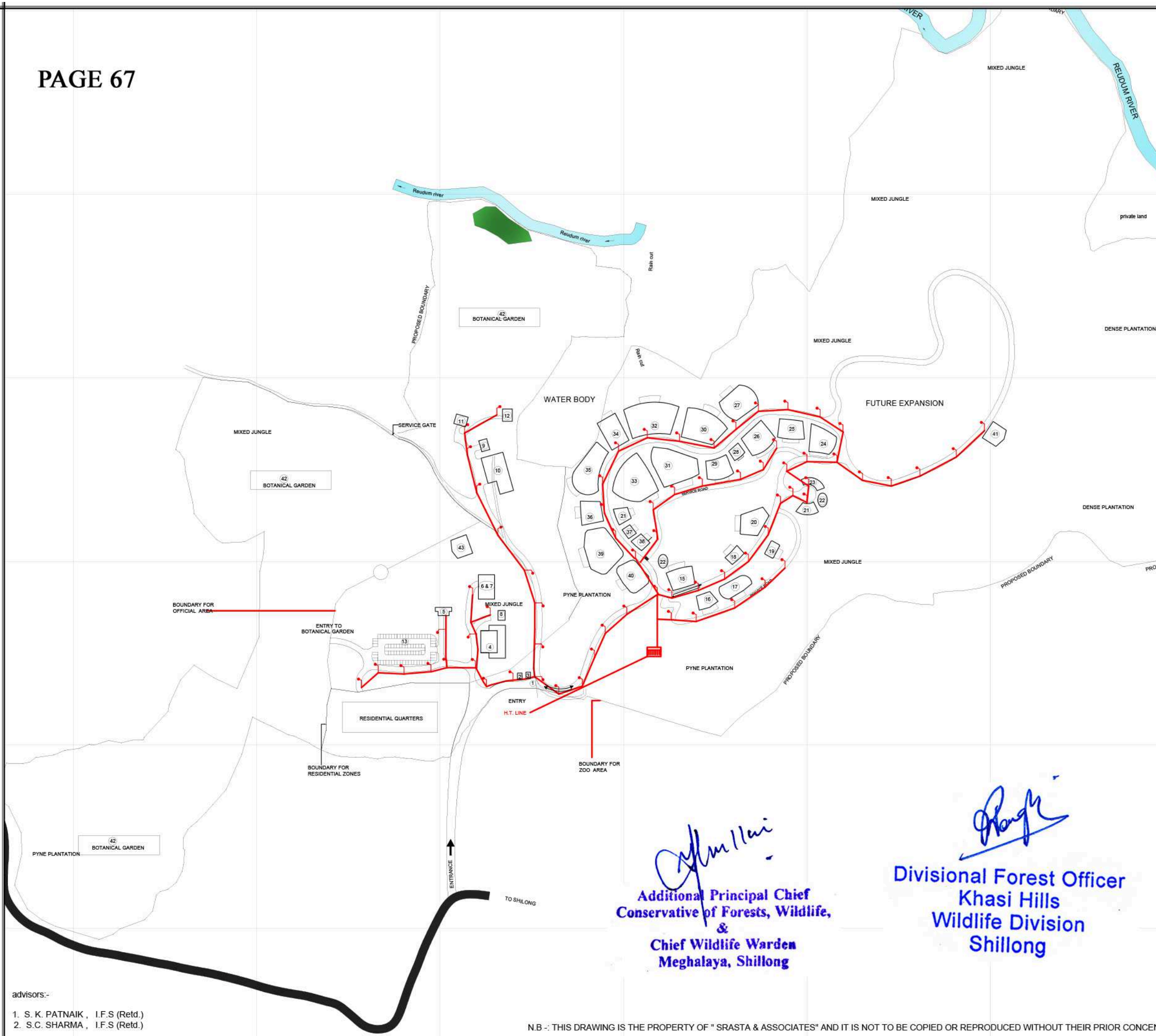
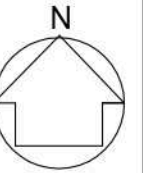
advisors:-
 1. S. K. PATNAIK
 I.F.S. (Retd.)
 2. S.C. SHARMA
 I.F.S. (Retd.)

prepared For :- **GOVERNMENT OF MEGHALAYA**

drawing title:- **CIRCULATION LAYOUT PLAN**

dwg. no.:- SA/SZOO/MP007	scale:- 1 : 4000
rev. suffix:-	date:- 6-12-2012

- advisors:-
1. S. K. PATNAIK , I.F.S (Retd.)
 2. S.C. SHARMA , I.F.S (Retd.)



- LEGEND**
1. ENTRANCE
 2. TICKET COUNTER
 3. SECURITY
 4. ADMINISTRATIVE BLOCK
 5. RESTURANT
 6. MULTI MEDIA ROOM
 7. INTERPRETATION CENTER
 8. FEED STORE
 9. QUARATINE
 10. HOSPITAL
 11. POST MORTEM ROOM
 12. INCINERATOR
 13. PARKING
 14. STAFF ACCOMODATION
 15. JACKLE
 16. LEOPARD CAT
 17. LEOPARD
 18. CIVET CAT
 19. JUNGLE CAT
 20. CLOUDED LEOPARD
 21. RESTING PLACE
 22. TOILET & DRINKING WATER
 23. SNACK SHOP
 24. PROCUPINE
 25. FERRET BADGER
 26. HIMALAYAN YELLOW THROATED MARTEN
 27. LAND BIRD AVIRY
 28. NIGHTERON
 29. SEROW
 30. CRESTED SERPENT EAGLE
 31. HIMALAYAN BLACK BEAR (2 PAIRS)
 32. BARKING DEER
 33. HOG DEER
 34. STUMPTAILED MACAQUE
 35. SAMBER DEER
 36. ASSAMESE MACAQUE
 37. SLOW LORIS
 38. PEAFOWL
 39. RHESUS MACAQUE
 40. HOOLOCK GIBBON (3 NOS)
 41. CONSERVATION & BREADING
 42. BOTANICAL GARDEN
 43. RESCURE CENTER
 44. BORE WELL
 45. OVERHEAD TANK
 46. SPETIC TANK
 47. ELECTRICAL SUB STATION
 48. SITTING PLACE/ BENCH
 49. SERVICE PATH
 50. ELECTRICAL POLE

project :- **MASTER PLAN OF "STATE ZOO MEGHALAYA", SHILONG**
 AT-UMTREW, SHILONG GUWAHATI ROAD, NATIONAL HIGH WAY NO- 40.

Prepared By :- **srasta**
 CREATING HABITABLE SPACES.....
 2ND FLOOR, 270, MADHUSUDAN NAGAR, UNIT-4, BHUBANESWAR
 PH.- 91674 -2393394, 9861043625, E-mail: srasta_associates@yahoo.com

architect :- *Asish Parida*
ASISH KUMAR PARIDA
 E-mail : asish_parida@rediffmail.com

advisors:-
 1. S. K. PATNAIK
 I.F.S. (Retd.)
 2. S.C. SHARMA
 I.F.S. (Retd.)

prepared For :- **GOVERNMENT OF MEGHALAYA**

drawing title:- **ELECTRICAL LAYOUT PLAN**

dwg. no.:- **SA/SZOO/MP006** scale:- **1 : 4000**

rev. suffix:- date:- **6-12-2012**

0	1	2	3	4
---	---	---	---	---

Asish Parida
**Additional Principal Chief
 Conservative of Forests, Wildlife,
 &
 Chief Wildlife Warden
 Meghalaya, Shillong**


Parida
**Divisional Forest Officer
 Khasi Hills
 Wildlife Division
 Shillong**

advisors:-
 1. S. K. PATNAIK , I.F.S (Retd.)
 2. S.C. SHARMA , I.F.S (Retd.)

Annexure-VII**LIST OF EXISTING ANIMAL COLLECTION**

Sl. No.	ENDANGERED SPECIES		Opening Stock				During the Year												Closing Stock as on 31.12.2013				
							Birth			Acquisition			Disposal			Death							
	BIRDS	Scientific Name	M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	T				
1.	Indian Pied Horn Bill	<i>Antheracocerus malabaricus</i>	-	1	-	1														-	1	-	1
2.	Northern Gosh Hawk	<i>Accipiter gentilis</i>	-	-	1	1														-	-	1	1
3.	Indian Long Billed Vulture	<i>Gyps indicus</i>	-	-	1	1														-	-	1	1
4.	Hill Mynah	<i>Gracula religiosa</i>	1	1	-	2														1	1	-	2
Total Nos. of Birds			1	2	2	5														1	2	2	5
MAMMALS																							
		Scientific Name																					
1.	Leopard Cat	<i>Felis bengalensis</i>	1	2	1	4														1	2	1	4
2.	Slow Loris	<i>Nycticebus bengalensis</i>	2	1	-	3														2	1	-	3
3.	Serow	<i>Capricornis</i>	1	-	-	1														1	-	-	1
4.	Rhesus Macaque	<i>Macaca amulatta</i>	3	5	-	8														3	5	-	8
5.	Stump Tailed Macaque	<i>Macaca speciosa</i>	-	1	-	1														-	1	-	1
6.	Palm Civet Common Toody-Cat	<i>Hermophroditus</i>	-	1	-	1														-	1	-	1
7.	Himalayan Black Bear	<i>Salenarctus thibetanus</i>	4	2	-	6														4	2	-	6
8.	Jackal	<i>Canis aureus</i>	-	2	-	2														-	2	-	2
9.	Himalayan Yellow Throated	<i>Martes flavigula</i>	1	-	-	1														1	-	-	1
10.	Common Fox	<i>Vulpes bengalensis</i>	-	-	2	2														-	-	2	2
11.	Clouded Leopard	<i>Neofelis nebulosa</i>	-	1	-	1														-	1	-	1
Total Nos. of Mammals			1	1	5	3														1	1	5	3
Total Nos. of Animals			1	1	7	3														1	1	7	3

Sl. No.	Other than endangered species BIRD		Opening Stock				During the Quarter												Closing Stock as on 31.12.2013			
							Birth			Acquisition			Disposal			Death						
			M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	T			
1.	Duck Brahminy-Rudy Shell	<i>Tadorna ferruginea</i>	1	-	-	1													1	-	-	1
2.	Goose Bar Headed	<i>Anser indicus</i>	3	2	-	5													3	2	-	5
3.	Parakeet Blossom Headed	<i>Psittacula cyanocephala</i>	1	3	-	4													1	3	-	4
4.	Heron Night	<i>Nycticorax nycticorax</i>	-	1	-	1									-	1	-		-	-	-	-
5.	Heron Pond	<i>Ardeola grayii</i>	3	2	-	5													3	2	-	5
6.	Geese Chinese		4	3	-	7													4	3	-	7
7.	Grey Lag Goose	<i>Anser anser</i>	1	1	-	2													1	1	-	2
8.	Owl Brown Fish	<i>Bubo zylonensis</i>	1	2	-	3													1	2	-	3
9.	Owl Brown Wood	<i>Strixlepto grammica</i>	-	1	1	2													-	1	1	2
10.	Pelican	<i>Pelicanus philippensis</i>	1	2	-	3													1	2	-	3
11.	White Breasted Water Hen	<i>Amaronous pieroniurus</i>	-	-	1	1													-	-	1	1
12.	Eagle Crested Serpent	<i>Spilornis cheela</i>	3	2	-	5													3	2	-	5
13.	Pigeon		1	2	1	4													1	2	1	4
14.	Duck Chinese		1	2	-	3													1	2	-	3
	Total Nos of Birds		20	23	3	46									-	1	-	20	22	3	45	
Mammals																						
1.	Deer Barking	<i>Muntiacus muntjak</i>	5	4	1	10									-	1	-	5	3	1	9	
2.	Deer Hog	<i>Axis porcinus</i>	4	3	1	8									-	1	-	4	2	1	7	
3.	Deer Sambar	<i>Cervus unicolor</i>	4	2	-	6									-	1	-	4	1	-	5	
4.	Indian Porcupine	<i>Hystrix indica</i>	1	1	-	2									-	-	-	1	1	-	2	
	Total Nos. of Mammals		14	10	2	26									-	3	-	14	7	2	23	
	Total Nos. of Animals		34	33	5	72									-	4	-	34	29	5	68	


 (Shri P.S. Nongbri, IFS)
 Divisional Forest Officer
 Khasi Hills Wildlife Division
 Shillong

Annexure-VIII

SOME OF THE FLORA OF THE STATE ZOO SITE

- | | |
|----------------------------|------------------------------|
| 1. Pinus Khasiana | 17. Cinnamomum tamala |
| 2. Schima Wallichii | 18. Bambusa tulda |
| 3. Schima khasiana | 19. Bambusa Pallida |
| 4. Castanopsis indica | 20. Dendrocalamus hamiltonii |
| 5. Engelhardtia spicata | 21. Erythrina indica |
| 6. Beluta alnoides | 22. Holarhena antidysentrica |
| 7. Careya arborea | 23. Emblica officinalis |
| 8. Artocarpus integrifolia | 24. Clerodendron bracteatum |
| 9. Artocarpus Chaplasha | 25. Mallotus philipinensis |
| 10. Bombax ceiba | 26. Bauhina variegata |
| 11. Sterculia villosa | 27. Oroxylum indicum |
| 12. Gmelina arborea | 28. Croton caudatus |
| 13. Syzicium sps | 29. Zingiber Zerumbet |
| 14. Callicarpa arborea | 30. Alpinia galanga |
| 15. Shorea robusta | 31. Curcuma sps |
| 16. Alstonia Scholaris | 32. Phrynium pubinerve |

(Shri P.S. Nongbri, IFS)
Divisional Forest Officer
Khasi Hills Wildlife Division

Shillong
Divisional Forest Officer
Khasi Hills
Wildlife Division
Shillong


FAUNA OF STATE ZOO SITE

Mammals

1. Leopard Cat
2. Jungle Cat
3. Barking Deer
4. Otter
5. Civet Cat
6. Jackals

Birds

1. Oriental Turtle dove
2. Banded Cuckoo Dove
3. Emerald Dove
4. Green Pigeon
5. Green Billed Malkoha
6. Spotted Scops Owl
7. Small Blue Kingfisher
8. Chestnut headed bee-eater
9. Common Hoopoe
10. Great barbet
11. Blue Throated Barbet
12. Rufous Woodpecker
13. Common Swallow
14. Grey wagtail
15. Oriental Tree pipit
16. Scarlet minivet
17. Common Wood shrike
18. Black Crested Bulbul
19. Red Vented Bulbul
20. Brown eared Bulbul
21. Gold fronted chloropsis
22. Iora
23. Blue rock thrush
24. Blue whistling thrush
25. Magpie Robbin
26. Verditer flycatcher
27. Northern wheat-eater
28. White eye
29. Nut hatch
30. Sun birds
31. Spotted Munias
32. Common Myna
33. Hill Myna
34. Black Drongo
35. Lesser Racket-tailed drongo
36. Green magpie
37. Black crested yellow bulbul
38. Jungle crow
39. Bush warbler
40. Common tailor bird, etc.


(Shri P.S. Nongbri, IFS)
Divisional Forest Officer
Khasi Hills
Wildlife Division
Shillong
Divisional Forest Officer
Khasi Hills Wildlife Division
Shillong

Annexure-IX**LIST OF EXISTING AND PROPOSED STAFF**

Name of post	No. of Post required	Post sanctioned	Filled up posts	Proposed
(a) General Administration:				
Director	1	1	1	Nil
Dy. Director (ACF)	1	-	-	1
Range Officer	2	1	1	1
Driver	3	-	-	3
Attendant/Night Chowkidar	4	2	2	2
(b) Animal Upkeep & Care:				
Zoo supervisor/Forester	1	1	1	Nil
Animal Keeper/Forest Guard	6	1	1	5
Asst. Animal Keeper/Grass cutter	8	1	1	7
(c) Maintenance of animal Enclosures and other support infrastructure:				
Junior Engineer	1	1	1	Nil
Mason	1	-	-	1
Carpenter	1	-	-	1
Blacksmith	1	-	-	1
Plumber	1	-	-	1
Electrician	1	-	-	1
(d) Food supply				
Store keeper/Forester	1	-	-	1
Store Asst./Forest Guard	1	-	-	1
Kitchen attendant/Feeder	2	2	2	Nil
(e) Zoo Sanitation				
Sanitary supervisor/Forester	1	-	-	1
Sanitary Attendants/Cleaner	6	-	-	6
(f) Veterinary Hospital/Health Care Unit				
Veterinary Officer	1	-	-	1
Compounder	1	-	-	1
Laboratory Assistant	1	-	-	1
Asst. Animal keeper/Attendants cum Peon	3	-	-	3
(g) Zoo Education, Security and State Management				
Security supervisor/Forester	2	-	-	2
Ticket clerk	2	-	-	2
Security Guards	20	-	-	20
Horticulture supervisor/Forester	1	-	-	1
Museum Care taker	1	1	1	-
Mali	6	2	2	4
Dy. Range officer/Education Supervisor	1	-	-	1
Education Assistant/Forest Guard	2	-	-	2
Zoo Guide/Forest guard	2	-	-	2
Painter	1	-	-	1
Carpenter	1	-	-	1

Table Contd...

Name of post	No. of Post required	Post sanctioned	Filled up posts	Proposed
(h) Research and Monitoring Unit:				
R& M Officer/Zoo Biologist	1	-	-	1
Research Assistant	2	-	-	2
Zoo Keeper	2	-	-	2
Attendant/Peon	2	-	-	2
(i) Office Staff				
Head Clerk	1	-	-	1
Accountant	1	-	-	1
Data Processor/Clerk	4	-	-	4
Attendant/Peon	2	1	1	1
Grand total	103	-	14	89

(Shri P.S. Nongbri, IFS)
 Divisional Forest Officer
 Khasi Hills Wildlife Division
 Shillong

Divisional Forest Officer
Khasi Hills
Wildlife Division
Shillong

Annexure-X

LIST OF BUILDINGS OTHER THAN ENCLOSURES

Sl. No.	Building
1.	Administrative Block
2.	Veterinary Hospital
3.	Restaurant
4.	Multi Media
5.	Interpretation Centre
6.	Observation Room
7.	Post Mortem
8.	Feed Store
9.	Staff accommodation

(Shri P.S. Nongbri, IFS)
Divisional Forest Officer
Khasi Hills Wildlife Division
Shillong

Divisional Forest Officer
Khasi Hills
Wildlife Division
Shillong

NOTIFICATION OF ZOO SOCIETY

**GOVERNMENT OF MEGHALAYA
FOREST & ENVIRONMENT DEPARTMENT**

NOTIFICATION

No. FOR.18/2007/65

Dated Shillong the 25th March, 2009.

MEGHALAYA ZOO PROJECT IMPLEMENTATION SOCIETY

Whereas, in consideration of a memorandum submitted by the Government of Meghalaya, the Twelfth Finance Commission recommended a special award of Rs. 30.00 Crore for establishment of a Zoological Park at Umtrew in Meghalaya;

And whereas, utilization of above amount in a fair, transparent and speedy manner requires active involvement of various department of the Government of Meghalaya and other organizations and persons having special knowledge and practical experience in the field of conservation and preservation of wildlife;

And whereas, the Government of Meghalaya realizes the need to constitute an empowered body to ensure focused action and coordination of activities of various Departments, agencies and persons to establish a best possible zoological park from the funds available under the above award;

Now, therefore, the Governor of Meghalaya is pleased to announce the decision to constitute the **Meghalaya Zoo Project Implementation Society** as a Society as per the enclosed Memorandum of Association and Rules and Regulations.

Sd/- (V.S. Oberoi)

Principal Secretary to Government of Meghalaya,
Forests & Environment Department

30-3-09
14614-36

Memo No. FOR.18/2007/65-A, Dated Shillong, the 25th March, 2009.

Cc of to:

1. Commissioner & Secretary to the Governor of Meghalaya, Shillong.
2. Chief Secretary to the Government of Meghalaya,
3. Secretary to the Government of India, Ministry of Environment & Forests, Paryavaran Bhavan, C.G.O. Complex, Lodhi Road, New Delhi - 110 003.
4. Secretary to the Government of India, Department of Expenditure, Ministry of Finance, North Block, New Delhi-110001
5. Director General of Forests, Government of India, Ministry of Environment & Forests, Paryavaran Bhavan, C.G.O. Complex, Lodhi Road, New Delhi- 110.003.
6. All Administrative Departments of the Government of Meghalaya.
7. All Heads of Departments, Government of Meghalaya.
8. Principal Chief Conservator of Forests, Meghalaya, Shillong
9. All Chief Conservators of Forests, Meghalaya, Shillong.
10. Director of Printing & Stationary for publication of the Notification in the Meghalaya Gazette with a request to supply two hundred copies of the Notification to the Department.

By order etc.,

Deputy Secretary to Government of Meghalaya,
Forests & Environment Department

C.C.F.
Research Training & Wildlife