224

31/12/2014

MOHENDRA CHAUDHURY ZOOLOGICAL PARK, CHHATBIR

MASTER PLAN

(2009-10 TO 2029-30)

ZOO OPERATOR:

FIELD DIRECTOR

MOHENDRA CHAUDHURY ZOOLOGICAL PARK, CHHATBIR

DEPARTMENTOF FORESTS AND WILDLIFE PRESERVATION, PUNJAB

CERTIFICATE

This is to certify that the Master Plan of M.C. Zoological Park, Chhatbir (Punjab) for the duration of 2009-10 to 2029-30 has been prepared by the Field Director, M.C. Zoological Park, Chhatbir (Punjab) and M/s Aarti Grover & Associates, Master Planning Landscape Architecture Interiors, # 300 RCS Society Sec-48A, Chandigarh in consultation with members of the Expert Group on Zoo Designing of Central Zoo Authority namely Shri S.K. Patnaik and Prof. Rommel Mehta.

Manish Kumar

Field Director,
M.C. Zoological Park,
Chhatbir (Punjab).

Field Director
M.C. Zoological Park,
Chhatbir (Pb.)

Master Plan is approved subjected to the condition that the responsibility of mobilizing the financial resources for the implementation of the Master Plan will be sole responsibility of M.C. Zoological Park, Chhatbir (Punjab).

31/12/14

B.S. BONAL, (IFS)
Member Secretary,
Central Zoo Authority,
New Delhi.

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

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT & FORESTS
Central Zoo Authority

Fax

F. No. 19-53/92-CZA(224)(Vol.V)(M) DATE: 13.01.2011

To

The Field Director
M. C. Zoological Park,
Chhatbir (Punjab).

Sub: **Master Plan of the M. C. Zoological Park, Chhatbir, Punjab.**

Sir,

Please refer to your letter No. 3600 dated 15.11.2010.

Submitted Master Plan of the M. C. Zoological Park, Chhatbir was scrutinized by the Central Zoo Authority and approved in its 56th Meeting of the Technical Committee held on 22nd December, 2011.

In order to send you a copy of the duly signed and approved Master Plan of the M. C. Zoological Park, Chhatbir, you are requested to submit the soft copy of the scrutinized and amended Master Plan in any of the format i. e. AUTOCAD/ DRAW/JPEG/TIFF/PDF files on a CD/DVD to this office at the earliest.

Yours faithfully,
sd/
(B. S. Bonal)
Member Secretary

Copy to the Chief Wildlife Warden, Government of Punjab, Chandigarh for kind of information & necessary action.

(Dr. Brij Kishor Gupta)
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ACKNOWLEDGEMENT

The Master Plan of Chhatbir Zoo has been very arduous task brought to realization with the help of some very special people. I am deeply grateful to the Department of Forests and Wildlife Preservation, Government of Punjab, for posting me as the Field Director (FD) of the zoo and thereby providing me the opportunity of giving final shape to the master plan for which In-principle approval was already acquired by the tiring efforts of my esteemed predecessors.

I express special thanks to *Sh. R. K. Luna, IFS, and Sr Gurbaz singh , IFS ,* (Former Chief Wildlife Warden, Punjab) and *Sh Dhirendra Singh, IFS,* present Chief Wildlife Warden (CWLW) Punjab, for their valuable guidance and suggestions without which this plan would not have been as useful and comprehensive as it is now. My acknowledgements are also due to *Sh. S. S. Bhatti, IFS, Former* CF (Wildlife) Parks and Protected Areas Circle, Punjab for taking time out to read through the document and give some simple but useful tips especially regarding making the drawings more understandable. My thanks are also due to *Sh. Kuldip Kumar, IFS,* Former Director of the zoo and esteemed senior for doing some spadework, the elements from which have been included in this plan.

I also sincerely acknowledge the efforts of Sh. *Dharminder Sharma IFS*, Former Field Director, the main person behind the preparation of this master plan, whose contribution cannot be expressed in words, as it was during his tenure when the preparation of this document was initiated and brought into shape of a master plan. I also express my sincere thanks to *Sh T. K. Behera, IFS, Sh. Charchil Kumar IFS* and *Sh. Basanta Rajkumar IFS* (all Former Field Directors, Chhatbir Zoo) for making contributions in terms of rectifying the objections and subsequently ensuring the *In- principle* approval of the master plan.

There has been large number of employees of the office of Field Director, Chhatbir Zoo, Chief Wildlife Warden (Punjab) and Conservator of Forests (Wildlife) Park and Protected Area Circle (Punjab) who have made some kind of contribution in supplying information but I would specially like to mention the names of Sh. Harpal Singh, Sh Naib Singh, Sh Neeraj Gupta and Sh. Ram Asray who have contributed a lot in terms of their time and in supply of information, not only in hard format but also in soft copies. The words of gratitude would not be complete without expressing thanks to M/S Aarti Grover and Associates, the architects and consultants for their repeated visits to the zoo (whenever requested to do so) for preparation of various designs for master plan by undertaking necessary surveys and for giving priority to Chhatbir works over their other assignments.

Last but not the least; special thanks are due to *Sh. B. R. Sharma, IFS (Ex Member Secretary CZA New Delhi)* and Sh. B S Bonal, *IFS,* Member Secretary, Central Zoo Authority, New Delhi, for all the support provided for the preparation of this Master Plan.

DR. MANISH KUMAR, IFS
FIELD DIRECTOR,
M.C. ZOOLOGICAL PARK
(CHHATBIR). PUNJAB

FOREWORD

This Master Plan is a corollary to the Conceptual Plan that was prepared by the Central Zoo Authority (CZA) for the state of Punjab and was discussed between the CZA represented by the Member Secretary and the state of Punjab represented by the Chief Wildlife Warden, Punjab and the Field Director, Chhatbir Zoo at a joint workshop organized in Chandigarh in the beginning of this year.

There have been efforts in the past to make Master Layout Plans for the zoo but they were no more than piece-meal efforts. This particular plan is a comprehensive twenty year blue-print for the development of the Chhatbir Zoo in which an effort has been made to cover all possible structural and functional aspects of future development of the zoo.

There are two volumes of this Master Plan, whereas the first volume is a write up along-with relevant annexure based on the CZA format for preparing the Master Plan (given in the CZA guidelines) the second volume contains all the drawings professionally prepared by architects. The 24 drawings clearly bring out what is existing now and what needs to be done in future.

At the end of Part I of Volume I, a complete analysis of the present scheme has been done in which the inadequacies and shortcomings have clearly been mentioned. In the beginning of the Part II of Volume I, future objectives, future action plan and a proposal to address the inadequacies and shortcomings is given.

The drawings given in Volume II are prepared on a scale of 1:5000 as the drawings of bigger scale become unwieldy. However, a Master Layout Plan on a scale of 1:2000 (as per CZA requirement) is being separately submitted in addition to the two volumes. It is also advised that while taking up any future developmental activity, the planning should be based on the 1:2000 sheet and not the 1:5000 one given in Volume II.

PART-I

Chapter 1

INTRODUCTION

a. History

The first proposal to establish a Zoological Park at Chhatbir was mooted in the year 1973. The State Government then decided to constitute committees at various levels so as to secure the co-operation, assistance, expert advice and provide co-ordination which were vital for the establishment of such an important project. A state level advisory council headed by Shri M. M. Chaudhary, the then Hon'ble Governor of Punjab was formed on 7th January, 1974 to evolve policies, broad strategies and decide about the overall plan of this Zoological Park. A list of members of this committee is enclosed as Annexure 1.

A second important committee of experts under the chairmanship of Sh.G.P.S Sahi was constituted by the Government in November 1974 which included specialists and experts in zoo management, wildlife and forestry. This committee was entrusted with the responsibility of providing expert opinion on the technical aspect of animal management, zoo establishment and planning. A list of the members of this committee is enclosed as Annexure2.

For co-operation between various departments associated with the establishment of Zoological Park, an implementation committee was also constituted in January, 1974 under the Chairmanship of Development Commissioner, Punjab. This committee was meant to review the progress of works, discuss problems and bottle-necks encountered in the execution of this project, co-ordinate activities for speedy implementation of decisions and to approach the government for solving various problems and difficulties. This committee comprised the members as shown in Annexure 3.

Apart from the above committees, another committee as shown in Annexure 4 was also constituted to provide expert opinion on specific subjects such as

landscaping and other technical matters.

After the initial planning and finalization of zoo site, the first and foremost necessity felt was that of preparing a Conceptual Plan for a planned and systematic development of the zoo and to rule out the common shortfalls that were encountered while establishing other zoos in India. Consequently, a technical Committee consisting of the following members was set up for the preparation of Conceptual Plan:

1. Shri C.M. Sethi, I.F.S. Chief Conservator of Forests, Punjab, Chandigarh.
2. Shri N.S. Lamba, Chief Town Planner, Punjab, Chandigarh.
3. Shri Jeet Malhotra, Senior Architect O/o Chief Architect, Punjab.
4. Shri N.D. Bachkheti, Administrator, Lucknow and Kanpur Zoos, Lucknow.
5. Shri Pushap Kumar, Director, Nehru Zoological Garden, Hyderabad.
6. Shri S.K. Kapur, O.S.D.

These members assisted by Shri D.K. Behal, Architect, conceived the final plan on 29th September 1975. This plan was then finally approved by the Apex Committee presided over by His Excellency the Governor of Punjab on 27th

November 1975. It was felt that this plan will work as a guide for the execution of all details in future or of any expansion in a particular pocket which may be planned at some later date. This conceptual plan was to enable the zoo experts and the architects at that time to detail out any particular pocket with some margin of flexibility according to the prevailing conditions and the configuration of the ground, yet fitting into the overall Master Layout Plan that was part of that conceptual plan.

b. Vision of the Zoo: The zoo has a generalized vision of creation of wildlife and nature related awareness to its visitors.

c. Mission of the Zoo: The mission of the zoo has been to educate and motivate the visitors of the zoo for better wildlife conservation values.

d. Strategy of the Zoo: The zoo aims to achieve the vision and mission through the strategy of display of animals in the manner which could create a sense of wildlife awareness among its visitors.

e. Objectives of the Zoo

M. C. Zoological Park, Chhatbir aims to compliment and strengthen the national efforts in conservation of endangered and rare species of wild fauna. Since its beginning, the park has aimed at the following objectives:

- To support conservation of endangered and rare species through breeding under captive conditions.
- To educate, motivate and create awareness in the society about the need for conserving wildlife, biodiversity and natural resources.
- To provide opportunities for scientific research on wild fauna.

f. Physical features like the topography of the area

The selection of present site of the zoo was done after considerable deliberations. Several candidate sites were evaluated from various angles and finally Chhatbir Protected Forest was chosen for establishing the zoo. The Chhatbir forest is a typical example of the riverine succession with Shisham as the major species along-with the others. A satellite imagery of Chhatbir is shown in the Sheet No. 1 of Volume II of this Master Plan. It is located on the right bank of river Ghaggar, with Shiwaliks and Himalayas visible in the background. The zoo area is basically a floodplain of the river Ghaggar, by and large a level terrain with a few low-lying areas where the shallow lakes either exist or were conceptualized. The topography of the area is shown in

Sheet No. 2 of Volume II of this Master Plan.

g. Geology

The zoo forest is located on the right bank floodplain of river Ghaggar with Shiwalik hills in the background. The open countryside with vast agricultural fields around Chhatbir forests provides vast opportunity to the naturalists to take a close look at nature and natural resources alongwith the geology, rock and soil.

h. Rock and Soil

The soil in the zoo area varies at different places; most parts are sandy whereas some are clayey. The sandy soil results in immediate drainage of water even in heavy rainfall. It is very difficult to create and maintain a water feature on this land. But the zoo has successfully maintained its two water features (artificial lakes) one of which has now become an ideal habitat of migratory birds visiting the zoo every winter; in fact some of the species have become residents of the Chhatbir zoo now.

i. Flora and Fauna

The place is ideally suited for the study of local fauna and flora as the area has a mixed riverine forest of tree species such as Shisham, Kikar, Jamun, mulberry, palms, figs, miscellaneous shrubs, grasses and climbers. The depiction of the existing vegetation in the zoo based on satellite imagery is shown in Sheet No. 3 of Volume II of this Master Plan.The fauna includes a large number of free ranging species like Sambar, Neelgai, porcupine, python, jackal and a variety of snakes. In the year 2007, about 20 species of migratory birds totaling about 800 in number were estimated at the large artificial lake. With the upcoming barrage on the north-east corner of the zoo, there is great possibility of increase in the number of migratory bird species and their numbers. A checklist of important bird species and trees in the zoo is given in Annexure 5 and 6.

The Conceptual Plan was evolved taking into consideration that the water feature is further exploited and that the trees are cut in a planned manner so that the zoo has enough greenery and water bodies available even when the whole conceptual plan stands realized.

j.Climate

The climate is typical of Punjab plains *i.e.* extremely hot during summer and extremely cold during winter months. During May/June, the mercury sometimes touches 46° C whereas in December/January, the temperature reaches near freezing point.

k.Rainfall

Average rainfall is about 575 mm. In spite of being close to river Ghaggar, the water table is deep. The area is cut off by small gullies and nullahs.

l.Season

The zoo experiences the following seasons with the respective average temperatures as below:

- **Spring**: The climate remains the most enjoyable part of the year during the spring season (from February-end to early-April). Temperatures vary between (max) 13 °C to 20 °C and (min) 5 °C to 12 °C.
- **Autumn**: In autumn (from September-end to mid November.), the temperature may rise to a maximum of 30 °C. Temperatures usually remain between 10° to 22° in autumn. The minimum temperature is around 6 °C.
- **Summer**: The temperature in summer (from Mid-April to June-end) may rise to 44 °C. The temperatures might sometime rise to 44 °C in mid-June. Temperatures generally vary between 40 to 42 °C.
- **Monsoon**: During monsoon (from early-July to mid-September), Chandigarh receives moderate to heavy rainfall and sometimes heavy to

very heavy rainfall (generally during the month of August or September). Usually, the rain bearing monsoon winds blow from south-west/south-east. Mostly, the city receives heavy rain from south (which is mainly a persistent rain) but it generally receives most of its rain during monsoon either from North-west or North-east. Maximum amount of rain received by the city of Chandigarh during monsoon season is 195.5 mm in a single day.

- **Winter**: Winters (November-end to February-end) are mild but it can sometimes get quite chilly in Chandigarh. Average temperatures in the winter remain at (max) 5 °C to 14 °C and (min) -1 °C to 5 °C. Rain usually comes from the west during winters and it is usually a persistent rain for 2–3 days with sometimes hailstorms. The city witnessed bone-numbing chill as the maximum temperature on Monday, 7 January 2013 plunged to a 30-year low to settle at 6.1 degrees Celsius.

m. Approach

Mahendra Chaudhary Zoological Park, Chhatbir is situated about 19 Km from Chandigarh on Chandigarh-Patiala road along the right bank of river Ghaggar. The area has been well protected against flooding by an embankment on three sides and a flood drain on the fourth side. The zoo is easily approachable from all sides and the nearest towns are Zirakpur, Banur, Patiala, Panchkula, Ambala and Chandigarh.

The zoo is very close to Delhi-Chandigarh-Shimla National Highway and Chandigarh-Patiala Road, and also few kilometers away from Chandigarh Airport. At the time of conception of the zoo, it was also opined that with the opening of land route with Pakistan, flow of foreign tourists will increase and the Lahore-Delhi traffic route will also contribute towards an increased number of visitors to this zoo.

The neighbourhood of the zoo has historically famous sites, and the Gurudwaras are situated at Nabha Sahib and Nadha Sahib. Besides the

cantonement of Chandi Mandir, Yadvendra Gardens at Pinjore, Aam Khas Bagh at Sirhind and Gurudwara Fatehgarh Sahib are other important historical and tourist places which draw visitors and are within a radius of 30 km from the zoo. Keeping in view, the above strengths, it was thought that this zoo will become an important component of the existing socio-religious tourism of the region.

n. Demography of the surrounding area

Village Chhat is an ancient town and is the second village after Sanghol in Punjab, where ancient artifacts relating to the 11th and 12th centuries have been found by the Archaeology Department. These artifacts have established the relationship of this sleepy village with the civilisation of Mughal Emperor Mohamad Gauri and Prithvi Raj Chauhan. Now the village is under the tehsil of Derabassi Disst. Mohali and has a population of more than 5000. Recent urbanization of the area has induced most land-lords to sell their lands to builders and developers most of whom are outsiders, selling of lands has rendered most villagers without much of work. So, as a result of this phenomenon a large work force is available in the vicinity of the zoo, some of which work for the zoo.

o. Legal status of Land

Mahendra Chaudhary Zoological Park, Chhatbir is legally a Protected Forest.

p. Sources of pollution

The major source of pollution in the zoo is the vehicular pollution. Therefore, a decision has already been taken at the highest level to deal with this by starting the battery operated vehicle service. The process has already been started and very shortly the vehicular traffic inside the zoo shall be stopped altogether. The noise pollution caused by the diverted Patiala/Rajpura/Banur bound traffic from the Ambala side that takes a detour on the road passing along the zoo is also a minor source but is not a cause of much worry as it happens very occasionally.

Besides the above two Methane released from the dung of animals is also a source of air pollution but the zoo has found out a way to deal with this source by converting all the collected dung into vermi-compost in its vermin-compost unit situated in the fodder farm.

q. Present Ground Situation, Layout and Description of the Facilities

As a result of experience gained from other modern zoos of the country, it was decided to locate main building complex i.e. residential area, administrative block, hospital and stores outside the boundary wall of the exhibit area of the zoo. The residential colony was also kept outside. The administrative block was kept near the main entrance and zoo hospital and stores were proposed to be constructed at a small distance away from the administrative block. The area lying in between Banur Canal and bundh on river Ghaggar side were marked for lion safari, deer safari and fodder farm. The shallow lake for birds was created in a low-lying area of the zoo. The present ground situation, layout and description of the facilities is depicted in Sheet No. 4 of Volume II of this Master Plan.

The following area distribution was envisaged at the conception stage of the zoo:

1. The residential, administrative, hospital and parking blocks in 22 ha.
2. Fodder farm in 15 ha.
3. Shallow lake for bird species, 0.5 to 1 meter deep, in an area of 8 ha.
4. The lion safari in an area of about 8 ha.
5. The deer safari in an area of about 12 ha.
6. Boundary fence of 2.75m height consisting of 1.75m high masonry wall and 1m high barbed wire fence. However, the height of boundary wall has now been increased by about 5 feet with the funding from CZA.

The species-wise display of primates, carnivores, ungulates, rodents, elephants, birds and reptiles etc. was planned. The layout of the zoo was done in a planed randomization pattern i.e. various species were spread over the entire zoo area in a planned fashion. The layout of the enclosures is such that in case of a Keeper being on leave the adjoining keeper can easily perform the additional duties. A strict supervision can be kept on the distribution of the feed as similar type of food is to be carried to a particular zone.

The visitors can have comparison of similar type of animals at a glance. Keeping in view the above pattern, the primates were kept near the main entrance as they are very playful and liked by one and all irrespective of the age group. The carnivores consisting of lion, tiger, panther, leopard, jaguar, cat, wolf, wild dog, fox and hyena etc. were kept adjacent to each other because of their food habits. Large sized animals like rhino, hippo and elephants were kept near each other. The birds were kept basically in two aviaries one for small birds and the other for the large ones. The antelopes, deer and zebra were kept in one section because of their food habits.

The restaurant was located near the children park and a shallow bird lake. This was done for allowing the elders to keep an eye on their children while they are playing and at the same time enjoying the natural surroundings. Provisions were also made for a natural history museum, an aquarium, a nocturnal house and a reptile house near the main entrance and along the boundary wall. It was planned in such a way that this complex can also be separated and given an independent entry whenever required.

At the time of the conception, it was agreed that it should be designed so as to exhibit its animals with utmost degree of naturalness. The animals should enjoy their liberty as in the wild. They would thus live their natural lives and display their natural instincts and habits. Under such conditions the visitors will also be able to learn much more about them than they could do otherwise. For big cats like tiger and lion, large naturalistic and moated enclosures were

designed in order to facilitate them to display their natural behaviour. To provide shelter and to simulate natural conditions, the enclosures area was properly landscaped with trees, grasses, shrubs, stones etc. To isolate individuals for reasons of illness, or when a female is likely to litter, it was felt necessary to provide cells attached to the enclosures. So as a rule, a house with cells with distantly controllable doors were provided. For some animals like leopard with a climbing nature the enclosures were provided with mesh wire all around to avoid their escape.

The zoo covering a large area is planned along a circulatory path (primary loop) giving possibility to the visitors to see most parts of the zoo traveling just along this path without having to deviate much. A sense of direction has been created by the circulatory path (primary loop) and the movement takes place in a planned manner with no confusion to return to the gate or to the same set of places again and again. The small Kachcha paths (secondary loops) are provided for the visitors to go around on foot and watch the animals from close vicinity. The existing circulation system in the zoo is shown in Sheet No. 5 of Volume II of this Master Plan.

At half way, facing a small water body (conceptualized), the site for restaurant (the present Jasmine restaurant) was planned to enable the visitors to have refreshments while enjoying natural surroundings. Public conveniences have been provided along the circulatory path in a way that they merge with the landscape and the surrounding enclosures. Similarly, the lawns have also been planned along the primary loop so that the visitors may stop and relax if and when they so desire. The existing water points, toilets, pavilions (rain shelters etc.), and lawns in the zoo are shown in Sheet No. 6, 7 and 8 of Volume II of this Master Plan.

Chapter II

APPRAISAL OF THE PRESENT ARRANGEMENT AND THE CONSTRAINTS

a. (i)Animal Management Section of the Zoo

The enclosures were originally built according to species-wise pattern of display. The enclosures of different species of same family are grouped into one particular complex such as primate complex, small cat complex, elephant complex, bear complex and the like. Efforts are made to occupy the enclosure with the animal for which it is made. However, over time, some of the enclosures have provided accommodation to animals of allied species due to non-availability of a particular species. The existing animal distribution of the area is shown in Sheet No. 9 of Volume II of this Master Plan. The animal records in Chhatbir are being maintained on the CZA approved pro-forma *e.g.* animal history sheets and the keeper's diary (Annexure 7 and 8).

There are 35 enclosures with moats and 68 cages housing the following stock as on 31.3.2009:

Class	Species	Specimens
Mammals	40	594
Birds	42	372
Reptiles	4	25
TOTAL	86	991

The zoo houses both Indian and exotic species of birds and animals. Inventory of animals as on 31-03-2009 is given as Annexure 9. The initial stock of lions, tigers, elephants, bears, leopards, clouded leopards, snow leopards, red pandas and many others came from the Guwahati zoo in Assam. The later stock came from various zoos like Delhi, Kanpur, Tripura, Mysore, Junagarh etc. under various animal exchange programs. For example the present stock of Zebra came from Kanpur zoo; Jaguar, white

tiger and African cape buffalo from Delhi zoo; Pig-tailed macaque from Tripra zoo; leopard from rescue and rehabilitation centre Tuttikandi; Baboon, fallow deer and bison from Mysore zoo; Chinkara from Pilani and Chausingha from Junagarh zoo. The list of animals available at the zoo is enclosed as Annexure 6. The following staff works in the animal management section of the zoo:

1.	Range Officer	1
2.	Sanitary Inspector	1
3.	Block Officer	1
3.	Forest Guard	2
4.	Zoo Keeper	17
5.	Sweepers	10
6.	Mahaut	2
7.	Grass Cutter	2
8.	Mali cum Sweeper	4
9.	Beldar	22
10.	Peon	1
11.	Mali	2
12.	Chowkidar	2

Some of the enclosures, cages and animal houses which have been built in the past years, are now either inadequate or wrongly designed as per the existing CZA guidelines. Therefore, they need alterations, relocation or removal. At the same time some new enclosures are required to be constructed. The details of the enclosures to be removed are given in the Sheet No. 10 of Volume II of this Master Plan.

The primate complex in Chhatbir zoo is a composite unit having five moated and 13 mesh covered enclosures. The steel barricades around each enclosure/cage have been provided. The visitor's path is cemented. The open moated enclosures are required to be properly vegetated. More trees and shades are required in some of them. The caged structures require cemented

roofing to provide shade. The slide gates of some of the houses are required to be replaced or redesigned to prevent the mixing of animals or escape of animals. The moat walls need re-plastering as the cement plaster is old and worn out.

There are two mated and adequately sized enclosures, one each for the Royal Bengal Tiger and lion but both of them presently house tigers. The Chain-link mesh raised along the sides of moat wall has been rusted as the climbers have deteriorated the strength of the mesh and therefore, replacement is required. The wooden planks of the floors of the houses are also worn out with urine, faces and other organic matter and are required to be replaced with appropriate state-of-the-art flooring. This could be applied to the cells attached to lion safari also. The provision of attached squeeze gate exists in tiger enclosures but the same does not exist in the lion safari. Similarly, squeeze facility is required in all other enclosures also where carnivores are housed.

Elephant complex open yard area for movement is sufficient but the flooring and roofing of night shelter is in a poor shape. The flooring needs to be reconstructed. The aluminum sheets forming the night shelter are very old. They have been rusted. Even their size and shape does not provide proper shade during noon in the summer. Therefore, it requires to be re-designed and re-constructed in a state-of-the-art manner. The ground vegetation in the open yard is insufficient, the logs and other furniture needs to be supplemented. There is only one pond which also needs major repairs. One small pond needs to be constructed. The moat is adequate.

The cubicles of panther complex are small in size. They need to be widened and ventilated. The wire mesh of some of the enclosures needs repair. There is no provision of attached squeeze gate, so that is required to be put in place.

The mesh of small cages of cat complex has been rusted beyond repair. The climbers have weakened the strength of mesh. It has covered the outer

surface and prevents the flow of light. During monsoons, the cage open yard area does not get proper sunlight. The whole complex needs replacement of the wire mesh.

The night houses of bear enclosures in the bear complex are dark, ill ventilated and do not get proper light. They are also small in size. Therefore, the bear enclosures need a total revamp.

The bar and meshing of the bird aviary is very old, rusted and beyond repair. It needs to be replaced in a phased manner. The roofs of the night cells of some of the bird cages need to be repaired to prevent leakage during rainy season.

Some of the animal enclosures such as Manipuri deer, blue bull, deer safari and Chinkara do not have isolation yards or night shelters. They are required to be provided.

Some of the enclosures including those where hog deer, goral, black buck, Chausinga etc. are kept are not meant for them. The accommodation has been provided due to non-availability of enclosures for them. There is a need to construct new enclosures for them. The details of enclosures those are to be retained and added is given in the Sheet No. 11 in Volume II. of this Master Plan.

The only snake in the zoo, a python has been housed in a small enclosure. There is no reptile house in the zoo. During winter (hibernation time), the animal is shifted to veterinary hospital in order to provide a thermo-regulated environment. However, a reptile house is now under construction, funds courtesy the CZA.

The zoo is exhibiting mammals, birds and reptiles but no fishes as there is no aquarium in the zoo. Smaller animals (toads/frogs etc.) are also poorly exhibited. Whereas the reptile house is under construction, a terrarium for frogs/toads etc. has been envisaged on the able advice of the CZA. There is a

problem of the disposal of surplus population of Sambar, black buck and Rhesus macaque that are prolifically breeding and population control measures in them are a problem. Asiatic lions are hybrid and highly inbred. There are many specimens which are single or of the same sex. The zoo faces the problem of getting their partners due to various reasons. The zoo does not have a rescue cum rehabilitation center for carnivores, herbivores or birds. Most of the times when an animal or bird in the wild is rescued by Forest and Wildlife officials or seized from the offenders, there is not much option but to send the animal/bird to this zoo. Therefore, a composite rescue and rehabilitation facility was envisaged and discussed with the CZA during the discussions on the Conceptual Plan (Annexure 10) and the CZA has agreed to provide funding for such a facility in the near future.

The zoo forest provides an excellent habitat and vegetation for many free ranging species of birds and animals. The zoo forest has not been separated by any barrier from the enclosures and cages. Free ranging animals often spotted are blue bull, Sambar, mongoose, jackal, snake, squirrel, peafowl and many species of birds. Some rehabilitation plan for the bigger mammals, in consultation with the Chief Wildlife Warden, Punjab shall be drawn up in due course.

Shallow Water Lake is one of the most attractive features in the zoo. During winter, some of the species of migratory birds like spot-billed duck, coot, common pochard, Brahminy duck, dabchick, mallard, grey heron, Indian shag, cormorant and many more visit the lake. There is also a colony of small cormorants and bats at the lake. The dead and dry trees in the zoo also provides habitat to many species of resident birds like egret, painted stork, eagle, pond heron, night heron etc. along-with many insect species.

The Zoo faces the nuisance of stray monkeys and stray dogs. These monkeys often reach the zoo promises and come in contact with the resident primates. Such monkeys need treatment and translocation. The stray dogs of the village Chhat find their entry from the main road upto the feed store. Some

stray dogs find opportunity to enter the zoo premises through Banur Canal which crosses through the zoo. A vigil is required to control this nuisance.

Two off-display facilities have been added in open unutilized area of the zoo. The animals that have become old, sick or infirm and the ones that are beyond recovery or not fit for display are housed therein.

a. (ii) Veterinary Section

A Veterinary hospital complex has been constructed with quarantine facilities, observation room, operation theatre, surgery room, a laboratory room for diagnostic testing and pathological examination of urine, blood, faecal matter and a medicine room. The hospital is fully equipped with medicines, reagents, blow pipes, tranquilizing guns, etc. to handle any emergency that may arise in the zoo. However, more equipments and shifting cages are required to be added. The library is required to be updated with latest books on veterinary and animal management. For proper restraining and diagnosis of animals, squeeze gates attached with cages are required to be built. The existing cages need to be fitted with squeeze facilities.

The medical treatment cards and the post-mortem reports in the zoo are being maintained as per the CZA guidelines and these shall be continued to be maintained on the same pro-forma (Annexure 11 and 12). A future action plan for the up-gradation of the veterinary hospital is given in Annexure 13. The hospital is manned by the following staff:

S.No.	Designation	No.
1	Senior Veterinary Officer	1
2	Veterinary officer	1
3	Veterinary Pharmacist	1
4	Veterinary Attendant	2
5	Laboratory Technician	1

The Veterinary Section needs to be reorganized and strengthened as per the new re-structuring proposal pending before the government in order to provide adequate veterinary care to precious wild animals in the zoo.

a (iii) Stores and Feed Supply Section

Stores and kitchen are adequately provided with proper storage facilities. There is a one animal kitchen, feed preparation room, feed store room and four dry ration stores. The feed preparation room is provided with wash basins and a geyser. The feed store room is provided with shelves and racks where the fresh feed stored. The meat room is meant for receiving and distributing meat and at present there are two refrigerators of small capacity to store the meat as its supply is from Saharanpur which is approx. 150 km from chhatbir Zoo , Process has been started for the purchase of the deep freezer of five quintal capacity to store the meat , after sanction purchase will be made in no time as funds are available . It has an electronic weighing machine, crates, a water tank and a geyser. The meat room and feed preparation room has exhaust fans and are protected from flies and rodents. The dry ration store has drums to store dry rations. The kitchen is well protected from rains, flies and rodents. It has a raised platform for the preparation of feed. It is well equipped with an earthen and a gas stove, gas cylinder and the requisite utensils for the preparation of feed.

The stores and kitchen are provided with one min truck vehicle for the purchase of stores at the time of emergency. There is one boom ladder with hydraulic system for occasional collection of tree twigs, branches and green leafy fodder in order to supplement the green fodder supplies. The store section comprises of following staff:

S. No	Designation	No.
1	Range Officer	1
2	Block Officer	1
3	Forest Guard	2
4	Driver	1

Since the establishment of the zoo about 30 years back, this section has remained over-burdened. With the passage of time, some of the infrastructure has become worn out and some of the facilities provided initially have become outdated. There is a need to update the zoo infrastructure, facilities and renovate those which have become an element of sore according to the present day requirement.

There is a need to renovate public toilet system. A water feature at the main gate needs complete revamp. The children park requires swings and better facilities for children. The zoo roads and roads in the deer safari and lion safari also need re-carpeting. The pavement is broken at many points. The drains and nullahs also need repairs. The traffic regulation at the main gate has become difficult and a separate exit and entry gate is required. The zoo staff colony/residential quarter also require large-scale maintenance. Therefore, this section needs further strengthening as there is going to be a lot of work for this section in the near future.

a (vi) Security Section

The Zoo Security comprises of very meager staff comprising of only 11 gate keepers cum watchmen and 5 watchmen.

The security staff guards the building, property and animals from both external and internal elements by constant patrolling of the area day and night. An alarm system is installed at the main gate. The staff is provided with torches for night patrolling. The Zoo premises are enclosed by a perimeter wall with a barbed wire fence above.

Due to increase in number of visitors, vandalism has also increased in the zoo. With some new projects like the rural tourism project, eco-tourism project and the falcon conservation breeding project coming up, there is a need of additional security staff not only in the night but also during the day. The security needs to be modernized with state-of-the-art CCTVs, alarm system, wireless system and other requisite equipments.

a (vii) Water Supply Section

Water is the most important requirement of any zoo. The water is required for cleaning of animal houses, toilets, moats, ponds and for sprinkling on the road berms. The drinking water is required both for visitors and animals. The water is also required in the zoo residential colony for the drinking purposes. The water is also required for watering the plants, hedges and parks as well as the lawns. The total requirement of water in the zoo is roughly five lac litre per day. The water needs of the zoo are presently fulfilled by Public Health department. But during summer, shortage of water is felt and the zoo has to supplement supplies through its own water arrangements. There are two bores operated by electric motor to feed the water lakes of the zoo. There are three diesel engine operated bores in working condition that meet the moat water requirement of hippopotamus and elephant as well as for the general water needs of landscaping and animal section. There are ten hand pumps in the zoo that are mostly used by the zoo keepers for cleaning/washing purposes.

The water supply from Public Health department often causes inconvenience due to various reasons. Procedure of availing their emergency services does not serve the purpose fully and needs a rethink on the matter. The non working bores of the zoo need to be made functional. There is also a proposal to install an additional deep tube-well for which the efforts are on with the permission of the govt. having already been obtained.

a (viii) Sewerage System

Sewerage system is one of the most important requirements of the zoo. The sewerage system is required for the drainage of animal houses, toilets, moats, ponds etc. The sewerage system is required both for the toilets and animal houses. The sewerage system is also required in the zoo colony for staff. There is one sewage disposal well in the zoo connected with whole sewerage system. The sewerage system of the zoo till recently was being maintained by

the Public Health department but has recently been taken over by the zoo staff. There are two sewer pumps operated by diesel engine to run the sewerage system of the zoo.

a (ix) Visitors' Amenities

The visitor facilities available in the zoo are three canteens, one ice cream parlour and one restaurant. Snacks, cold drinks, mineral water, ice cream and other eatables are provided at these points for visitors inside the zoo. More direction boards to guide the visitors are required. A new Layout map of the zoo at the entrance gate and display boards for each animal, giving important information about the animals need to be replaced as the existing ones have become worn-out. Pamphlets containing information about the zoo and post cards with animal pictures were got printed and distributed in public recently out of the existing funds. However, the meager funds being provided presently need to be increased many folds in order to completely achieve the education and awareness purposes of the zoo. Sitting places, pavilions (rain shelters) and the lawn furniture need complete revamp.

a (x) Lawns and Gardens- Landscape Section

The 202 ha area of Chhatbir was a state forest bearing mixed crop of tree species like Shisham, Kikar, eucalyptus, mulberry, figs, palms, miscellaneous shrubs, grasses and climbers. The forest was cut out in a planned manner for constructing enclosures, cages, roads, paths, parks, lakes, and other buildings. The rest of the area was left undisturbed.

The main gate of the zoo has been beautified by ornamental trees. The entrance has been made further attractive by developing parks, lawns immediately inside the gate. The steel barricades around the animal enclosures have been camouflaged with hedges. The tree planting of species like bamboo has been done around sensitive points such as panther enclosures, elephant complex and primate complex to camouflage houses from visitors. The beautiful landscaped lawns have been set up adjacent to

the lake for visitors. The road to deer safari has been made attractive by small tree plantation of ornamental species. The landscape of the zoo has been planned and developed in such a way that it merges with the cages and enclosures. The weeds like cannabis, Parthenium and Ageratum etc. are eradicated from time to time to maintain the indigenous vegetation in the zoo.

Two fodder farms have been maintained where fodder is raised to meet the part requirement of herbivores in the zoo. The landscape section has also maintained one nursery to raise the seedlings of tree species and ornamental pots in order to meet with landscaping needs and for beautification on special occasions in the zoo.

The deer safari and lion safari landscape management is also looked after by the landscape section. Pasture cum grazing plots have been created and maintained to feed the herbivores of the deer safari. The landscaping section is manned by the following staff:

S. No.	Designation	No.
1	Range Officer	1
2	Forester	2
3	Forest Guard	3
4	Tractor Driver	1
5	Peon	1
6	Mali	11
7	Grasscutter cum Mali	3
8	Beldar	5

The responsibility and workload of landscaping section has increased manifold over the years. With the increase in area under lawns and parks the section needs equipments like cutters, motorized lawn mower, water sprinklers, diesel engines etc. There is an acute shortage of water in the zoo. Therefore, there is a need to develop additional water source and water recycle plan.

2(a)xi Electricity

Electricity is supplied by Punjab State Electricity Board (PSEB) on a rural feeder that also supplies electricity to village Chhat. During summers, there are frequent power cuts due to shortage of electricity in the state. This affects the electricity supply to the zoo. The zoo had obtained a Hotline connection from the PSEB but it was discontinued by the PSEB many years back without assigning any reasons. The case of the hotline electric supply to the zoo has been pursued vigorously with the PSEB and the hotline is expected to be restored shortly. The hotline supply would boost the water supply also and would help in making the zoo greener.

There is an additional requirement of 60 KW for the upcoming Falcon project office, nocturnal house and reptile house. A standby generator with a capacity of 60 KW is also needed for this purpose only. In addition an electric supply at 440 volts is needed for operating the incinerator. The present voltage is much less and therefore, the matter was taken up with the PSEB who have shown their inability to provide 440 volts supply due to technical reasons. In such a situation a separate 45 KW generator is required for running the incinerator.

2(a)xii Other Facilities

An old building of museum has been converted into exhibition gallery near the gate where photographs of birds and animals have been displayed. A public address system has been installed at the main gate to address the public at off and on hours and to provide message at the time of emergency. Six CCTV cameras, two each at tiger enclosures and houses, one at the main gate and one in kitchen were installed so that a vigil can be maintained but these cameras require very frequent repairs, therefore, there is a need to provide state-of-the-art CCTV cameras across the zoo in order to provide a fool-proof secure environment to both the animals and the visitors.

SWOT Analysis of the Zoo

Strengths

1. Its strategic location in a natural forest area of 202 ha along the right bank of river Ghaggar is a big plus point. The forest area along a river and the Shivalik hills in the back drop provide an excellent ambience to Chhatbir zoo that is the envy of many other zoos.

2. Chhatbir Zoological Park is located near the capital city of Chandigarh that is developing into an IT hub of Northern India and has a great tourist potential. The whole neighbourhood of Chandigarh-Panchkula and Mohali (Tricity) is developing at a very fast pace and holds great tourist potential.

3. The design policy and layout of the Chhatbir Zoo has always been advantageous to both animals and the management as it leaves behind a scope for further improvement in terms of visitors' needs, visitors' safety and better management from animals' viewpoint also.

4. Chhatbir Zoo has continued to implement the animal management standards in terms of Exhibits design and size, stand off barriers, open, spacious and naturalistic enclosures and a well planned movement of the visitors. Therefore, these are the strengths of this zoo.

Weaknesses

1. Although a conceptual master layout plan was made but the lack of a detailed blue-print for a planned future development is one of the major weaknesses. No planned documentation of the research done in the past exists.

2. The Chhatbir zoo though has an excellent record of breeding some of the rare and threatened species of animals and birds, but due to lack of vision and knowledge, zoo continued to breed some of the prolific breeding species of deer, carnivores such as lions of doubtful lineage. This resulted

in over crowding in enclosures, increased incidences of mutual fights, non-formation of compatible groups, doubtful parentage and increased competition. Nevertheless things at present are in a much better shape and are improving as all these animals are being phased out and proper stud records are now being maintained.

3. Whereas the mandate of the zoo has been changed completely since the formation of CZA, Chhatbir zoo did not give much attention to breeding of the local fauna of the State and no zoo education policy exists.

4. Lack of an assured electricity supply to the zoo is a big constraint in providing proper summer and winter care arrangements. The hotline provided to zoo was withdrawn long back and efforts are on to get the same restored.

5. Lack of a toy train (or any other suitable transport means) for the visitors on foot is a big negative point as the area of the zoo is too big to be covered on foot. This however, is in the pipeline and battery operated carts are shortly going to be operational.

6. Some of the other weaknesses of this zoo are poor visitors' facilities, lack of a planned interpretation and education program, non thematic entry gate, financial constraints and extremes of climatic conditions.

Opportunities

1. With the boost in development activity around the tricity, there is a great potential for increasing the number of visitors to the zoo. The zoo can handle much bigger number than the present visitation (4 lac visitors) that visit every year.

2. A large natural forest area outside the zoo perimeter wall and the upcoming barrage on the river Ghaggar holds great opportunities for the bird watchers, rural and eco-tourists and the weekend visitors.

3. The proposed Punjab Zoos Development Society, can a handy tool and offers a great opportunity for better management of the zoo in future as it will not only provide an additional fund support but will also ensure requisite autonomy to the zoo management for the smooth running of day to day business.

Threats

1. One of the major threats is from the urbanization and vigorous development activities going on in the vicinity of the zoo. Therefore, a vigorous and strict anti-encroachment policy needs to be followed to guard against this threat.

2. Lack of proper funding policy at the state level, though a small threat, needs to be addressed at the appropriate level if the zoo has to be upgraded to world standards. Presently, the major source of funding is only the non-planned budget that does not have a continuous flow and ad-hoc arrangements are made every now and then to run the day to day arrangements of the zoo.

Conclusions of the Existing Plan (Site Analysis)

- The present scheme depicts the taxonomic organizational theme partially. There is a need to organize the scheme as per a complete organizational theme. The conclusions drawn from the existing scheme (site analysis) are shown in (Sheet No. 12 of Volume II).

- Optimum utilization of the present natural resources like the river and the forest areas needs to be done.

- In the recent years there has been a lot of urbanization around the zoo. There is a need to take into consideration the impact of these developments and changing land-uses and plan accordingly.

- The residential area has been placed outside the exhibit zone to ensure least disturbance to the animals. It shall be retained in its original form.
- There is a need to reorganize the entrance zone and establish a sequence of parking area, ticketing area and entrance gateway.
- There is a need to provide an extra space of 2000 sq m for parking the vehicles which in the current situation are allowed in the zoo exhibit area.
- There is a need to provide separate entrances for vehicular (mainly service vehicles) and pedestrian traffic to the zoo. The road between the hospital and the new office of the landscape Range shall be used as a service entry.
- The present situation in which private vehicles are allowed inside the exhibit zone is the cause of generating a lot of pollution and noise. There is a need to stop the entry of private vehicles and introduce better options like battery-operated vehicles.
- Pedestrians and vehicular traffic move together on the circular road (primary loop) which creates a lot of conflict between the two. There is a need for safe and separate pedestrian paths along the primary loop.
- The hierarchy of roads is missing in the current scheme which needs to be taken into consideration while developing the new master plan.
- There is a need to separately define the service circulation routes which do not create conflict with the visitor circulation.
- There is a need to strengthen the existing vegetation by planting suitable species to create the desired ambience from both animals' and visitors' angle.
- Public spaces and lawns need to be planted with a balanced mix of ornamental and shade bearing tree species.

2 (b). Animal Collection Plan (Existing)

Position as on 31.03.2009						
Sr. No.	**Species**	**Scientific Name**	**Male Total**	**Female Total**	**Unsexed Total**	**Grand Total**
	BIRDS					
1	PEAFOWL INDIAN	*Pavo cristatus*	5	2	0	7
2	PEAFOWL WHITE	*Pavo cristatus*	1	0	0	1
3	KALEEJ PHEASANT	*Lophura leucomelanos*	7	1	0	8
	Total Birds		**13**	**3**	**0**	**16**
	MAMMALS					
1	BLACK BUCK	*Antelope cervicapra*	10	9	0	19
2	CHINKARA INDIAN GAZELLA	*Gazella bennetti*	1	7	8	16
3	DEER BROW ANTLERED	*Cervus eldi*	0	2	3	5
4	DEER SWAMP	*Cervus duavauceli*	2	2	1	5
5	ELEPHANT INDIAN	*Elephus maximus*	2	4	0	6
6	PANTHER/LEOPARD	*Panthera pardus*	4	5	0	9
7	LIONS INDIAN	*Panthera leo persica*	4	6	0	10
8	MACAQUE LION TAILED	*Macaca silenus*	1	0	0	1
9	TIGER BENGAL	*Panthera tigris tigris*	4	3	3	10
10	FOUR HORNED ANTELOPE	*Tetracerus quadricornis*	1	1	2	4
11	GAUR (Indian Bison)	*Bos gaurus*	1	2	0	3
12	LEOPARD CAT	*Felis bengalensis*	1	1	0	2

13	WHITE TIGER	*Panthera tigris tigris*	1	1	0	2
14	CAPPED LANGUR	*Trachipithecus pileatus*	1	0	0	1
	Total		**33**	**43**	**17**	**93**
SCHEDULE 1 OF WILDLIFE (PROTECTION ACT, 1972)						
Position as on 31.03.2009						
Sr. No.	**Species**	**Scientific Name**	**Male Total**	**Female Total**	**Unsexed Total**	**Grand Total**
	REPTILES					
1	GHARIAL	*Gavialis gangeticus*	2	2	2	6
2	CROCODILE	*Crocodilus palustris*	0	3	0	3
3	PYTHON	*Python molurus molurus*	0	1	0	1
	Total		**2**	**6**	**2**	**10**
SCHEDULE 1I OF WILDLIFE (PROTECTION ACT, 1972)						
Position as on 31.03.2009						
Sr. No.	**Species**	**Scientific Name**	**Male Total**	**Female Total**	**Unsexed Total**	**Grand Total**
	MAMMALS					
1	BEAR HIMALYAN BLACK	*Selenarchos thibetanus*	4	3	0	7
2	BEAR SLOTH	*Melursus ursinus*	4	3	0	7
3	CIVET CAT	*Paradoxurus hemaphroditus*	1	1	1	3
4	JACKAL	*canis aureus*	1	2	1	4
5	LANGUR COMMON	*Presbyties entellus*	3	1	0	4
6	MACAQUE ASSAMESE	*Macaca assamensis*	10	11	0	21

7	MACAQUE BONNET	*Macaca radiate*	4	5	2	11
8	MACAQUE RHESUS	*Macaca mulatto*	23	12	5	40
9	MACAQUE PIG TAILED	*Macaca enmestrina*	1	2	1	4
10	OTTER SMOOTH INDIAN	*Lutra perspicillata*	1	0	0	1
	Total		**52**	**40**	**10**	**102**
SCHEDULE 1II & IV OF WILDLIFE (PROTECTION ACT, 1972)						
Position as on 31.03.2009						
Sr. No.	**Species**	**Scientific Name**	**Male Total**	**Female Total**	**Unsexed Total**	**Grand Total**
	Birds					
1	CRANE COMMON	*Grus grus*	1	0	0	1
2	CRANE SARUS	*Grus antigone*	5	0	3	8
3	DOVE	*Streptopelia chinensis*	0	0	28	28
4	DUCK SPOT BILL	*Anas poecilorthyncha*	0	0	11	11
5	DUCK BRAHMINY	*Tadorna ferruginera*	0	0	0	0
6	DUCK COMBED	Sarkidiornis melanotos	1	2	0	3
7	FOWL RED JUNGLE	*Gallus gallus*	2	8	1	11
8	GEESE BARHEADED	*Anser indicus*	2	1	0	3
9	GEESE COMMON		0	0	34	34
10	COMMON POCHARD		0	0	1	1
11	PIGEON WHITE		0	0	45	45
12	PIGEON BLACK		0	0	24	24
13	PARAKEET ROSE	*Psittacula krameri*	0	0	31	31

	RINGED					
14	PARAKEET ALEXANDRINE	*Psittacula eupartria*	2	2	5	9
15	PARAKEET BLOSSOM HEADED	*Psittacula roseate*	3	2	0	5
16	PARTRIDGES GREY	*Francolinus pondicerianeus*	0	0	3	3
17	PARTRIDGES BLACK	*Francolinus francolinus*	1	1	0	2
18	PELICANS ROSY	*Pelecanus philippensis*	1	2	0	3
19	QUAIL COMMON		1	0	0	1
20	STORK BLACK NECKED	*Xenorhychus asiaticus*	1	0	0	1
21	STORK PAINTED	*Mycteria leucocephala*	15	15	28	58
22	STORK WHITE		1	0	0	1
23	SHIKARA	Accipiter badius	1	1	2	4
24	BARNOWL	*Tyto alba*	0	0	4	4
25	GREAT HORNED OWL		0	0	1	1
26	BLACK SWAN	*Cygnus atratus*	0	1	0	1
27	SPOTTED EAGLE		0	0	2	2
28	Love Bird		0	0	6	6
	TOTAL		**37**	**35**	**229**	**301**
SCHEDULE 1II & IV OF WILDLIFE (PROTECTION ACT, 1972)						
Position as on 31.03.2009						
Sr. No.	**Species**	**Scientific Name**	**Male Total**	**Female Total**	**Unsexed Total**	**Grand Total**
	MAMMALS					

1	BLUE BULL	*Boselaphus tragocamelus*	4	3	2	9
2	DEER BARKING	*Muntiacus muntjak*	6	6	4	16
3	DEER HOG	*Axis porcinus*	1	3	9	13
4	DEER SAMBAR	*Cervus unicolor*	16	20	27	63
5	DEER SPOTTED	*Axis axis*	5	12	21	38
6	HYEANA	*Hyaena hyaena*	0	2	0	2
7	PORCUPINE	*Hystrix indica*	0	0	15	15
8	GORAL	*Nemorhaedus goral*	3	0	0	3
	TOTAL		**35**	**46**	**78**	**159**
OTHER AND EXOTIC ANIMALS AND BIRDS						
Position as on 31.03.2009						
Sr. No.	**Species**	**Scientific Name**	**Male Total**	**Female Total**	**Unsexed Total**	**Grand Total**
	OTHER BIRDS					
1	EMU	*(Dromiceius novahollandiae)*	0	1	1	2
2	COCKATOO SULPHER CRESTED	*(Kokatoe galerita)*	0	1	0	1
3	COCKTIEL GREY	*(Nymphicus hollandicus)*	2	1	0	3
4	BUDGRIGAR	*(Melopsittacus undulates)*	40	40	146	226
5	PHESANT MANGOLIAN RING		0	0	4	4
6	PHEASANT GOLDEN	*(Chrysolophus pictus)*	0	1	1	2
7	PHESANT SLIVER	*(Lophura nycthemerus)*	2	1	0	3

7	Sr.Stenographer	1	0	1	
8	Steno-typist	1	0	1	--
9	Sr. Asstt.	3	0	3	--
10	Clerk/Jr.Asstt.	8	4	4	--
11	Range Officer	3	2	1	--
12	Dy. Ranger	2	3	-	--
13	Forester	6	5	1	--
14	Forest Guard	6	14		--
15	Head Draftsman	0	0	1	--
16	Jr. D.man.	0	0	1	--
17	Carpenter	0	1	0	--
18	Black Smith	0	1	0	--
19	Vet. Pharmisist	0	1	1	--
20	Security Supervisor	0	-	1	--
21	Zoo Guide	0	0	1	--
22	Electrician	0	1	0	--
23	Plumber	0	1	0	--
24	Sanitary Inspector	0	1	0	--
25	Lab. Technician	0	1	0	--
26	Mahawat	4	2	2	--
27	Tubewell operator/Tractor Operator	1	1	0	
28	Tractor Driver	2	2	0	
29	Jeep Driver	5	2	3	--
30	Texi Dermist	1	0	1	--
31	Mechanic/ Mechanic Operator	1	0	1	
32	Jamadar Peon	1	-	1	--
33	Peon	10	7	3	

34	Sweeper	15	13	2	--
35	Chowkidar-cum-Gate Keeper	23	22	1	
36	Mali	24	25	-	1 Mali Excess
37	Grass Cutter	4	4	0	--
38	Grass Cutter-cum-Mali	4	4	0	--
39	Zoo Keeper	21	16	5	--
40	Cook	2	2	0	--
41	Kitchen Helper	1	1	0	--
42	Vet. Attendant	2	3	0	0
43	Beldar	44	43	1	--

2(d) Research

There is no systematic research plan in the zoo though some behavioural studies on tiger, Gharial, Sarus crane, elephant etc. have been done. Some papers based on the experiences in hand rearing of animals have been presented in compulsory training programs for IFS officers. The paper on the hand-rearing of the white tiger got published in the Zoo Year Book published by the Indian Zoo Director's Association in collaboration with the CZA. There is a need for a vigorous research to be conducted in collaboration with institutes like Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Indian Veterinary Research Institute, Bareilly, Wildlife Institute of India, Dehradun and the like. However, lack of suitable staff is the biggest constraint but the things are expected to improve if more staff as envisaged in the restructuring plan of the department is provided for.

2(e) Conservation Breeding

Today when wildlife habitats are under severe pressure and large number of species of wild animals have become endangered, the zoos not only to

PART-II

Chapter III

FUTURE OBJECTIVE INCLUDING VISION, MISSION STATEMENT/THEME AND STRATEGY

a) Future Objectives

- To support conservation of endangered and rare species like falcons and tiger through breeding under captive conditions.
- To educate, motivate and create awareness in the society about conservation.
- To promote research programs for conservation by involving local institutions for studying the animal physiology, anatomy, diseases, ecology and behavior directed towards wildlife conservation and better management of zoo.
- Rescue and rehabilitation of infirm animals.
- To provide adequate and suitable living environment through the provision of cage furniture to animals/birds to meet the biological, physical and psychological requirements of animals that does not inhibit their normal behavior.
- To develop state of the art infrastructure in the zoo in order to give complete wildlife experience to the visitor.
- To provide highest possible standards of animal husbandry, veterinary care and sanitation.
- To develop comprehensive animal collection policy in consonance with the existing enclosures/cages, climatic conditions and other facilities in the zoo.

- To develop a pro-active zoo education policy and outreach activities for schools.

b) Vision

We envision to be a world class zoo which will contribute towards conservation and protection of the biodiversity of planet by orienting the communities towards wildlife values.

c) Mission Statement

Our mission is to actively contribute towards wildlife conservation efforts of the nation by ensuring following through ***taxonomical distribution theme*** of animals in the zoo:

- Establishing In-situ and ex situ conservation linkages.
- Orienting visitors towards conservation values of biodiversity and environment by providing an informative, educational, and engaging experience.
- Providing research platform in the field of healthcare, animal behavior and captive breeding aspect of wildlife species.

d) Strategy

- Enhance the existing infra structure and services of the zoo.
- Develop the taxonomical theme based distribution of the animals in the zoo as shown in the master layout plan of the zoo.
- Strengthen the animal management related core competency.
- Capacity building of the staff involved in vital zoo activities.
- To promote wildlife related research through involvement of prime institutions.

Chapter IV

FUTURE ACTION PLAN

i) Proposed/recommended animal collection plan

When the zoo was started and opened to public in 1977 the animals displayed were collected from other zoos of the country. Many exotic species were purchased from the reputed animal dealers. No efforts were, however, made to acquire the species from the wild. The animals acquired were accommodated in the enclosures/cages either meant for the same species or of allied species. There was no plan for the collection of animals which could act as a guiding source for the zoo directors over the years. With the passage of time, the zoo continued to collect animals and birds either by way of exchange deals or through purchase of exotics irrespective of the available expertise to handle them or the suitability to prevailing climatic conditions. Funds to the tune of 30 lacs have already been approved by the State Wildlife Advisory Board for the purchasing of a pair of African lions. The proceedings of the board are enclosed as Annexure 16.

Nevertheless, by virtue of such collection of animals and their upkeep, zoo developed a considerable expertise in breeding and health care of many species. Now after 30 years, when a lot of demographic and environmental changes have occurred and many species of national importance have become vulnerable and endangered, their breeding in captive conditions has become an urgent necessity. The state of Punjab has also experienced a lot of changes in its land-use patterns. Forests in Punjab have been fragmented and many native species have been on the brink of local extinction. The Chhatbir zoo holds many single animals and many species are over populated. Some of the rare species are less in numbers or are over aged and therefore cannot breed any further; these need immediate infusion of fresh blood in order to support a sustainable population. Similarly lion safari

requires new stock of lions as they are all vasectomised and are being phased out.

Keeping in view the broad objectives of the zoo viz. education and breeding, emphasis will be laid on the exhibition of native fauna and on those animals which are not commonly seen in the area. Among exotics, greater emphasis will be placed on the species like zebra, hippopotamus, giraffe, chimpanzee, kangaroo, baboon, ostrich, macaws, cockatoos and other species which are representatives of various ecosystems around the world and not difficult to obtain. However, no domestic animals will be displayed in the zoo.

To be in line with the objectives of the National Zoo Policy, changed mandate towards conservation and to tackle the above issues, a detailed Animal Collection Plan has been formulated which will guide the zoo managers for acquisition and transfer of animals in future and further the scope of implementing conservation breeding programs. The animals in the plan will be acquired by way of exchange deals or purchase. The critically endangered species for which state has planned to initiate conservation breeding program will be taken from wild after due permission of state or central government wherever necessary. The exotics and other less threatened fauna will continue to form a part of the zoo collection and will be displayed for educational purposes. The proposed Animal Collection Plan is enclosed as Annexure 17. A breeding program for the conservation breeding of gray and black partridges will be chalked out in due course and the CZA will be requested to fund these projects in the interest of wildlife conservation.

Chhatbir zoo will continue to display its existing fauna and the efforts would be made to pair single animals. The provision will be made in the enclosures to isolate the sub-dominant or younger males affected by the activities of dominant males especially during the mating season. The Chhatbir zoo will also continue to hold the overage specimens and will make efforts to acquire their young ones through exchange deals. The singled animals will be paired by acquiring mates from other zoos of the country.

Proposed Animal Collection Plan:

S. No	Animal name	Scientific name	Present stock			Proposed stock			Proposed to be acquired			Surplus		
SCHEDULE I OF WILDLIFE (PROTECTION ACT, 1972)														
BIRDS														
1	PEAFOWL INDIAN	*Pavo cristatus*	4	2	3	5	5	0	1	3	-3	-1	-3	3
2	PEAFOWL WHITE	*Pavo cristatus*	1	0	0	5	5	0	4	5	0	-4	-5	0
3	KALEEJ PHEASANT	*Lophura leucomelanos*	3	1	4	5	5	0	2	4	-4	-2	-4	4
4	FALCON	*Falco peregrinus*	0	0	0	5	5	0	5	5	0	-5	-5	0
5	FALCON	*Falco biarmicus*	0	0	0	5	5	0	5	5	0	-5	-5	0
6	FALCON	*and Falco chicuera*	0	0	0	5	5	0	5	5	0	-5	-5	0
7	BAZA	*Aviceda jeordone*	0	0	0	5	5	0	5	5	0	-5	-5	0
8	BAZA	*Aviceda leuphotes*	0	0	0	5	5	0	5	5	0	-5	-5	0
9	HAWKS	*Accipitridao*	0	0	0	5	5	0	5	5	0	-5	-5	0
10	GREAT INDIAN HORNBILL	*Buceros bicornil*	0	0	0	5	5	0	5	5	0	-5	-5	0
11	PIED HORNBILL	*Anthracoceros malabaricus*	0	0	0	5	5	0	5	5	0	-5	-5	0
12	PEACOCK PHEASANT	*Polyplectron bicalearaturn*	0	0	0	5	5	0	5	5	0	-5	-5	0
13	VULTURE	*Gyps indicus*	0	0	0	5	5	0	5	5	0	-5	-5	0
14	VULTURE	*Gyps bengalensis*	0	0	0	5	5	0	5	5	0	-5	-5	0
15	VULTURE	*Gyps tenuirostris*	0	0	0	5	5	0	5	5	0	-5	-5	0
MAMMALS														
16	BLACK BUCK	*Antelope cervicapra*	4	6	11	4	6	0	0	0	-11	0	0	11
17	WHITE BUCK	*Antelope cervicapra*	4	6	11	4	6	0	0	0	-11	0	0	11
18	CHINKARA INDIAN GAZELLA	*Gazella bennetti*	5	5	4	4	6	0	-1	1	-4	1	-1	4
19	DEER BROW ANTLERED	*Cervus eldi*	1	2	0	4	6	0	3	4	0	-3	-4	0
20	DEER SWAMP	*Cervus duavauceli*	6	2	2	4	6	0	-2	4	-2	2	-4	2
21	ELEPHANT INDIAN	*Elephus maximus*	2	4	0	2	4	0	0	0	0	0	0	0
22	PANTHER/LE OPARD	*Panthera pardus*	4	2	0	4	6	0	0	4	0	0	-4	0

23	LIONS INDIAN	*Panthera leo persica*	1	2	0	4	6	0	3	4	0	-3	-4	0
24	MACAQUE LION TAILED	*Macaca silenus*	1	0	0	4	6	0	3	6	0	-3	-6	0
25	TIGER BENGAL	*Panthera tigris tigris*	5	3	0	4	6	0	-1	3	0	1	-3	0
26	FOUR HORNED ANTELOPE	*Tetracerus quadricornis*	2	3	0	4	6	0	2	3	0	-2	-3	0
27	GAUR (Indian Bison)	*Bos gaurus*	2	3	1	4	6	0	2	3	-1	-2	-3	1
28	LEOPARD CAT	*Felis bengalensis*	1	1	0	4	6	0	3	5	0	-3	-5	0
29	WHITE TIGER	*Panthera tigris tigris*	1	2	0	4	6	0	3	4	0	-3	-4	0
30	CARACAL	*Felis caracal*	0	0	0	4	6	0	4	6	0	-4	-6	0
31	CLOUDED LEOPARD	*Neofelis nebulosa*	0	0	0	4	6	0	4	6	0	-4	-6	0
32	DESERT FOX	*Vulpes bucapus*	0	0	0	4	6	0	4	6	0	-4	-6	0
33	LORIS	*Loris tardigradus*	0	0	0	4	6	0	4	6	0	-4	-6	0
34	MOUSE DEER	*Tragulus meminna*	0	0	0	4	6	0	4	6	0	-4	-6	0
35	RHINOCEROS	*Rhinoceros unicornis*	0	0	0	4	6	0	4	6	0	-4	-6	0
36	SEROW	*Capricornis sumatraensis*	0	0	0	4	6	0	4	6	0	-4	-6	0
37	WILD BUFFALO	*Bubalus bubalis*	0	0	0	4	6	0	4	6	0	-4	-6	0
38	PANGOLIN	*Manisjavanica*												
REPTILES														
39	GHARIAL	*Gavialis gangeticus*	1	3	0	4	6	0	3	3	0	-3	-3	0
40	CROCODILE	*Crocodilus palustris*	0	3	0	4	6	0	4	3	0	-4	-3	0
41	PYTHON (Indian rock)	*Python molurus molurus*	1	0	0	4	6	0	3	6	0	-3	-6	0
42	PYTHON (Burmeese python)	*Python molurus bivittatus*	0	1	0	4	6	0	4	5	0	-4	-5	0
43	BENGAL MONITOR LIZARD	*Varanus bengalensis*	0	0	2	4	6	0	4	6	-2	-4	-6	2
44	YELLOW MONITOR LIZARD	*Varanus flavescens*	0	0	2	4	6	0	4	6	-2	-4	-6	2
45	PYTHON RETICULATED	*Python reticulatus*	0	0	0	4	6	0	4	6	0	-4	-6	0

46	INDIAN SOFT SHELLED TURTLE	*Lysmes punctata*	0	0	0	4	6	0	4	6	0	-4	-6	0
SCHEDULE II OF WILDLIFE (PROTECTION ACT, 1972)														
BIRDS														
47	GREY JUNGLE FOWL	*Gallus sonnerati*	0	0	0	5	5	0	5	5	0	-5	-5	0
	MAMMALS													
48	BEAR HIMALYAN BLACK	*Selenarchos thibetanus*	4	7	0	4	6	0	0	-1	0	0	1	0
49	BEAR SLOTH	*Melursus ursinus*	3	2	0	4	6	0	1	4	0	-1	-4	0
50	CIVET CAT	*Paradoxurus hemaphroditus*	2	2	1	4	6	0	2	4	-1	-2	-4	1
51	JACKAL	*canis aureus*	0	2	6	4	6	0	4	4	-6	-4	-4	6
52	LANGUR COMMON	*Presbyties entellus*	2	0	0	4	6	0	2	6	0	-2	-6	0
53	MACAQUE ASSAMESE	*Macaca assamensis*	14	3	0	4	6	0	-10	3	0	10	-3	0
54	MACAQUE BONNET	*Macaca radiate*	6	2	0	4	6	0	-2	4	0	2	-4	0
55	MACAQUE RHESUS	*Macaca mulatto*	5	5	0	4	6	0	-1	1	0	1	-1	0
56	MACAQUE PIG TAILED	*Macaca enmestrina*	1	2	2	4	6	0	3	4	-2	-3	-4	2
57	COMMON FOX	*Vulpes bengalensis*	0	0	0	4	6	0	4	6	0	-4	-6	0
58	JUNGLE CAT	*Felis chaus*	0	0	0	4	6	0	4	6	0	-4	-6	0
59	OTTERS	*Luthra, L. perspicillata*	0	0	0	4	6	0	4	6	0	-4	-6	0
60	GIANT SQURILL	*Ratufa macroura*	0	0	0	4	6	0	4	6	0	-4	-6	0
61	GIANT SQURILL	*Ratufa indica*	0	0	0	4	6	0	4	6	0	-4	-6	0
62	GIANT SQURILL	*Ratufa bicolor*	0	0	0	4	6	0	4	6	0	-4	-6	0
REPTILES														
63	COBRA	*Naja naja*	0	0	8	4	6	0	4	6	-8	-4	-6	8
64	RAT SNAKE	*Ptyas mucosa*	0	0	4	4	6	0	4	6	-4	-4	-6	4
65	CHECKERD KEELBACK SNAKE	*Xenochrophis piscatar*	0	0	0	4	6	0	4	6	0	-4	-6	0
66	KING COBRA	*Ophiophagus hannah*	0	0	0	4	6	0	4	6	0	-4	-6	0
67	MONGOOS	*Herpestes*	0	0	0	4	6	0	4	6	0	-4	-6	0

SCHEDULE III & IV OF WILDLIFE (PROTECTION ACT, 1972)														
Birds														
68	CRANE SARUS	*Grus antigone*	7	2	1	5	5	0	-2	3	-1	2	-3	1
69	DOVE	*Streptopelia chinensis*	0	0	28	5	5	0	5	5	-28	-5	-5	28
70	DUCK SPOT BILL	*Anas poecilorthyncha*	0	0	11	5	5	0	5	5	-11	-5	-5	11
71	DUCK COMBED	*Sarkidiornis melanotos*	1	2	3	5	5	0	4	3	-3	-4	-3	3
72	FOWL RED JUNGLE	*Gallus gallus*	4	8	10	5	5	0	1	-3	-10	-1	3	10
73	GEESE BARHEADED	*Anser indicus*	1	1	0	5	5	0	4	4	0	-4	-4	0
74	COMMON POCHARD	*Aythya ferina*	0	0	1	5	5	0	5	5	-1	-5	-5	1
75	PARAKEET ROSE RINGED	*Psittacula krameri*	0	0	32	5	5	0	5	5	-32	-5	-5	32
76	PARAKEET ALEXANDRINE	*Psittacula eupartria*	2	2	13	5	5	0	3	3	-13	-3	-3	13
77	PARAKEET BLOSSOM HEADED	*Psittacula roseate*	2	2	1	5	5	0	3	3	-1	-3	-3	1
78	PARTRIDGES GREY	*Francolinus pondicerianeus*	0	0	4	5	5	0	5	5	-4	-5	-5	4
79	PARTRIDGES BLACK	*Francolinus rancolinus*	0	0	4	5	5	0	5	5	-4	-5	-5	4
80	PELICANS ROSY	*Pelecanus philippensis*	1	2	0	5	5	0	4	3	0	-4	-3	0
81	QUAIL COMMON	*Coturnix coturnix*	1	0	0	5	5	0	4	5	0	-4	-5	0
82	STORK BLACK NECKED	*Xenorhychus asiaticus*	1	0	0	5	5	0	4	5	0	-4	-5	0
83	STORK PAINTED	*Mycteria leucocephala*	15	15	40	5	5	0	-10	-10	-40	10	10	40
84	STORK WHITE	*Ciconia ciconia*	1	0	0	5	5	0	4	5	0	-4	-5	0
85	SHIKARA	*Accipiter badius*	0	1	4	5	5	0	5	4	-4	-5	-4	4
86	BARNOWL	*Tyto alba*	0	0	3	5	5	0	5	5	-3	-5	-5	3
87	GREAT HORNED OWL	*Bubo virginianus*	0	0	2	5	5	0	5	5	-2	-5	-5	2
88	SPOTTED EAGLE		0	0	2	5	5	0	5	5	-2	-5	-5	2
89	WHITE IBIS	*Threskiornis melanocephala*	0	0	7	5	5	0	5	5	-7	-5	-5	7
90	FLAMINGOES	*Phoenicopteridae*	0	0	0	5	5	0	5	5	0	-5	-5	0

91	Little Grebe or Dabchick	*Podiceps ruficollis*	0	0	0	5	5	0	5	5	0	-5	-5	0
92	Large Cormorant	*Phalacrocorax carbo*	0	0	0	5	5	0	5	5	0	-5	-5	0
93	Little Cormorant	*Phalacrocorax niger*	0	0	0	5	5	0	5	5	0	-5	-5	0
94	Darter or snake bird	*Anhinga rufa*	0	0	0	5	5	0	5	5	0	-5	-5	0
95	Grey heron	*Ardea cinerea*	0	0	0	5	5	0	5	5	0	-5	-5	0
96	Purple heron	*Ardea purpurea*	0	0	0	5	5	0	5	5	0	-5	-5	0
97	Indian Pond heron or *Paddy bird*	*Ardeola grayii*	0	0	0	5	5	0	5	5	0	-5	-5	0
98	Cattle egret	*Babulcus ibis*	0	0	0	5	5	0	5	5	0	-5	-5	0
99	Large egret	*Egretta alba*	0	0	0	5	5	0	5	5	0	-5	-5	0
100	Smaller or Median egret	*Egretta*	0	0	0	5	5	0	5	5	0	-5	-5	0
101	Little egret	*Egretta garzetta*	0	0	0	5	5	0	5	5	0	-5	-5	0
102	Night heron	*Nycticorax nycticorax*	0	0	0	5	5	0	5	5	0	-5	-5	0
103	Ruddy shelduck or *Brahminy duck*	*Tadorna ferruginea*	0	0	0	5	5	0	5	5	0	-5	-5	0
104	Paintail	*Anas acuta*	0	0	0	5	5	0	5	5	0	-5	-5	0
105	Common teal	*Anas Crecca*	0	0	0	5	5	0	5	5	0	-5	-5	0
106	Spotbill duck	*Anas poecilorhycha*	0	0	0	5	5	0	5	5	0	-5	-5	0
107	Mallard	*Anas platyrhynchos*	0	0	0	5	5	0	5	5	0	-5	-5	0
108	Gadwall	*Anas Penelope*	0	0	0	5	5	0	5	5	0	-5	-5	0
109	Shoveller	*Anas clypeata*	0	0	0	5	5	0	5	5	0	-5	-5	0
110	Blackwinged Kite		0	0	0	5	5	0	5	5	0	-5	-5	0
111	Crested honey buzzard	*Pernis ptilorhynchus*	0	0	0	5	5	0	5	5	0	-5	-5	0
112	Pariah Kite	*Milvus migrans*	0	0	0	5	5	0	5	5	0	-5	-5	0
113	Sparrow Hawk	*Accipiter nisus*	0	0	0	5	5	0	5	5	0	-5	-5	0
114	Greater spotted eagle	*Aquila clanga*	0	0	0	5	5	0	5	5	0	-5	-5	0
115	Marsh harrier	*Circus aeruginosus*	0	0	0	5	5	0	5	5	0	-5	-5	0
116	Crested serpent eagle	*Spilornis cheela*	0	0	0	5	5	0	5	5	0	-5	-5	0

117	Demoiselle crane	*Anthropoides virgo*	0	0	0	5	5	0	5	5	0	-5	-5	0
118	Moorhen	*Gallinula*	0	0	0	5	5	0	5	5	0	-5	-5	0
119	Purple Moorhen	*Porphyrio porphyrio*	0	0	0	5	5	0	5	5	0	-5	-5	0
120	Coot	*Fulica*	0	0	0	5	5	0	5	5	0	-5	-5	0
121	Whitetailed lapwing	*Vanellus leucurus*	0	0	0	5	5	0	5	5	0	-5	-5	0
122	Redwattled lapwing	*Vanellus indicus*	0	0	0	5	5	0	5	5	0	-5	-5	0
123	Blackwinged stilt	*Himantopus himantopus*	0	0	0	5	5	0	5	5	0	-5	-5	0
124	Green Pigeon	*Treron phoenicoptera*	0	0	0	5	5	0	5	5	0	-5	-5	0
125	Blue rock pigeon	*Columba livia*	0	0	0	5	5	0	5	5	0	-5	-5	0
126	Turtle dove	*Streptopelia orientalis*	0	0	0	5	5	0	5	5	0	-5	-5	0
127	Ring dove	*Streptopelia risoria*	0	0	0	5	5	0	5	5	0	-5	-5	0
128	Spotted dove	*Spilopelia chinensis*	0	0	0	5	5	0	5	5	0	-5	-5	0
129	Pied crested cuckoo	*Clamator jacobinus*	0	0	0	5	5	0	5	5	0	-5	-5	0
130	Indian cuckoo	*Cuculus micropterus*	0	0	0	5	5	0	5	5	0	-5	-5	0
131	Koel	*Eudynamys*	0	0	0	5	5	0	5	5	0	-5	-5	0
132	Crow pheasant	*Centropus sinensis*	0	0	0	5	5	0	5	5	0	-5	-5	0
133	Small blue kingfisher	*Alcedo coerulescens*	0	0	0	5	5	0	5	5	0	-5	-5	0
134	Blue tailed bee eater	*Merops philippinus*	0	0	0	5	5	0	5	5	0	-5	-5	0
135	Small green bee-eater	*Merops persicus*	0	0	0	5	5	0	5	5	0	-5	-5	0
136	Hoopoe	*Upupa epops*	0	0	0	5	5	0	5	5	0	-5	-5	0
137	Grey hornbill	*Ocyceros birostris*	0	0	0	5	5	0	5	5	0	-5	-5	0
138	Large green barbet	*Megalaima zeylanica*	0	0	0	5	5	0	5	5	0	-5	-5	0
139	Lesser golden backed wood pecker		0	0	0	5	5	0	5	5	0	-5	-5	0
140	Golden oriole	*Oriolus oriolus*	0	0	0	5	5	0	5	5	0	-5	-5	0
141	Black drongo or king crow	*Dicrurus macrocercus*	0	0	0	5	5	0	5	5	0	-5	-5	0
142	Brahminy myna	*Sturnia pagodarum*	0	0	0	5	5	0	5	5	0	-5	-5	0

	MACAW													
SCHEDULE OTHERS OF WILDLIFE (PROTECTION ACT, 1972) AND EXOTIC														
OTHER MAMMALS														
192	HIPPOPOMTAMUS	*Hippopotamus amphibus*	1	4	0	2	4	0	1	0	0	-1	0	0
193	ZEBRA		0	1	0	2	4	0	2	3	0	-2	-3	0
194	BUFFALO CAPE AFRICAN	*Syocerus catter*	0	0	0	2	4	0	2	4	0	-2	-4	0
195	JAGUAR	*Pantheraonca*	1	0	0	2	4	0	1	4	0	-1	-4	0
196	FELLOW DEER	*Dama dama*	1	0	0	2	4	0	1	4	0	-1	-4	0
197	HAMADRYES BABBOON SACRED	*Papio hamadryas*	1	1	0	2	4	0	1	3	0	-1	-3	0
198	FRUIT BAT	*Pteropus giganteus*	0	0	4	2	4	0	2	4	-4	-2	-4	4
199	CHIMPANZEE	*Pan troglodytes*	0	0	0	2	4	0	2	4	0	-2	-4	0
200	ORANUTAN	*Pongo pygmaeus*	0	0	0	2	4	0	2	4	0	-2	-4	0
201	GIRAFFE	*Giraffa camelopardalis*	0	0	0	2	4	0	2	4	0	-2	-4	0
202	OKAPI	*Okapia johnstoni*	0	0	0	2	4	0	2	4	0	-2	-4	0
203	WILDBEEST	*Connochaetes gnou*	0	0	0	2	4	0	2	4	0	-2	-4	0
204	TAPIR	*Tapirus indicus*	0	0	0	2	4	0	2	4	0	-2	-4	0
REPTILES AND AMPHIBIANS														
205	GREEN IGUANA	*Iguana iguana*	0	0	0	4	6	0	4	6	0	-4	-6	0
206	RED IGUANA	*Iguana iguana*	0	0	0	4	6	0	4	6	0	-4	-6	0
FISH FOR AQURAIUM INDIGENUS AND EXOTIC (Fresh Water and Salt water)														
Sr.No.	**Animal name**	**Scientific name**	**Present stock**			**Proposed stock**			**Proposed to be acquired**			**Surplus**		
CENTRAL AMERICAN CICHLID + 17 other Fish (Total 20 Fish Species)														
207	**Honduran Red Point**	*Amatitlania sp. "Honduran Red Point"*	0	0	0	2	5	0	2	5	0	-2	-5	0
208	**Convict, Zebra Cichlid**	*Amatitlania nigrofasciatus*	0	0	0	2	5	0	2	5	0	-2	-5	0
209	**Convict, Zebra Cichlid**	*Amatitlania nigrofasciatus (Marbled)*	0	0	0	2	5	0	2	5	0	-2	-5	0
210	**Pearse Cichlid**	*exCichlasoma pearsei*	0	0	0	2	5	0	2	5	0	-2	-5	0

Total 15 Species of Frogs and Toads.

544	**Hazara torrent frog**	*Nanorana pleskei*	0	0	0	10	20	0	10	20	0	-10	-20	0
545	**Karez frog**	*Nanorana sternosignata*	0	0	0	10	20	0	10	20	0	-10	-20	0
546	**Marbled Sand Frog**	*Sphaerotheca rolandae*	0	0	0	10	20	0	10	20	0	-10	-20	0

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Chhatbir zoo also holds excess number of prolific breeding species such as Rhesus Macaque and Sambar. These species shall not be allowed to breed by employing suitable population control measures. The over-aged specimens in the zoo shall continue to be shifted to off display exhibit facility when required.

It is suggested to continue the planned taxonomic display of animals so that management is easy and animals of allied species could be looked after by one Zoo Keeper. In case the Keeper is on leave, adjoining Keeper can easily perform additional duties. Since a particular kind of feed is required for allied species, therefore, a strict supervision can be kept on the distribution of feed. Moreover, the visitors can have comparison of the similar types of animals at a glance and get educated.

The enclosures will not remain empty as they can easily be utilized by shifting surplus animals from neighboring enclosures with ease. Moreover, continuation with the existing (taxonomic) display would cause least wastage of resources as it would require minimal removal or relocation of the enclosures. However, for specialized exhibits like Nocturnal House, Reptile House and Aquarium, taxonomic display will be dispensed with.

ii) Description of Layout Plan of the Zoo

Sheet No. 15 of Volume II of this Master Plan shows the proposed Master Layout Plan on a scale of 1:5000. The master layout plan shows all the design concepts of the previous sheets put together and made as per the colour code scheme of CZA New Delhi.

The black colour shows the existing enclosures to be retained, red colour shows the enclosures to be redone after demolition, green colour shows

enclosures to be modified and blue colour shows new enclosures to be made during plan period.

The 1:5000 sheet will be used for the academic purposes and detailed planning to be done for future development of the zoo.

iii) Proposal to Address the Inadequacies and Shortcomings Identified in the Appraisal report (as appraised in Part-I, 2a) ***Proposed Design Concept (Based on Site Analysis)***

- The proposed scheme shall depict the taxonomic organizational theme completely. Sheet No. 16 of Volume II shows the zoning of animal enclosure distribution based on taxonomic classification.

- Optimum utilization of the present natural resources like the river and the forest areas shall be done. The river water that flows through the zoo in the Banur canal may be used for the creation of two additional lakes, one opposite the elephant enclosure and the one near the Jasmine restaurant, in two low-lying areas. Nature trails for the eco-tourists and other interested visitors shall be created in the forest area and around the Shallow lake as shown in Sheet No. 25 of Volume II.

- Taking into consideration the impact of recent developments and changing land-uses around the zoo, the boundary plantation shall be strengthened to create appropriate buffer. Bamboos are a suggested option. Proposed vegetation plan is shown in Sheet No. 17 of Volume II.

- Entry of private vehicles inside the zoo premises shall be stopped and better options like rickshaws, cycles, battery operated carts and e-bikes etc. shall be started. Five battery operated vehicles have already been started. The proposed loop/circulation is shown in Sheet No. 13,15,18, 20 of Volume II will be developed/used for battery operated vehicles.

- The pedestrian footpath shall be constructed along the primary loop. The secondary loop shall also be for the pedestrian use; therefore, the visitors

using the battery operated vehicles shall also be using the secondary loop for a close viewing of the animals. Sheet No. 19 of Volume II shows the primary and secondary loops.

- The hierarchy of roads shall be followed in the proposal with mainly three kinds of roads, the circular road (primary loop) for the battery operated vehicles, the pedestrian footpaths along the primary loop and the secondary loops originating and joining back on the primary loop. The secondary loops shall be used to facilitate close viewing (on foot) of some of the exhibits that are away from the primary loop. Sheet No. 20 of Volume II shows the proposed circulation plan.

- Separately defined service circulation routes shall be proposed. The service routes shall be exclusively for the service vehicles of the zoo. Sheet No. 21 of Volume II shows the proposed service circulation plan.

- The existing vegetation within and outside the enclosures shall be strengthened by planting suitable species in order to create desired simulated environment for the animals as close to their natural habitat as possible.

- Public spaces and lawns shall be landscaped with a balanced mix of ornamental and shade bearing tree species, shrubs, bamboo or other suitable and indigenous species.

- Separate entrances shall be provided for service vehicles and visitors. The road between the hospital and the new office of the Landscape Range shall be used as a service entry.

- Extra space for parking the vehicles which in the current situation are allowed in the zoo exhibit area shall be provided outside the walled area of the zoo. The Sheet No. 15 and 22 of Volume II shows the proposed parking areas.

- Certain animal enclosures shall be removed, relocated or added in order to realize the taxonomic organizational theme as intended. Sheet Nos. 10 and 11 of Volume II show the enclosures to be removed, retained and added. Sheet No 23 of Volume II shows proposed animal enclosure distribution. Minimum dismantling would be allowed and the efforts would be made to retain the structures wherever possible.

- The existing safaris shall be extended to fulfill the criteria of area requiremnt as per the agreement with the CZA during the conceptual plan discussion. The flora-fauna relationship shall also be taken care of.

- The inappropriate enclosures and night shelters that are either small as compared with the CZA norms or with faulty design or location shall be rebuilt as per the state-of-the-art designs and latest architectural concepts.

- Temporary structures and cages shall be replaced by natural-looking simulated habitats for the animals as far as possible.

- Eco-tourism, rural tourism or any such tourism oriented activities shall be restricted to the Eco-tourism zone only. A copy of the proposed eco-tourism and rural tourism projects is enclosed as Annexure 18 and 19.

- Some inactive areas in the zoo have been identified as public spaces that may be used for any future public amenities. Sheet No. 24 of Volume II of this Master Plan shows such public spaces.

- The feed store and kitchen of the zoo will be renovated to addresse the present shortcomings and will be converted into a modern facility with all the necessary provisions for safe and hygienic feed storage and distribution.

- The zoo will be equiped with the modern security devices such as CCTV cameras at all the strategic location to monitor the animal-visitor interface apart from animal monitoring inside the animal houses. Alarming system will be installed in the zoo to send the alarm to the control room in case of

any emergency during visitor hours and off hours. The security staff will be equiped with the wireless system for better communication among the staff. Dedicated patrolling vehicle will be provided to the security wing for better mobility.

- The exisiting water supply network of the zoo is almost 40 years old and need complete renovation. It will be renovated by relaying the water pipe lines of suitable sizes apart from installation of new bore wells.
- Necessary landscapping operations will be undertaken at all suitable locations to improve the aesthetic look of the zoo. It will also ensure better sitting places for the visiors. A modern nursery will also be created to cater to the needs of the zoo for the purpose of providing required plants.
- The electrical system of the zoo is also very old leading to the problem of frequent power cuts and drop in voltage. It will be renovated by the replacement of the electrical panels along with the connecting cables and other accessories.

iv) Depending on the Local Conditions of the Zoo, Other Items and Peculiar Problems of the Zoo

Banur Canal

The Banur canal passing through the zoo can be used for creating some more water features for the birds (free ranging) and that would further improve the ambiance. In the past, its water was used mostly for the irrigation of lawns but presently the work by the Irrigation Department has started is on to make it perennial and therefore, there is no water in the canal at the moment.

Transport System

Mahendra Chaudhary Zoological Park, Chhatbir on an average receives around 6-7 lakhs visitors annually. The peak visitation is during holidays. The average visitation per day is 1290. The visitors reach the zoo using various

modes of transport viz public bus hired auto rickshaws and own vehicles. There is a bus service of Chandigarh Transport undertakes (CTU) that plies after each hour between Chhatbir Zoo and Chandigarh ISBT Bus Stand. Local people in and around Chandigarh usually prefer their own transport to reach Zoo. The rural visitors prefer to come to Zoo by public bus or by foot. The present public transport to the zoo is not adequate and this poses a significant restriction on zoo's development and future. Alternative transport system that will service the zoo and provide a link between Chandigarh city and zoo should be explored. The proposed monorail project between Chandigarh Mohali and Panchkula is expected to cover Zirakpur area also. If it happens, the number of visitors would improve manifolds.

Visitor Facilities at Zoo Entrance

The zoo entrance does not give an impressive look to the visitor on arrival. There is a scope for substantial improvement such as adequate landscaping, better queuing arrangements in front of ticket windows especially to manage peak seasons, informative and integrated signages, better sitting arrangements for waiting visitors, Digital Information screen that provides animal related information for queuing visitors, drinking water arrangement, there is a need to upgrade the existing ticketing booth with computerized ticketing and qualified full time permanent staff. The facilities for disabled, physically challenged persons as well as facilities for care of young children, cloak room, first aid post are required to be added. The guide map at the main gate requires a redo. A few such maps are required to be put up at prominent points in order to guide the visitors through various paths/roads etc. to visit various facilities in the zoo. Adequate number of dustbins is required at refreshment points, children's park and parking stand for the collection of garbage.

Information System

The existing Information centre cum museum has to be redeveloped to enable the visitors to have a first hand experience of biological specimens and their activities. In future, a souvenier shop of the zoo will also be made operational in the same building or in its vicinity.

Directional Boards

Prominent direction boards have to be provided so that visitors can take the correct path and see all the exhibits. The service roads required to be labeled with 'no entry' signs.

Drinking Water, Rain Shelters and Toilets

More drinking water facilities have to be provided in the zoo. The renovation of existing rain shelters and construction of new rain shelters with sitting arrangements are required. The toilets need to be renovated and modernized.

Exhibit Signage

Every Exhibit should have a standard sized display board giving details about the exhibits both in local language and in English so as to enable the visitors of all sections of society to take full advantage of it. The present iron exhibit boards have become outdated and require frequent repainting, so boards made of suitable material need to be put in place.

Roads and Paths

Roads both inside the Zoo and safaris need to be repaired. The ramps are to be provided to enable the physical by challenged persons to move on wheel chairs. All the secondary loops which are not paved need to be paved.

Zoo Education

Zoo Education is one of the foremost mandates under National Zoo policy. The large collection of living animals and the vegetation raised in the Chhatbir

Zoo makes it a unique biological resource and is of great educational value to all sections of society. However, Chhatbir Zoo initiatives towards conservation education programs have not been pursued in a systematic way due to various reasons including lack of dedicated staff and shortage of budget. The CZA has come out with a Zoo Education Master Plan with the help of Centre for Environment Education (CEE) Ahmedabad which should be applied in letter and spirit. The zoo aims to have a dedicated Zoo Education wing in future which will be solely responsible for the implementation of zoo education plan of the zoo including various zoo out reach programs.

a. Interpretation Centre

In order to explain the visitors on the role of zoo in conservation and propagation of species and to orient them for their enjoyable and educative journey and to inform about rules and regulations of the zoo management, a state-of-the-art Interpretation Centre is a must. Chhatbir Zoo at present lacks this facility, it is therefore, suggested to build an Interpretation Center having written and pictorial information about the biological need of animals, feeding habits, parental care, migration and other relevant aspects in a way that arouse curiosity and interest among visitors. This center will also have exhibition hall where photographs of rare animals and birds would be exhibited. The portraits of various biological processes will be displayed. The center may also have an auditorium cum lecture theatre with a seating capacity of about 50-100 equipped with all allied facilities.

b. Gate Education

A thematic zoo entrance will be created to orient the visitors towards the wildlife experience. Publication material will be provided to the visitors to make them aware about the basic activities of the zoo specially the nature and wildlife awareness programs. A dedicated *state of the art* Zoo Education Park will be created at a suitable location so as to provide a platform imparting

zoo education to visitors specially school children through various theme based programs.

Aquarium

A state-of-the-art aquarium and a terrarium for amphibians especially toads and frogs shall be built to educate the visitors about the aquatic wildlife and about amphibians. It will be built to showcase the aquatic (freshwater and marine) life to the visitors.

Quarantine Section

A proper quarantine section shall be built adjoining the veterinary hospital complex. Separate sub-sections for herbivores, carnivores and birds shall be appropriately designed. It will not only ensure better monitoring and observation of new entrants for any specific disease conditions but will also help in understanding the behaviour of that perticular animal for its better management and upkeep.

Rescue Centre

The fodder farm near the residential quarters and the neighbouring conservation zone shall be used for rescue and rehabilitation purposes as already discussed with CZA in the conceptual plan discussion.

Conservation Breeding Program in Off-display Area

M.C.Zoological Park Chhatbir has been identified as the coordinating zoo for the conservation Breeding Program of Birds of Prey like Falcons, Eagles, Harriers , Accipters, Buzzards especially Shaheen Falcons (Falco peregrines) as a coordinating zoo where as the Jaipur zoo is the participating zoo in this program. The requisite grant for the development of housing facilities have been given by CZA and accordingly the enclosure for conservation breeding of target species have been created. In this program, after the construction of the enclosures, effort will be made to capture the founder population from

wild. For initiation of breeding programme right founder will be identified, marked and analysed for their physical and genetic health. In these programme necessary assistance from the experts of WII, Dehradun, IVRI, Izatnagar and laboratory of Conservation of Endangered species, Hyderabad and other institutuions will be sought.

The Chhatbir zoo has also been identified as a participating zoo for the conservation breeding of Royal Bengal tigers. In this process, Chhatbir Zoo will also develop an off display conservation facility inside the zoo premise with necessary assistance from Central Zoo Authority and participate in the breeding activity by maintaining different genetic pool of the breeding stocks.

Water Harvesting System

Most of the water in the zoo gets percolated in the sub-soil layers as the soil is sandy and well-drained leaving hardly any scope for its harvesting. However, the water drained out of the ponds, moats and animal houses can be recycled and put to use for landscaping purposes. Therefore, a detailed project on water harvesting system will be prepared with the help of experts in the field and put forth for funding to an appropriate agency.

Incinerator

An oil fired incinerator has been installed with the help of the CZA for the disposal of dead animals in a way that does not involve firewood. There is however, some problem in the running of this incinerator due to low voltage supply at the zoo. The company engineer had informed that the incinerator for its operation requires 440 V electric supply but the supply at the zoo is 240 V that also sometimes falls below 200 because the electric supply at the zoo is on a rural feeder. This issue was discussed between the officers of PSEB and Punjab Forest Department at higher level and accordingly fresh request was made to the PSEB to upgrade the electricity load to 98 kw and to provide a separate Transformer near the Incinerator to maintain constant voltage power supply. **Alfatherm** Company has already given its estimate for the repair and

maintenance of Incinerator which has been sanctioned by the PCCF. Beside this a shed is also being fabricated over the Incinerator to protect it from wear and tear due sun and rain, the work for which has already been started and Incinerator will be made functional very soon.

Solid Waste Management

The solid waste is always of two kinds, biodegradable and non-degradable. The major source of bio-degradable source is the dung and faeces of the wild animals. The zoo has already found out a way to get rid of this kind of waste by setting up vermi-composting units which are at the distance of about two kms in the disposal area and no vermi-compost unit will be set up near the animal section. All such waste is being converted to vermi-compost in this unit and is being used for landscaping purposes in the zoo. The zoo aims to use this unit for production of vermi-compost on large scale and if need be the number of unit will be increased with latest facilities to upgrade the existing system of vermi composting.

All the left-over / bones are now being collected and taken daily to the disposal area which is about two km from the night houses of carnivores. Th animal waste of carnivores is daily and regularly disposed off by way of removal by buriel or burning. But once the Incinerator is mad functional, all the faeces and leftover of carnivores will be disposed off by burning in Incinerator only to the maximum possible extent.

Apart from the above, the bio-degradable waste also includes the waste that visitors sneak in the zoo. The personal vehicles are allowed inside the zoo and it is practically difficult to check each and every vehicle that enters the zoo, therefore, some visitors despite best efforts of zoo management are able bring in some plastics or polythene in the zoo. Since the zoo administration has already taken a decision to stop the personal vehicles from entering the zoo and started a battery operated vehicle service for the visitors, this problem will be sorted out to a great extent in future. Apart from the above, in

order to minimise the waste generated by the visiotrs, paper bags will be given free of cost to visitors replacing their poly bags at the gate itself. Number of dust bins will be increased at strategic location in the zoo for better waste management.

The zoo also aims to have a *state of the art* Sewerage System by creation of Sewerage Treatment Plant (STP). The existing sewerage network of the zoo will be relayed and expanded to cope up the problem of sewer disposal.

System of Animal Record Keeping

The present system of animal record keeping in the zoo is going to be changed to Animal Record Keping System (ARKS). The CZA has already paid for a five year subscription for the Chhatbir zoo. The zoo has already applied for a high speed internet connection that is a pre-requisite for using ARKS which is an online system.

Zoo Development Society

Presently the zoo is being administered by a Field Director who is supervised by a Conservator of Forests who in turn is supervised by the Chief Wildlife Warden, Punjab. In the matters related to the zoo, the Chief Wildlife Warden, Punjab is then answerable to the state government through Principal Chief Conservator of Forests or the Financial Commissioner, Forests and Wildlife, as the case may be. All the major decisions related to the zoo are taken by the movement of files through all these channels, these long channels sometimes cause delays simply because of the office procedures involved. Secondly, at the moment, there is no way by which the zoo may generate its funds through sponsorships or donations as the govt. rules do not permit this, Therefore, a society called the Punjab Zoos Development Society has been mooted in the shape of a trust under the direct supervision of the Hon'ble Minister of Forests and Wildlife keeping all these things in mind (Annexure 20).

Evaluation of Zoo by the Central Zoo Authority

Chhatbir, as the other zoos of India, is evaluated every three years by the CZA based on 51 points. The recognition to the zoo is extended on the basis of this evaluation by the experts. The latest evaluation report giving recognition to Chhatbir zoo till 2012 is attached as Annexure 21.

Chapter V

PERSONNEL PLANNING

The zoo presently has an approved cadre of 163 employees of various levels. The present administrative set up and approved staff strength is below the actual personnel required to meet the growing needs of the institution. To meet the future requirement of the zoo the overall personnel planning is given as below:

Name of the Post	Post Sanctioned	Post filled up	Proposed Post
Field Director IFS(Senior Duty posts.)	1	1	1
ACF	2	0	2
Senior Veterinary Officer (Zoo)	1	1	1
Veterinary Officer (Zoo)	0	0	1
Curator	0	0	1
Zoo Biologist	0	0	3
Zoo Education Officer	0	0	1
Education Assistant	0	0	4
Superintendent	1	1	1
Map Officer/ Draftsman	0	0	1
Senior Assistant	3	2	4
Clerk/Junior Assistant	7	5	8
Technical Assistant	2	0	2
Junior Engineer	1	1	1
Forest Ranger	4	1	4
Dy. Ranger	6	3	6
Forester	4	4	4
Forest Guard	10	10	10

Veterinary Compounder	3	1	3
Veterinary Attendant	3	2	6
PRO Forests and Wildlife	1	0	1
Drivers	6	3	6
Zoo Security Supervisor	2	0	2
Zoo Lab Technician	2	2	2
Head Cook	2	0	2
Cook	2	1	2
Multipurpose Workers	30	78	90
Peon	3	6	10
Zoo-Keeper	27	12	40
Head Zoo Keeper	4	0	4
Sanitary Inspector	2	1	2
Head Hygiene worker/Hygiene worker	23	9	50
Mahavat	4	1	4
Mechanic	7	2	7
Electrician	0	0	2
Plumber	0	0	2
Blacksmith	0	0	2
Carpenter	0	0	2
Steno Typist	0	01	2
P.A	0	0	1
	163	**148**	**297**

Chapter VI

DISASTER MANAGEMENT

Crisis or disaster in context of a zoo is referred to the following:

(i) When any animal life, vegetation or human life is endangered

(ii) When zoo property is susceptible to damage

The zoo holds more than 900 animals belonging to 85 different species of mammals, birds and , therefore, some kind of emergent circumstances are bound to happen very now and then. Majority of these may not qualify as disasters but these may require certain amount of preparedness. In the past, the zoo has experienced the incidences of animal escapes from enclosures/cages and therefore, the staff is well equipped to deal with the situation. However, it is suggested that some mock drills need to be conducted frequently in order to simulate the situations and thereby give the staff a feel of the situation so that they know what needs to be done in case of the actual situation at hand.

The emergent conditions like entry of stray dogs into enclosures; snake bite; jackal predation in safari; dog bite in deer enclosure; flood in river Ghaggar; strike by the workers' union; failure of food, water, electricity or water supply; agitation by staff; entry of stray monkeys and heat stroke etc. have often been witnessed by the zoo. Therefore, mock drills with these simulated situations shall be organized to sensitize the staff and refresh their memories and thereby improve their preparedness for the crises situations. In addition, mobile telephone numbers of fire brigade, ambulance service, nearest police station etc. shall be displayed prominently at various places in the zoo.

M.C. Zoological Park,Chhatbir is prone to the following disasters:

(i) Forest Fire

(ii) Flood by river Ghaggar

(iii) Animal Disease emergencies

3. (i) Forest Fire Management Plan:-

The threat of fire and explosion exists at every wooded place. Fire and explosion can be accidental (such as short circuit or by the accidental fire caused by a thrown cigarette by the Zoo visitor) and at times can be intentional (by the Zoo visitor/ anti-social elements). Following measures will be taken in the Zoo.

- The first person who spots a fire should activate the alarm system and contact the authorities.
- Zoo personnel should evacuate visitors.
- Small or isolated fires should be immediately extinguished.
- Fire lines should prepared near the animal enclosures.
- As a precautionary measure lopping of trees will be done at regular interval .
- Adequate supply of water for sprinkling on the animals and for dousing the fire should be made available.
- Ensure that the Fire Department has been informed.
- Notify persons of the need to evacuate, activate alarm system, etc.
- Shut down electricity lines or systems as necessary.
- Ensure that emergency medical care is provided to injured persons.
- Coordinate offsite medical assistance, ambulance calling/pick up etc.
- Notify key officials as necessary.

Equipment required for dealing with fire

Items Required	Essentially needed	Needed
Fire Tender	√	
Multi-purpose water sprinkling vehicle	√	
Rubber boots	√	
First aid kit	√	
Protective gloves	√	
Helmet	√	
Shovels	√	
Cages	√	
Fire proof dress	√	
Goggles	√	

3. (ii) Flood Management Plan:-

Chhatbir Zoo is very prone to the disaster like flood as river Ghaggar is flowing in the backyard of the zoo boundary wall and a patch of forest area. So the zoo administrators should have knowledge about historical information on the flood situation of the area. Following measures will be taken in the zoo.

- Information on drainage, geography and the quantum of rainfall received by the area that might lead to flood situation should be publically displayed.
- During floods the zoos should access drinking water only from reliable and clean sources.
- The water should be evaluated in order in order to eliminate risk of water-borne infection and poisoning.
- The zoos should have water quality field testing kits, which should be capable of testing residual chlorine and bacteriological quality of the water.

- Personal cleanliness of food handlers is very important.
- Contaminated and decaying food material should't be given to the animals.
- Develop some highland areas in those enclosures which have a history of Inundation.
- Zoo Should have a rapid response team equipped with required equipments.

Equipment required for dealing with flood

Items Required	**Essentially needed**	**Needed**
Flashlight/ Torch lights and spare batteries	√	
Residual chlorine/chlorine tablets and PH testing equipment	√	
Rubber boots	√	
First aid kit	√	
Protective gloves	√	
Helmet	√	
Shovels	√	
Water quality field testing kits		
Sand bags	√	
Construction and repair material like Cement, Iron rods, sand etc	√	

Critical Decisions to be made in a Flood Situation:-

Indicator	Decision
Water Supply	
1. Total interruption of the normal system source	Establish alternative water
2. Poor Water Quality at source	Initiate chlorination
3. Poor drinking water quality chlorination/boiling	Recommend
Sewage Disposal	
Total interruption of the normal System/interruption	Provide alternative methods of sewage disposal
Solid Waste Disposal	
Inadequate collection /removal and Dumping site	Obtain equipment for a) Debris removal b) Reconditioning of dump& c) Garbage collection
Food Hygiene	
Frequent inspections	Provide additional personnel for food hygiene inspections.
Corpses	
Large number of corpses	Initiate mass burials
Mosquitoes	
Increase in vector population and Breeding sites	Initiate Spraying and larval control

Determination of the biological Life cycle.	Select best spraying time and larvicide Application.
Sensitivity of mosquitoes,	Select appropriate insecticide

Other Pests

Increase in number of poisonous snakes	Stock the snake venom serum

3 (iii) Animal Disease emergencies Management Plan:-

The captive animals of the zoos are vulnerable to a number of diseases of viral, bacterial and mycoplasmic origin. Some of these diseases are dreadfull and their amongst the captive populations of the zoo may have disastrous consequences, like:-

- Serious losses to the zoo by the way of loss of valuable genetic materials
- Increased concerns of animal diseases transmitting to humans(i.e. zoonotic)

Following measures will be taken in the zoo to counter these kind of disastes.

- Disease surveillance both active and passive should be an integral component of the zoo
- Occurrence of particular disease and its potential consequences will be identified and evaluated.
- Assess the seriousness of the threat of each disease.
- Determining the life threatening diseases for which there is a greatest need and urgency.
- Removing potentially contaminated materials by disinfection, destruction and/or safe disposal.

- Care must be routinely exercised to ensure all food(living or dead) brought to the zoo.
- An effective pest-management program should be implemented and maintained.
- Appropriate and speedy disposal of biological wastes, carcasses, animal products, material, etc. will help in preventing the diffusion of infection within the zoo.

Training for disaster preparedness and mitigation , Line of command

A team will be constituted to train and enable its members for disaster preparedness and mitigation . Team members will be sent to the training at NIDM (National Institute Of Disaster Management) Delhi. A well defined line of command will be followed in the disaster management at the level of chief wild life warden and field director zoo an it is proposed as under.

Coordination at the State Level :

Chief Wild Life Warden

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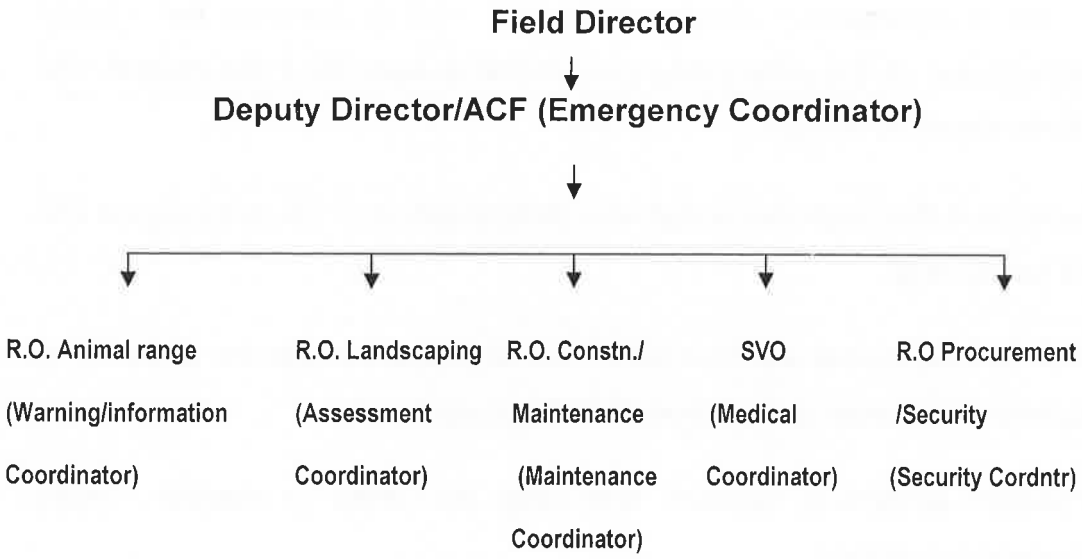
Field director	Govt. through O/o PCCF	DC/SSP	Other Deptt. (Drainage, fire, Public Health, CMO etc.)

Coordination and members of the team at the zoo level:



(A) In-charge/ Director of the Zoo

The role of in-charge/Field Director of the Zoo is vital before and during exigencies. He will be the one who is responsible for imparting training to people in the different protective actions before actual emergency occurs. He has to make decisions on protective actions, operations and expenditures. He will have to receive information and recommendations from the emergency coordinators and take appropriate decisions

The in-charge/ Field Director's primary responsibilities are :

- Getting the plan prepared and approving it
- Identifying the people and assigning tasks to them.
- Deciding and implementing protective actions so that the consequences of the disaster are minimized.
- Allowing the use of internal resources of the zoo whenever it is required to do so and arranging necessary logistics .
- Arranging the finances for implementing the plan .

(B) Emergency Coordinator (Dy. Director/ ACF/Wild life warden)

The role of emergency coordinator is very vital in ensuring the smooth implementation of the emergency preparedness plan, for it the person who has been identified should

- possess a thorough knowledge and understanding of the zoo's layout and its functioning.
- Hold a responsible position within the organization with an authority to summon resources and personnel during exigencies.
- Possess leadership qualities and have the ability to operate under stressful conditions.

The main responsibilities of the emergency coordinator are:

- Maintaining a current disaster management plan and testing it on regular basis.
- Ensuring that all members of different teams are well-trained in dealing with exigencies.
- Coordinating the functioning of different teams that are involved in crisis management.
- Notifying local authorities of an emergency or disaster situation.
- Ensuring that vital records are identified and protected.
- Making arrangements for logistics, emergency housing and feeding for personnel involved in emergency operations.
- Making provisions for food and water requirements of Zoo animals.
- Organizing and maintaining control room with adequate communication facilities.

- Implementing decisions and directives from the In charge of the zoo/Director.

(C) Unit Coordinator(s) (Range Forest officers / Wild life Inspectors)

The zoological park is divided into four ranges (sections) for administrative convenience in dealing with the exigencies.

The persons in charge of this Range will act as the unit coordinators and they will be responsible for:

- Participating in the plan review meetings and giving their inputs.
- Training the people working under them.
- Conducting mock drills.
- Taking in protective actions within their jurisdiction before an actual emergency occurs.
- Identifying and ensuring protection of vital things under their jurisdiction.
- Mobilizing resources and personnel.
- Ensuring that stranded zoo visitors are taken safely to the designated shelter/ evacuation areas.
- Ensuring that the electricity points are shut down during emergencies.
- Helping in the proper movement of people and vehicles conditions.

(D) Warning/ Information Coordinator (RO /Forester animal Range / security range)

Whenever a disaster occurs with in the zoological park the first and foremost thing to be done is intimating different coordinators of the zoo about the occurrence of disaster (can be done-through blustering of an alarm/ making public announcements/ wireless messages/ cell phones etc), communicating

about the disaster with the local authorities like police/ fire departments and providing information about the disaster to the print and electronic media, etc.

Warning/ Information Coordinator's Primary responsibilities are :

- Ensuring that protective actions are publicized for all employees.
- Participating in emergency plan review meetings.
- Training the people working under them.
- Establishing a media centre and making arrangements for logging the messages.
- Maintaining communication equipment like wireless sets, fax machines, telephone lines etc.
- Receiving and disseminating information about the disaster.
- Communicating with the local police/fire departments for assistance.
- Requesting the district administration for vehicles/ personnel.
- Preparing press notes after consulting assessment coordinator and submitting them to the officer in charge of the zoo for press release.
- Conducting media tours whenever possible.

The information coordinator is responsible for developing news releases, answering media questions, ensuring that protective actions are publicized for all employees, etc. He should be comfortable working with the media and have a clear understanding of management's priorities.

(E) Assessment Coordinator (Range Forest Officer Land scaping)

Assessing of the extent of losses due to disaster is very important for sharing the information with Government, departmental officers, local authorities,

press etc. For it every zoological park must have a mechanism for collecting and verifying information about the disaster.

The information thus collected can be used for :

- Preparing press releases.
- Evaluating response efforts and preparedness of the zoo personnel in dealing with disasters.
- Assessing further training needs of the personnel.
- Knowing about the lacunaes in the plan prepared.
- Improved future crisis management efforts etc.

Assessment Coordinator's Primary responsibilities are :

- Participating in emergency plan review meetings.
- Training the people working under him.
- Collecting and compiling information on disaster situation.
- Maintaining a written record of all events that occur including actions taken, decisions made and by whom, personnel involved, costs incurred etc.
- Reporting verified damage information to the officer in charge of the zoo.
- Assisting with the preparation of reports like after-action report.

Assessment Coordinator for the Zoo can be Forest range officer and he can be assisted by L.D.C and an orderly.

(F) Maintenance Coordinator (Range Officer construction and Maintenance range)

Crisis deepens when the men are ready but not the materials and mechanical systems, hence the maintenance of these systems is very important.

The maintenance coordinator will be responsible for smooth functioning of all mechanical and utility systems of the zoo and in shutting down of the electrical systems during exigencies. He will also be responsible for maintaining adequate spares, removing of fallen trees, debris etc and in erecting of barricades etc.

Maintenance Coordinator's Primary responsibilities are :

- Participating in emergency plan review meetings.
- Proper maintenance of cages, squeeze cages, fire extinguishers, tube wells, electrical supply points, Tractor, Trolleys, welding machines, earth moving equipment, shovels, axes, cutters, blades, ropes, ladders and spare parts of

  different mechanical devices etc.
- Training the people working under them.
- Putting up ofbarricades for the control of traffic.
- Getting the fallen trees, poles, debris of the buildings etc cleared off.
- Inspecting the damaged areas with his team and giving recommendations for entry/ reuse etc.

(G) Medical Coordinator (Senior Veterinary Officer)

The medical coordinator is responsible for providing immediate care to Injured persons/ injured Zoo animals, as well as the collecting and compiling of health and medical-related disaster information.

Emergency Medical Coordinator's Primary responsibilities are :

- Participating in site emergency plan review meetings.
- Ensuring that emergency medical care/ first aid is provided to injured persons and animals.
- Maintaining adequate quantities of medicines.
- Collecting and compiling health/medical disaster information for the Assessment Coordinator.
- Coordinating ambulance calling and pick-up, medical assistance etc..
- ***SVO will coordinate with the SMO Derabassi and local health services at village Chhat for the treatment of injured/affected persons.***

(H) Security Coordinator (Security Incharge)

He will be responsible for coordinating safe removal of stranded people,

Controlling the movement of vehicles, checking the unauthorized entry of people, catching/ caging/netting / tranquilizing of animals that have escaped their houses as early as possible.

Chapter VII

CONTINGENCY PLAN

(1) Animals Rescued From Wild

Chhatbir zoo being the largest captive facility in the entire north India is an obvious choice for housing the rescued animals not only from the state of Punjab but also the neighbouring states of Haryana and Himachal Pradesh. Rescued animals especially during the winters include herbivores like Sambar and hog deer, carnivores like leopard and birds like eagles, kites and owls. But there are no facilities for keeping such animals in the zoo. Keeping this in mind a Composite Rescue and Rehabilitation Centre has been planned at the zoo and the CZA has agreed in principle to support such a facility during the conceptual plan discussions. Till the time a full fledged facility is created, following things should be kept in mind while dealing with the rescued wild animals and birds:

- Identify suitable enclosure where rescued animal is to be kept under quarantine for a minimum period of 21 days.
- Rescued animal needs to be thoroughly examined by the veterinarian for any injuries or wound and the treatment should be given accordingly.
- Avoid undue stress to the rescued animal by limiting the access to only minimum requisite staff.
- Proper feeding and drinking water arrangements need to be done as are done for a normal zoo animal if there are no special feed prescribed by the veterinarian.
- Health status should be monitored regularly.
- Rescued wild animal after being declared fit by the veterinarian should be released in the wild as soon as possible.

(2) Escape of Animals from Enclosures

Escape of animals from enclosures is much more frequent and rampant than it is thought to be. Therefore, this is an issue that needs to be addressed properly instead of being brushed under the carpet. Therefore, some of the important points that need to be considered are the following:

- Get all the zoo gates and other openings sealed and put some experienced staff to control the visitors.
- Identify and prepare a team of alert and active staff members who can properly handle the escaped animal. Those who have handled such exigencies in the past should be given preference.
- Identify the likely places around the enclosure of the escaped animal where it may be expected to hide. Prepare a fool proof plan to locate the escaped animal on the spot before launching the search operations.
- Do not excessively chase the animal if it is not escaping out of the zoo and allow it to calm down. Unnecessary chasing of animal may result in injury either to the animal or to a human being.
- Encircle the animal from all sides and try to drive the animal towards its enclosure slowly.
- Escaped animal may not find the feed/fodder of its choice or the one it is habituated to eat, so putting such feed/fodder in its enclosure and waiting for it to arrive may also be a good strategy sometimes.
- Separate teams should be constituted for the use of tranquilizing gun or a net in case the need be.

(3) Monkey and Dog Menace

- The best way to avoid monkey and dog menace is the proper disposal of left over feed items and animal kitchen wastage. In no case such things should be allowed to be thrown around the zoo area, incineration is the best way to get rid of such materials.

- A regular vigil on the monkeys and liaison with the nearest municipality for catching dogs may also help.

(4) Arrangement of Food in Case of Strike

Chhatbir zoo keeps adequate stock of dry ration in its feed store (sufficient for one month) and the green fodder is also grown on its own fodder farm. Chhatbir zoo is strategically located close to the states of Punjab, Haryana, Himachal Pradesh and U.T, Chandigarh. Therefore, in case of strike in one state local purchase can be done from the other state. In case of disruption in the supply of buffalo meat from Saharanpur, local purchase of chicken can be done from a number of poultry farms available near barwala area on very competitive rates. In the year 2007-08, when the suppliers of Saharanpur refused to supply meat, purchases were made for almost one month from there before arrangements were made to purchase buffalo meat from Delhi markets.

(5) Snake Bite

The zoo forest is full of venomous snakes like cobra and viper and some non-venomous but dangerous snakes like rat snake. Therefore, there is a need for preparedness against this threat. Following points need to be kept in mind in case of a snake bite:

- Immediately apply a tight tourniquet around the bitten area so that blood supply from that side is curtailed.

- Wash the bite wound in fresh running water for 3-5minutes, thereafter wash the wound in the carbolic soap and fresh water.
- Do not create panic around the patient. 90% of snakes are non venomous but the patients often die of a heart attack instead of the snake bite.
- Make the patient lie down on a soft bed. Do not move the patient excessively. An anti-venom injection should be given under medical supervision.
- Outline the history of past incidences and identify the places which are more vulnerable. Keep emergency kits along-with anti-venom ready near such points.

(6) Visitors Getting Injured/Visitors Falling Inside Enclosure

- In case of a visitor falling in an enclosure where animal is released, the first effort should be to restrain the animal especially if it is a carnivore so that the two do not confront each other. Some kind of inducement such as the favourite feed item of the animal if available can be of great help. In one of the incidents in Chhatbir, a man fell in the open moated enclosure of tiger but was fortunate enough to survive as it was feeding time for the tiger and the smell of buffalo meat from the back of the house was more tempting than the fallen visitor.
- The visitor after being rescued should be given First-Aid, the wounds if any should be washed with tincture/ suitable spray and bandaged before being referred to a doctor.
- Incase of bleeding or swelling ice packs should be applied to stop bleeding and provide relief from pain.
- In case of fall on iron grill etc. anti-tetanus injection is a must but it may be given after the visitor has been referred to the hospital.

- After giving First-Aid, the visitor should be referred to the nearest Hospital for a proper treatment.

(7) Fighting among animals

In case of animal infighting the line of action will be as follows:

a. <u>Reporting of animal management range</u>

- Zoo-keeper to maintain strict vigil and observation of all the animals under his area of duty
- Any abnormal posture/ behaviour/ discharge from natural orifices/ any cuts, injury, bite or hit marks to be reported immediately.

b. <u>Shifting plan of injured animal(s)</u>

- If possible, drive the animal to the squeeze cage
- If not, either restraint the animal with net or ropes; if all methods fail or appear non-practical, go for chemical immobilization with all possible do's and don'ts
- final approach is to present the animal to the vet for the possible care & treatment.

c. <u>Treatment protocol of the vet</u>

- Thorough examination of the animal physically for any bite/injury/cut/hit marks & any abnormal discharges from the natural orifices
- Clinical examination of blood, if required
- Go for x-rays or other interventions as per the case & conditions
- local and parentral treatment schedule to be followed as per the case/ condition

d. Management practices to be adopted

Animal management range officials to provide all the necessary infra-structure for the comfortable cage, special arrangements for heat & light as per the requirement, special feed and extra nutrition as per the veterinary guidelines.

e. Possible etiologies of infighting

- Poor management practices
- Over-crowding
- Feeding/ nutrition insufficiency
- Breeding season
- In-appropriate sex ratio
- In-house addition of any stray/ wild captured non-compatible animal
- Fear/ phobia of predation
- Fear/ sighting of any external intruders/ shock/ stress of any nature

(8) Epidemics

Regular prophylaxis with adequate control and effective preventive measures, the epidemics can be minimised/ avoided. However, in case of epidemic of any nature, may be either infectious or toxicosis, the line of action will be as follows:

- Immediately separate the apparently healthy animal stock from the affected animals
- try to find out the basic cause or the source of affection, may be either the feed/ water/ any external toxins, etc. & remove them from the site

- Go for the symptomatic treatment at once & try to find out the basic etiology to plan the next line of action
- Suitable samples relating the symptoms to be collected as per the recommended veterinary protocol and get them analysed from the concerned institutes for the diagnosis of the etiology of the epidemic
- Technical help from the specialists of gadvasu, ludhiana; ivri, barielly and/ or wii, dehradun as & when required
- Save the affected ones and plan the strategies to prevent the onset of symptoms in the apparently healthy animals & follow the prophylactic measures as per the conditions
- Needful is being done with the possible help from all the ranges of the zoo management

(9) Breakdown of Power supply

Chhatbir zoo is located in a rural area away from the city. Although the zoo is connected with the hot-line power supply, but there is a problem of power failure during storms, heavy rainfalls, extreme summer and extreme winter season. During the break down of power supply, zoo faces problem in operation of basic facilities apart from water supply interruption. To cope up the problem of breakdown of power supply, zoo intends to install a high capacity Genset to make it power sufficient during power supply breakdowns. As the zoo is located in the natural forest area with good numbers of large trees which keeps on interrupting power supply during storms due to breakage of overhead wires. So, in future regular thinning operations will be carried out as per the requirement.

(10) Free Ranging animals/Feral animals menace

Chhatbir is located in a natural habitat of about 200 hectare area which is a house of many free ranging animals like Sambar, Blue bull, Jackal, Porcupine,

snakes, monitor lizards and other reptiles and birds. The birds and other small wildlife creatures can co-exist with the visitor's in the zoo surrounding without posing any threat and do not create any managemental problem to zoo management. But the big mammals like sambars, blue bull etc can pose a threat to the visitors and children in the zoo. To cope-up this problem in future, the vegetation plan of the zoo (sheet No. 17) will be helpful in a way that primary and secondary loop will be fenced with natural thick hedges which will act like a barricade to these mammals. The hedges and park will be further fenced with jali or other local material like hard bamboo railing and Jeffery etc. to ensure the minimum entry of the free ranging animals in to the primary, secondary loops and visitor's lawns of the zoo. After the extension of safaris, all the free ranging sambar and blue bull will be shifted to herbivores safari. Jackal and porcupine are mostly nocturnal therefor these species are not a big threat for the visitors.

Chapter - VIII

CAPACITY BUILDING PLAN TO UPGRADE SKILLS OF ZOO STAFF AND INTERACTION WITH OTHER ZOOS

Capacity building of the zoo personnel is an integral and vital aspect of zoo management as it ensures enhancement of technical abilities of the zoo staff. With the changing times and recent trends in the field of captive animal management across the globe, it is the need of the hour to upgrade the knowledge and technical abilities of the staff at all levels, starting from zoo keepers to zoo In-charge.

Most of the zoo staff is posted in the zoo for a long time and over time have built a capacity to deal with the animals and animal management directly or indirectly. It is therefore suggested that only those employees who are willing to move out should only be transferred and unnecessary shifting of staff should be avoided. Every year two zoo keepers/ employees are sent for zoo keeper's training at various zoos. Zoo keepers are also trained in-house at the Chhatbir zoo whenever a zoo keeper's training program takes place, apart from other skill up gradation programs for the zoo personnel. However, there is a need for a systematic capacity building plan to be chalked out and adhered to. The CZA however, keeps conducting workshops and conferences for the zoo veterinarians, middle level supervisory officers and Directors from time to time. As a policy, officials trained in wildlife management may be placed as in-charge of animal management in the zoo. In addition to the zoo staff, it is also proposed that the unemployed local youth of the neighboring villages shall also be trained as the zoo guides under the rural tourism and eco-tourism projects.

The future action plan for capacity building of the staff is given in the table below:

a. ***Theme based training programs***:

Field/Subject	Theme/Target Group	Activity and Planning
Zoo-Keeping	Zoo Keeper's Training Course	C.Z.A. regularly conducts zoo-keeper's training course for 2 to 3 weeks on regional basis at different zoos. Chhatbir zoo regularly sent its keeper and other staff for the training. In future Chhatbir zoo will ensure that its keeper and other staff regularly participate in such trainings as per schedule.
Animals Upkeep	Reptiles	Plan is to conduct in-house reptiles hands-on training workshop on annual basis for 3 to 5 days to cope-up with the husbandry aspect of reptiles for the staff and officials of Chhatbir zoo. The experts from reputed institutes/NGO/individuals will be called like WII. Dehradun, MCBT Chennai, TSA, CEE ahmedabad etc. The Tentative cost estimates will be included in the A.P.Os of the zoo for submission in different schemes and agencies like CZA, PUNCAMPA, STATE NON-PLAN AND PLAN SCHEMES etc.
Animals Upkeep	Birds	Plan is to conduct in-house Birds hands-on training workshop at annual basis for 3 to 5 days to cope-up the husbandry and breeding aspect of Birds for the staff and officials of Chhatbir zoo. The experts from reputed institutes/NGO/individuals will be called like WII, BNHS, USFW, UNIVERSITIES etc. The tentative cost estimates will be included in the A.P.Os of the zoo for submission in different schemes and agencies like CZA, PUNCAMPA,

		STATE NON-PLAN AND PLAN SCHEMES etc.
Animals Upkeep	Zoo Biologist	C.Z.A conducts zoo-biologists training workshop on a particular subject and theme at every alternate year for 4 to 6 days at National level. Chhatbir zoo is regularly participating in these workshops. Chhatbir zoo will regularly participate in the zoo-biologists training workshop as per given schedule in future.
Animals Upkeep	Enrichment	Wildlife Institute of India, Dehradun and C.Z.A., New Delhi are collectively doing many research works in the field of enrichment for improving the animal's up keep in captivity. There is a small team of ground level workers at Chhatbir zoo which is creating environmental enrichment structures in the enclosures of animals. Chhatbir zoo will conduct exposure visit of staff and official to other zoo's including foreign Zoos to improvise the animal enrichment in the zoo. The staff will be sent to the W.I.I and other institutions for getting necessary inputs about this aspect in future.
Zoo Education	Zoo Education Officer	C.Z.A conducts zoo-education officer's training workshop on at every alternative year for 4 to 6 days at National level. Chhatbir zoo is regularly participating in these workshops. Chhatbir zoo will regular participate in the zoo-education officer's training workshop as per given schedule in future.
Zoo Education	Zoo Guide	Zoo guide is a backbone of the awareness programs of the zoo. The plan is to engage zoo guides for the visitors for guided tours and individual

		visitor basis. In-house training workshop will be organized for training of the zoo guides or naturalists. The help of WII, CEE, JLR and other institutes and agencies will taken in this regard.
Zoo Education	Zoo Volunteers	Zoo volunteers are the best recourse for improving zoo atmosphere and improving the quality works in the zoo because zoo volunteers comes in the zoo as a devotee towards wildlife and nature conservation. Chhatbir zoo gets some volunteers on regular basis for conducting various nature awareness related activities mostly from nearby areas. The plan is to conduct a in-house permanent short training course cum oath ceremony workshop to trained volunteers for 1 to 2 days on quarterly basis or as per requirement according to the availability of volunteers in a year. In future these trained volunteers will be involved in various nature education related works apart from other core activities of the zoo based on their competencies. The training facility services will be hired from different institutes and within the Department to fulfill this purpose.
Zoo Education	Vandalism	Vandalism is a serious and omnipresent problem at every public premises of the world. Only the guards and some watch and ward staff is handling the vandalism in the zoos mostly. The plan is to educate and motivate whole staff of zoo like cleaning staff, gardeners, multipurpose workers and other zoo staff who can guide the visitor about some basic fundamental manner's of the zoo apart

		from doing their routine jobs. The experts and motivators will be called for this purpose and motivation sessions and orientation sessions of the staff will be conducted during zoo off-days like Mondays and the zoo holidays. These kinds of session will be conducted twice a year in future.
Landscape	Gardening	Landscaping is one of the most important aspect of public premises. If the landscaping is good or catchy everybody appreciate the place. The Chhatbir zoo is a natural Forest Coverage area at the Ghaggar river's edge. Management has improved it's few areas as a beautiful landscape gardens. The plan is to conduct a exposure visit of staff's to the well known gardens of the country like botanical garden Ooty, Vrindavan garden Mysoore etc. and also some ground level staff will be sent for training at suitable institutes for special hedge creations and other horticultural activities.
Landscape	Butterfly Park	Pollination is a very important ecological activity of the nature. The Chhatbir zoo is situated in a natural and old Forest area. Many species of pollinator's are residing locally. The plan is to conduct a in house work-shop to understand the basic idea of pollination and their relation with the vegetation. The entomologist will be called to educate the ground level staff and officials. These kind of small work-shop or orientation sessions will be conducted as the day celebration kind of activities in future, like

		World habitat day or World earth day etc. it will help to improve the butterfly park of the zoo. The selection of host plants will be finalized with the help of these kinds of orientation sessions.
Conservation	Research	Chhatbir zoo is a coordinating zoo for the conservation breeding programme of falcons and participating zoo for the conservation breeding programme for Bengal Tigers. In future Chhatbir zoo will explore the possibility of engaging traditional falconer with its ambitious project .The Scientist from W.I.I, B.N.H.S and department of other states will be engaged in these projects. Also S.R.F, J.R.F and other re-search scholars will be engaged in these projects in future. The zoo will depute its regular staff and officials with these scientists, traditional falconers and research scholars to improve their skills and knowledge with the help of this the zoo workers and officials will learn to work and plan their activities more scientifically in future. The zoo will also undertake subject based research projects in collaboration with other reputed institutions viz., subject related to animal health and behavior by allowing students to carry research for their PhDs which will also be helpful for the zoo management in generating its database on many vital aspects of animal management.

b. Library

A library with wildlife books, manuals, journals and magazines along-with facilities of seating and reading is required as a tool for better zoo

management. Chhatbir Zoo at present has a small library in veterinary hospital but it is merely a random collection of books lying in racks.

c. Training Institute

There is a proposal to set up a training institute with hostel facility for wildlife studies where the staff of the wildlife wing of the state shall be trained. The training programs supported by the CZA shall also be conducted there.

Chapter – IX

E-GOVERNANCE

The zoo is an integral part of the Department of Forests and Wildlife Preservation, Punjab. The State Forests and Wildlife Preservation Department has e-governance plans for all of its units including the e-governance component at the zoo. The zoo is located outside the city limits, in the vicinity of a village named Chhat. The has a internet connection which is very shortly being upgraded to a high speed internet connection so that the ARKS (Animal Record Keeping System) can be fully utilized for an efficient and better management of the zoo. The CZA has already paid the subscription for the software of ISIS for next five years on behalf of the zoo. A variety of data could be generated by this system by a click of the mouse and that will give a tool to zoo director for a scientific and better wildlife management

The brief State's E-Gov. plan is as given below and the Zoo is mentioned at the S. No. 13 of the table of main e-governance plan.

INFORMATION AND COMMUNICATION TECHNOLOGIES

It has increasingly been felt that the forestry sector in the State of Punjab, impacted by the course of events in other sectors and the pressure of development and high economic growth, cannot continue to do forest management in traditional ways anymore. DFWP is today at a crossroads in terms of meeting the twin goals of conservation and development. This demands that a multiplicity of factors and dimensions be considered in strategic, tactical and operational decision-making. There is thus a premium on the Enhancement and usage of Information and Communication Technologies (ICT) towards better management and conservation of the forest and wildlife resources of the state, besides bringing about better levels

of internal efficiencies and effectiveness in the working of the Punjab Forest Department.

THE E-GOVERNANCE INITIATIVE OF THE PUNJAB FOREST DEPARTMENT

Through this assignment, the DFWP has embarked on an ambitious initiative that is aimed at (a) bringing about better levels of internal efficiencies and effectiveness in the working of the department, including the ability to take decisions in a multi-dimensional environment, (b) extending better citizen centric services to the customer, (c) making appropriate and effective use of ICT to take well-informed forest management decisions, and (d) use the modern-day channels of communication to bring about better levels of awareness, in particular, and sensitization to conservation issues in general.

E-GOVERNANCE VISION

Aligned with the mandate of the e-Governance initiative of the department, the following is conceptualized as the Vision for the Department of Forests and Wildlife Preservation, Government of Punjab in so far as the e-Government effort is concerned:

"Better Management of Forests and Wildlife Resources by bringing about Highest Levels of Internal Efficiency, Service Delivery Effectiveness, and Collaboration among various stakeholders using the Information and Communication Technologies."

In order to achieve the e-Governance Vision of the department, the following key interventions have been identified:

PROCESS INTERVENTIONS

The process interventions would include all efforts towards standardization and improvement of internal processes of the department to achieve highest levels of efficiency in the internal processes and effectiveness in service

delivery. Some of the key process interventions recommended as part of the assignment are as below:

SN	Functional Area	Key Process Intervention
1.	Working Plan Preparation	o System alert 2 years before expiry of WP ensuring timely initiation of preparation of working plan. o Usage of GIS technologies in preparation of Working Plan will help in devising effective forest resource management strategies.
2.	Plantation Management	o GIS based identification of afforestation area and plantation species. o Maintaining a library of rate of items for estimate preparation. o System alert to DFO/CF in case of delay in payment to labour.
3.	Forest Protection	o Setting up of Control Room at Head Office which would act as single point of contact for information about all forest protection and fire related incidences in the state. o Identification of forest fires in the state by processing NRSA images in the GIS system and auto SMS/E-mail alert to fire control station/ guard/DFO/ CF along with the location of fire o Identification of encroachment area using GIS (change analysis techniques) and maintenance of GIS database with encroachers' details and publishing on department website
4.	Forest Diversion	o Provision of online submission of forest diversion application as well as hard copy submission at nearest forest office. o Generation of unique application reference number for online status tracking.

		o Use of electronic copy of diversion file for internal purpose. o Online payment of fee.
5.	Forest Industries Management	o Provision of cnline submission of forest diversion application as well as hard copy submission at nearest forest office. o Generation of unique application reference number for online status tracking. o Online payment of license fee.
6.	Forest Extension & Awareness	o SMS/e-mails alerts, e-pamphlets, downloadable wall papers etc. to interested citizens to generate awareness on forest and wildlife conservation will be made available on website. o School and college student attachment for internships
7.	Nursery Management	o Information on inventory of plants to be available for public use on the department portal and facility to book and pay online for nursery plants. o Estimation preparation for nursery plantation using previous year's estimate, actual spending and requirements, existing stock etc. and system maintained library of rate of items.
8.	Forest Production	o Standing trees and timber auction schedule to be maintained in the department portal along with photographs of trees/ stacks and other details o Maintaining Form-1 in the system and auto generation of remaining Forms (Form 2- Form 16) o Online collection of EMD and bidding amount for auction. o Online application submission for permission of resin blazing/ tree felling and payment of processing fees.
9.	Forest Research &	o Online submission and status tracking of research proposals by the research institutions/universities.

	Development	o Online submission of research project progress report by the research institute.
10.	Growing Stock Estimation	o GIS based growing stock estimation for block forests with flexibility to DFO to define own set of parameters to prepare stock polygons. o Growing stock estimation for strip forests using incremental changes in the growing stock of sample strips.
11.	Eco-Tourism Management & Development Process	o Online booking of eco-tourism spots. o Work flow based approval of eco-tourism projects. Convenience to citizens and tourists. o Status tracking of projects using online tools and unique reference number.
12.	Wildlife Management	o System alert 2 years before expiry of WP ensuring timely initiation of preparation of working plan. o Provision of online submission of wildlife compensation claim as well as hard copy submission at nearest forest office. o Forest control room to act as single point of contact for report wild animal rescue cases. o SMS/ E-Mail alerts to nearest officer/ guard/ DFO etc. for wildlife rescue.
13.	Zoological Parks Management	o Maintenance of zoo animal database with details of their history, specie, behavior, stud book etc. o E-Mail/ SMS alert to veterinary wing if any animal is not well. o Online booking and payment for zoo tickets o E-Mail/SMS alerts to building and maintenance range in case of any emergency/disaster or incident in zoo.
14	Forest	o Online preparation and submission of Microplan for JFM by

.	Community Development	the forest communities. o Workflow based approval of microplan and sanction of funding.
15.	Projects and Schemes Management	o Preparation of project proposal using GIS data to determine the proposed plantation and other works in the state. o Workshop with DFOs and other concerned officers to discuss proposal and incorporation of their suggestions before submitting it for approval. o Online preparation and submission of fund utilization reports by divisions which can be cross-verified using available GIS data.
16.	Monitoring and Evaluation	o Online preparation of monitoring and evaluation visit schedule and intimation to concerned DFO. o Maintenance of plantation grades determined by M&E on the GIS database for better monitoring and control.
17.	Forest Case Management	o On the spot preparation of Damage Report using hand-held devices/ GPS and parallel reporting to higher-ups. o Maintenance of GIS database of forest offences along with photos and addresses of offenders.
18.	Human Resource Development	o Provision of applying online through the department portal for appointments. o Maintenance of one comprehensive personnel database of employees with all their details including postings, ACRs, trainings, leaves records etc. o Online leave application by the employees and work flow based leave sanction. o Online filing up of Self Assessment Form by the employee and workflow based review and acceptance.
19	Financial	o Online preparation of pay-slip of employees using the

.	Management	payroll database and online declaration of tax saving plans by employees. o Electronic transfer of employees' salary to their accounts.
20.	Forest Budget Management Process.	o Online preparation of plan and non-plan budgets for the department. o Workflow based review and approval of the budget.
21.	Inventory and assets management	o E-tendering for procurement of store items. o System alerts whenever any item reaches critical inventory level.
22.	Support Functions	o Workflow based processing of RTI queries.

TECHNOLOGY INTERVENTIONS

The key technology interventions recommended as part of the e-Governance implementation plan are as below:

- **Forest Management Information System (FMIS)**: In order to cater to the Information and Services needs of the department stakeholders (internal as well as external) an integrated Forest Management Information System (FMIS) is recommended which would be seamlessly integrated with Geographical Information System (GIS) and other support applications. Broadly, it will have following three sub-systems:

  - DFWP Portal: DFWP Portal would be the single window for all the stakeholders of the department to avail various information and services online. In the backend, it would integrate with various applications (FMIS, GIS, DMS etc.) and provide required services to the users.

- Core Forest and Wildlife Management System: This sub-system will consist of modules, which deal strictly with the technical aspects of forest and wildlife management in the state.

- Support General Administration System: This sub-system would constitute of modules which are very generic in nature and may not be very specific to forest/wildlife aspects at all. As such, the functionality of these modules would be required to be performed by any other department of the state too.

- **Geographical Information System (GIS)**: GIS would be an integral part of the proposed system for Punjab Forest Department and will interface seamlessly with FMIS modules. Some of the key layers to be built as part of the GIS database are Forest types, Forest boundaries, Wildlife sanctuaries, DFWP Establishments, Communication Network, Hydrography, Villages and forest communities, Topographic features, Important Landmarks, Site quality, Plantation sites, Soil type, Fire Points, Encroachment, Nurseries and Research plots, Department Boundaries Management areas and working circles, Compartments etc.

- **Network And Infrastructure**: The recommended IT Systems will be deployed at a centralized application environment at the centrally managed Data Center. Various offices of the department will connect to the data center using a Wide Area Network (WAN) to access the centralized applications and will have Local Area Network (LAN) for internal connectivity.

LEGAL INTERVENTIONS

Following key legal changes have been identified for effective implementation of e-Governance in the department:

- Recognition to E-mail communications

- At par treatment of online applications

- Authorization of application status as shown on department portal
- Recognition to mobile alerts and updates

INSTITUTIONAL INTERVENTIONS

A comprehensive institutional structure has been proposed for overall implementation and monitoring of the e-governance initiatives. Various units proposed as part of institutional structure are as below:

- E-Governance Steering Committee to oversee overall progress of the project;
- E-Governance Nodal Officer for planning and monitoring the overall e-Governance implementation in the department;
- Project Implementation Unit (PIU) for coordination with all the stakeholders involved and for ensuring timely implementation of proposed e-Governance initiatives; and
- Core Functional Unit (CFU) to provide inputs on the functional aspect of the proposed system.

COMMUNICATION INTERVENTIONS

Various internal and external communication requirements for e-Governance implementation have been identified. These will help achieving following objectives:

- Creating awareness about the importance and benefits of e-governance
- Mitigating any negative perception that the stakeholders might have
- Improve the overall visibility of the initiative.

CAPACITY BUILDING INTERVENTIONS

Various capacity building measures have been recommended to enhance the IT skills of the department officials. Broadly these can be categorized as follows:

- Basic ICT Training: This will include trainings on basic office automation and project management tools.
- E-Governance Training: This will include trainings and sensitization workshops on department's e-Governance initiatives and their benefits.
- Application Training: Functional: These will be functional trainings to end users of the system so that they are able to effectively use the new applications in their day to day working.
- Application Training-Technical: These will be technical training to the members of the Project Implementation Unit (PIU) on System Management and Operations and Support Procedures.

IMPLEMENTATION PLAN

A three phase roadmap has been laid out for implementation of various e-Governance initiatives in the department.

- Phase I: This will include setting up on new delivery channels (Control Room, Mobile Gateway, Portal) and implementation of support applications such as Document Management System, Payment Gateway and Office automation applications. In addition, selected FMIS Modules (Financial and Budget Management System, Human Resource Management System, Inventory and Assets Management, Forest Diversion Management System, Forest Industries Management System, Forest Community Development System, Support Functions System) will be implemented in territorial offices of the department. Similarly, the

support modules will be implemented across the state upto division office level in this phase.

- Phase II: This includes implementation of GIS and implementation of selected FMIS modules (Working Plan and Growing stock System, Plantation and Nursery Management System, Forest Protection and Case Management System, Forest Production System, Projects and Monitoring System) in territorial offices of the department.

- Phase III: This includes implementation of remaining modules of FMIS (Wildlife Management System, Zoo Management System, Forest Research and Development System, Extension and Awareness System, Eco-Tourism Management System) in offices of the department.

Chapter –X

BROAD BUDGET ANALYSIS FOR IMPLEMENTING THE PLAN

(a) Construction and development

As per a broad estimate, the cost for proposed construction and development to fulfill the necessity of future, the broad budget analysis for non-recurring capital cost is done and given in detail Part III Chapter XI Management Plan (Non-recurring expenses for planned development according to future action plan tentative cost). It details out the year-wise activities in phased manner after prioritizing, to be taken up as per the master plan of the zoo. It also shows the realistic estimates along with the source of funding.

S. No.	Item and particulars of work	No of units	Unit cost (In cr.	Total cost (In cr.)	1st year 2012 -13	2nd year 2013 -14	3rd year 2014 -15	4th year 2015 -16	5th year 2016 - 17	6th year 2017 - 18	7th year 2018 - 19	8th year 2019 - 20	9th year 2020 -21	10th year 2021 -22	11th year 2022 -23	12th year 2023 -24	13th year 2024 -25	14th year 2025 -26	15th year 2026 - 27	16th year 2027 -28	17th year 2028 -29	18th year 2029 -30	19th year 2030 -31	20th year 2031-32	Source of Funds
1	Creation of infrastructure for conservation of endangered and rare species																								
a	Falcons (as coordinating zoo)	4	0.75	3 cr.				0.75			0.8			0.8		0.25		0.2		0.1		0.1			STATE PLAN/ CZA
b	Tigers (as participating zoo)	2	1.5	3 cr.						0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	STATE PLAN/ CZA
2	Advance and Modern Interpretation Center	1	3	3 cr.				1.5	1.5																STATE PLAN/ CZA
3	Training center with hostel facility to promote research programs for conservation by involving local institutions for better management of zoo.	1	2	2 cr.						0.5	0.5	0.5	0.5												STATE PLAN/ CZA
4	Creation of Rescue Center for the rescued wild animals from the state of Punjab and adjoining states, if needed.	1	4	4 cr.				2	1	1															STATE PLAN/ CZA
5	Renovation and Modification of 35 enclosures and cages to provide adequate and suitable living environment to animals/birds to meet the biological, physical and psychological requirements of animals to ensure their normal behaviour.	35	0.5	17.5 cr.		0.2	0.3	1	1.5	1.5	1.5	2	1.5	1.5	1.5	1	1	1	0.5	0.5	0.5	0.5	0.5		STATE PLAN/ CZA
6	Designing and Construction of 50 New Enclosures and cages to develop state of the art infrastructure in the zoo in order to give complete wildlife experience to the visitor.	50	2.5	125 cr.		1	4	5	5	5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	STATE PLAN/ CZA
7	Redoing of 40 Enclosures and cages after demolition which have either become obsolete in the new theme of animal display in the zoo or needs to be redone as per the CZA's prevailing specifications of animal housing	40	1.5	60 cr.		1.5	1.5	3	3	3	3	3	3	3	3	3	4.5	4.5	4.5	4.5	3	3	3	3	STATE PLAN/ CZA
8	Advance and modern Wildlife hospital	1	10	10 cr.		1		1		1		1		1		1		1		1		1		1	STATE

S. No.	Item and particulars of work	No of units	Unit cost (In cr.	Total cost (In cr.)	1st year 2012 -13	2nd year 2013 -14	3rd year 2014 -15	4th year 2015 -16	5th year 2016 - 17	6th year 2017 - 18	7th year 2018 - 19	8th year 2019 - 20	9th year 2020 -21	10th year 2021 -22	11th year 2022 -23	12th year 2023 -24	13th year 2024 -25	14th year 2025 -26	15th year 2026 - 27	16th year 2027 -28	17th year 2028 -29	18th year 2029 -30	19th year 2030 -31	20th year 2031-32	Source of Funds
	along with modern diagnostic equipments and quarantine ward to provide highest possible standards of animal husbandry, veterinary care and sanitation.																								PLAN/ CZA
9	Infrastructure for zoo education center including a *Zoo Education Park* to develop a pro-active zoo education policy and outreach activities for schools , universities and public according to zoo education master plan	1	7.5	7.5 cr.		0.1	0.2	0.3	0.2	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		STATE PLAN/ CZA
10	Devolopment of eco-friendly technologies and recycling of resources such as a)Vermi-composting Unit b)Advance nursery and c)Polynation zone like butterfly garden and nature trails etc. d)Live Worm culture unit e)Water Conservation Unit	1	5	5 cr.			1		1		1		1		1										STATE PLAN/ CZA
11	Ecofriendly Transportation System for visitors and zoo management and conversion of zoo into a prohibited area for fuel emmosion vehicle	1	7.5	7.5 cr.		0.25	0.25	1	4.5	1	0.25	0.25													STATE PLAN/ CZA
12	Relaying of Primary and Secondary loops including appropriate visitors pavement paths at all suitable places.	8.5 km apx.	0.5	4.2 cr.			1	2	1	0.2															STATE PLAN/ CZA
13	Creation of Public Spaces at 3 strategic locations in the Zoo	3	0.5	1.5 cr.				0.5		0.5		0.5													STATE PLAN/ CZA
14	Service circulation (Creation of separate service circulation)	6 km apx.	0.5	3 cr.			1	1	1																STATE PLAN/ CZA

S. No.	Item and particulars of work	No of units	Unit cost (In cr.	Total cost (In cr.)	1st year 2012 -13	2nd year 2013 -14	3rd year 2014 -15	4th year 2015 -16	5th year 2016 - 17	6th year 2017 - 18	7th year 2018 - 19	8th year 2019 - 20	9th year 2020 -21	10th year 2021 -22	11th year 2022 -23	12th year 2023 -24	13th year 2024 -25	14th year 2025 -26	15th year 2026 - 27	16th year 2027 -28	17th year 2028 -29	18th year 2029 -30	19th year 2030 -31	20th year 2031-32	Source of Funds
15	**Reclamation of flood prone area along Ghaggar river by creation of Stone Walled Structure**	1	36	36 cr.					12	12	12														STATE PLAN/ CZA
16	**Safari Devolopment** (carnivores and herbivores safaris) along with development of Eco-tourism Zone	2	5	10 cr.				0.25	0.25	0.25	2	3.5	2.5	1.25											STATE PLAN/ CZA
17	**Devolopment of parking zone and multiple plaza** outside the zoo boundry (in amenities zone)	1	5	5 cr.				1	1	1	1	1													STATE PLAN/ CZA
18	**Gate Education and Thematic Zoo Entrance**	1	4	4 cr.	0.1	0.1	1	0.2	0.1	0.1	0.1	0.15	0.15	0.15	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.15	0.15	0.15	STATE PLAN/ CZA
19	**Landscape** devolopment all across the zoo including lake beautification	40 ha. Apx	0.25	10 cr.		0.1	0.2	0.3	0.4	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	STATE PLAN/ CZA
20	**Ecotourism infrastructure for** devolopment of ecotourim activities according to the ecotourism policies of state as well as the ecotourism policies of GOI	1	25	25 cr.			1	1	1	1	1	1	2	2	2	2	2	2	2	1	1	1	1	1	STATE PLAN/ CZA
21	**Upgradation of Sewerage system** along with development of state of the art STP and its maintenance works to cope-up with the enviorionmental issues	1	5	5 cr.		0.2	1	1	0.25	0.25	0.25	0.25	0.4	0.4	0.5	0.5									STATE PLAN/ CZA
22	**Upgradation of Power Supply through a** *state of art* electical system to make the system power efficient and Installation of High Capacity Genset	1	5	5 cr.		0.1	0.2	0.3	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5								STATE PLAN/ CZA
23	**E-Gov.** to devolop the advance infrastructure to meet with the e-gov. system and ZIMS	1	5	5 cr.		0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.35	0.5	0.5	STATE PLAN/ CZA
24	**Zoo Adminstration Complex** including Field Director Office alongwith the Conference Hall	1	2.5	2.5 cr.			0.1	1	0.5	0.5	0.25	0.15													STATE PLAN/ CZA

S. No.	Item and particulars of work	No of units	Unit cost (In cr.	Total cost (In cr.)	1st year 2012 -13	2nd year 2013 -14	3rd year 2014 -15	4th year 2015 -16	5th year 2016 - 17	6th year 2017 - 18	7th year 2018 - 19	8th year 2019 - 20	9th year 2020 -21	10th year 2021 -22	11th year 2022 -23	12th year 2023 -24	13th year 2024 -25	14th year 2025 -26	15th year 2026 - 27	16th year 2027 -28	17th year 2028 -29	18th year 2029 -30	19th year 2030 -31	20th year 2031-32	Source of Funds
	and construction of Range Office Complex																								
25	Modern Zoo Workshop for local fabrication, carpentry and electrical repair works	1	0.5	0.5 cr.			0.1	0.2	0.1	0.1															STATE PLAN/ CZA
26	Renovation of Animal Kitchen and Feed Store facility	1	2	2 cr.									0.5	0.5	0.5	0.5									STATE PLAN/ CZA
27	Renovation of Staff Quarters of Zoo Colony and other common facilities related works	75	0.1	7.5 cr.		0.2	0.2	0.2	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	STATE PLAN/ CZA
				374 cr.	0.1	4.9	13.3	25	36	31	34	24	21	21	19	18	18	18	16.6	16.7	14	15	14	14	

(B) DAY TO DAY MAINTENANCE [Recurring budget analysis for 20 years (Plan Period)]

For the day to day maintenance of the zoo including feed/fodder and other material requirements as well as the staff salaries, year wise recurring cost for next 20 years (based on actual recurring expenditure of first three years) and for further years with the presumption of 10% increase of preceding year is estimated and given as below:

S. No.	Year wise recurring cost for next 20 years(based on actual recurring expenditure of previous three years) and for further years (2012-13 to 2031-32)with the presumption of 10% increase of preceding year	Recurring cost in Rs. (as per actuals)	Projected recurring cost (in cr.)
1	2009-2010	50965615	5.96
2	2010-2011	66115709	6.61
3	2011-2012	79723426	7.97
4	2012-2013		8.77
5	2013-2014		9.64
6	2014-2015		10.61
7	2015-2016		11.67
8	2016-2017		12.84
9	2017-2018		14.12
10	2018-2019		15.53
11	2019-2020		17.08

12	2020-2021		18.79
13	2021-2022		20.67
14	2022-2023		22.74
15	2023-2024		25.01
16	2024-2025		27.51
17	2025-2026		30.27
18	2026-2027		33.29
19	2027-2028		36.62
20	2028-2029		40.28
21	2029-2030		44.31
22	2030-2031		48.74
23	2031-2032		53.62
	TOTAL		**522.67**

PART-III

(MANAGEMENT PLAN)

The management plan will be submitted according to the broad budget analysis of this Master Plan (Page No. 122-130) as sub plans for five year management plans separately.

PART-IV

ANNEXURES TO THE MASTER PLAN

ANNEXURE 1

List of members of State Level Advisory Council

1.	Shri. M.M. Chaudhary	Chairman
2.	Giani Zail Singh, C.M.	Vice Chairman
3.	Shri Hans Raj Sharma, F.M.	Member
4.	Shri Gurbanta Singh, A.F.M.	Member
5.	Shri Gurdarshan Singh, P.W.D. Minister	Member
6.	Shri G.S. Sibia, Irrigation and Power Minister	Member
7.	Sh. M.S. Gill	Member
8.	Dr. M.S. Randhawa, I.C.S. (Retd.)	Member
9.	Chief Secretary	Member
10.	Development Commissioner	Member-Secretary
11.	Secretary, Public Works	Member
12.	Finance Secretary	Member
13.	Chief Conservator of Forests	Member
14.	Chief Engineer (B & R)	Member
15.	Chief Engineer (Drainage)	Member
16.	Director, Tourism	Member
17.	Chief Town Planner	Member
18.	State Architect	Member
19.	Deputy Commissioner, Patiala	Member

ANNEXURE 2

List of experts in zoo management, wildlife and forestry

1.	Shri G.P.S. Sahi, I.A.S.	Chairman
2.	Shri P. Barua, I.F.S. (Retd.)	Vice Chairman
3.	Shri. N.D. Bachkheti, I.F.S.	Member
4.	Shri Pushp Kumar, I.F.S.	Member
5.	Shri. M.B. Peter, I.F.S.	Member
6.	Shri N.D. Adkoli, I.F.S.	Member
7.	Shri K.L. Mehta, Wildlife Warden (Retd). HP.	Member
8.	Shri Rajni Kanta Chaudhary, Honorary Forest Officer (Assam)	Member
9.	Shri M.A. Islam, I.F.S.	Member
10.	Shri Harnek Singh Randev, I.F.S., Officer on Special Duty, Zoological Park, Chhatbir	Convener

ANNEXURE 3

List of members of Implementation Committee

1.	Shri K.S. Bains, I.A.S., Development Commissioner to Government, Punjab.	Chairman
2.	Shri S.P. Bagla, I.A.S., Finance Secretary to Government Punjab.	Member
3.	Shri. G.S. Toki, Chief Engineer, P.W.D. (B & R), Punjab, Patiala	Member
4.	Shri. I.P. Kapila, Chief Engineer, Drainage, Punjab, Chandigarh.	Member
5.	Shri Resham Singh, Chief Engineer, Public Health, Punjab, Patiala.	Member
6.	Shri N.S. Lamba, Chief Town Planner, Punjab.	Member
7.	Shri. S.S. Sahi, Chief Engineer, Canals, Punjab.	Member
8.	Sh. C.M. Sethi, I.F.S., ChiefConservator of Forests, Punjab.	Member
9.	Shri Jeet Malhotra, Additional Chief Architect, Punjab.	Member
10.	Shri. H.S. Randev, I.F.S., Officer on Special Duty	Member
11.	Shri P. Barua, I.F.S (Retd.), Administrator, Zoological Park, Chhatbir, Punjab.	Member
12.	Shri. D.S. Chaudhary, Deputy Commissioner, Patiala.	Member

ANNEXURE 4

List of Landscaping Committee Members

(A)	*Landscaping Committee*	
1.	Dr. M.S. Randhawa, I.C.S. (Retd.)	Chairman
2.	Shri P. Barua, Administrator, Chhatbir Zoo	Member
3.	Shri C.M. Sethi, I.F.S., CCF, Punjab	Member
4.	Shri H.S. Randev, I.F.S., O.S.D., Zoo	Member
5.	Shri Jeet Malhotra, Additional Chief Architect, Punjab	Member
6.	Shri D.K. Behal, Architect, Punjab	Member
7.	Shri Hardial Singh Johal, XEN, Horticulture (UT), Chandigarh	Member
8.	Shri Amrinder Singh Randhawa, Chief Wildlife Warden, Punjab.	Member

(B)	*Technical Sub-Committee*
1.	Shri C.M. Sethi, I.F.S., C.C.F., Punjab
2.	Shri N.S. Lamba, Chief Town Planner, Punjab
3.	Officer on Special Duty, Zoological Park, Chhatbir, Punjab.
4.	Shri Jeet Malhotra, Additional Chief Architect, Punjab.
5.	Shri N.D. Bachkheti, I.F.S.
6.	Shri Pushp Kumar, I.F.S.

ANNEXURE 5

Checklist of Free Ranging Birds in the Zoo

S.No	English Name/Scientific Name	Local Name
1.	Little Grebe or Dabchick *Podiceps ruficollis*	Dubkani
2.	Large Cormorant *Phalacrocorax carbo*	Wadda Jal Kan
3.	Little Cormorant *Phalacrocorax niger*	Jal Kan
4.	Darter or snake bird *Anhinga rufa*	Bhujanga or Bambi
5.	Grey heron *Ardea cinerea*	Nari
6.	Purple heron *Ardea purpurea*	Kirmachi nari
7.	Indian Pond heron or *Paddy bird Ardeola grayii*	Chhappari bagla
8.	Cattle egret *Babulcus ibis*	Badami bagla
9.	Large egret *Egretta alba*	Wadda bagla
10.	Smaller or Median egret *Egretta or Medium egret*	Gabhla bagla
11.	Little egret *Egretta garzetta*	Bauna bagla
12.	Night heron *Nycticorax nycticorax*	Chor bagla
13.	Painted stork *Mycteria leucocephalus*	Chitra lamdhing
14.	Whitenecked stork *Ciconia episcopus*	Dhing
15.	Ruddy shelduck or (a&b) *Brahminy duck Tadorna ferruginea*	Surkhab
16.	Paintail (a&b) Anas acuta	Sinkhpur
17.	Common teal Anas Crecca	Til
18.	Spotbill duck Anas poecilorhycha	Bindi chunjha
19.	Mallard Anas platyrhynchos	Nilsir
20.	Gadwall Anas Penelope	Gaidwall
21.	Shoveller Anas clypeata	Belchi
22.	Common Pochard	Pochad
23.	Nakta or Comb Duck	Nakta
24.	Blackwinged Kite	Chitti ill

25.	Crested honey buzzard	Makhi Tissa
26.	Pariah Kite	Ill or Chil
27.	Shikra	Shikra
28.	Asiatic Sparrow Hawk	Chirimar
29.	Greater spotted eagle	Wadda China Ukab
30.	Lesser spotted eagle	Chhota China Ukab
31.	Marsh harrier	Chhanbhi Kirla mar
32.	Crested serpent eagle Spilorins cheela	
33.	Black partridge	Kala tittar
34.	Grey partridge	Bhura tittar
35.	Grey quail	Wadda batera
36.	Jungle bush quail	Jangali batera
37.	Indian Pea Fowl	Mor
38.	Little bustard quail	Chhoti bateri
39.	Indian bustard quail	Bateri
40.	Demoiselle crane	Kunj
41.	Ruddy crake	Chhota jal-bater
42.	Moorhen	Jal Kukri
43.	Coot	Koot
44.	Whitetailed lapwing	Chittpunjhi tathri
45.	Redwattled lapwing	Tatihri
46.	Blackwinged stilt	Lamlatta
47.	Green Pigeon	Harial
48.	Blue rock pigeon	Gola Kabutar
49.	Rufous turtle dove	Kamloa
50.	Ring dove	Ghuggi
51.	Spotted dove	Chini ghuggi
52.	Rose ringed parakeet	Tota

53.	Blossom headed parakeet	Pahari tota
54.	Pied crested cuckoo	Barsati papiha
55.	Indian cuckoo	Desi papiha
56.	Koel	Koel
57.	Coucal or crow pheasant	Kamadi Kukkar
58.	Barn owl	Sunahiri ulloo
59.	Collared scops owl	Kalar wala ulloo
60.	Great horned or Eagle owl	Kanar ulloo
61.	Dusky horned owl	Saleti ulloo
62.	Brown fiwh owl	Machhera ulloo
63.	Spotted owlet	Chugal
64.	Indian Jungle night jar	Jangali nehrni
65.	House swift	Chhoti ateran
66.	Palm swift	Khajuri ateran
67.	Small blue kingfisher	Chhota machhera
68.	Blue tailed bee eater	Wadda patranga
69.	Small green bee-eater	Chhota patranga
70.	Hoopoe	Chakkiraha or Bededukh
71.	Grey hornbill	Dhanchiri
72.	Large green barbet	Hara basanta
73.	Lesser golden backed	Sunahiri kathphora
74.	Golden oriole	Pilak
75.	Black drongo or king crow	Kalkalichi or chepu
76.	Blackheaded or Brahminy myna	Bahmini maina
77.	Common myna	Lalri gutar shark
78.	Bank myna	Ganga gutar
79.	Tree pie	Lagoja
80.	House crow	Kan
81.	Jungle Crow	Patharikan or

		Rakan
82.	Redvented bubul	Bubul or Guldum
83.	Rufous bellied babbler	Geru dhidi Serhari
84.	Yellow eyed babbler	Pili akhi Serhari
85.	Brown flycatcher	Bhuri tik tiki
86.	Paradise flycatcher	Pari tik tiki
87.	Yellow bellied wren warbler	Pili piddi
88.	Tailor bird	Darji
89.	Magpie robin	Dhial
90.	River chat or whitecapped redstart	Darial galri
91.	Indian robin	Pidda
92.	Tree crepper	Rukh charchari
93.	Purple sunbird	Shakar khora or full sunghni
94.	House sparrow	Chiri
95.	Baya weaver bird	Bijra or baya
96.	Blackthroated weaver bird	Kala Gal bijra
97.	Red munia or Avadavat	Lalmuniaorsurkhan
98.	Whitethroated munia	Chittgali munia
99.	Spotted munia	Telia munia
100.	Crested bunting	Bodal boli

ANNEXURE-6

Checklist of Trees in the Zoo

S. No.	Vernacular Name	Scientific Name
1.	Arjan	Terminalia arjuna
2.	Safeda	Eucalyptus hybrid
3.	Kikar	Acacia arabica
4.	Shisham	Dalbergia sissoo
5.	Jamun	Syzygium cumini
6.	Sukhchain	Derris indica
7.	Subabul	Lucaena leucocephala
8.	Khair	Acacia catechu
9.	Dhak	Butea monosperma
10.	Kachnar	Bauhinia spp.
11.	Ber	zizyphus jujuba
12.	Amb	mangifera indica
13.	Bottle brush	Calistemon lanceolatus
14.	Neem	Azadirachta indica
15.	Kala Sirs	Albizzia lebbek
16.	Kigelia	Kigelia pinnata
17.	Alanthus	Ailanthus excelsa
18.	Seemal	Ceiba petandra
19.	Toot	Morus nigra
20.	Khajoor	Phoenix vulgaris
21.	Alstonia	Alstonia scholaris
22.	Pipal	Ficus religiosa
23.	Barota	Ficus bengalensis
24.	Chitta Sirs	Albizzia procera
25.	Amaltas	Cassia fistula
26.	Ashoka	Polyalthia longifolia
27.	Imli	Tamarindus indica
28.	Israeli Babul	Acacia tortilis

ANNEXURE-7

Animal History Sheet

	Name	
1		
2	**Scientific Name**	
3	**Sex**	
4	**Vernacular Name**	
5	**Housed in (Enclosure No. Date)**	
6	**Distinguishing Mark**	
7	**Date of Birth/Age**	
8	**Normal Body Temperature**	
9	**Gestation Period**	
10	**Habitat**	
11	**Breeding Data**	A Mating Date
		B Date of Parturition
		C Litter Size
12	**Acquisition**	(i) How & where from acquired
		(ii) Date
		(iii) Age on Arrival
		(iv) Size & Weight on Arrival
13	**Diet**	
14	**Disposal**	(i) How & where Disposed
		(ii) Date
		(iii) Age at Disposal
		(iv) Size & weight at Disposal

15	Postmortem Date & Name of Veterinary Officer
16	Pathological Findings incase of Death
17	Remarks On

ANNEXURE-8

KEEPER'S DIARY

Name of the Zoo Keeper _____

Complex_____

Sr. No. Enclosure _____ Species/Individual/Sex _____ Observation

Signature of Keeper Signature of Animal Supervisor

ANNEXURE-9

Inventory of Wildlife Species as on 31-03-2009

Sr. No.	Species	Scientific Name	Position as on 31.03.2009			
			M	F	U	Total
BIRDS (Schedule I & II)						
1	PEAFOWL INDIAN	*Pavo cristatus*	5	2	0	7
2	PEAFOWL WHITE	*Pavo cristatus*	1	0	0	1
3	KALEEJ PHEASANT	*Lophura leucomelanos*	7	1	0	8
	Total Birds		**13**	**3**	**0**	**16**
MAMMALS (Schedule I & II)						
1	BLACK BUCK	*Antelope cervicapra*	10	9	0	19
2	CHINKARA INDIAN GAZELLA	*Gazella bennetti*	1	7	8	16
3	DEER BROW ANTLERED	*Cervus eldi*	0	2	3	5
4	DEER SWAMP	*Cervus duavauceli*	2	2	1	5
5	ELEPHANT INDIAN	*Elephus maximus*	2	4	0	6
6	PANTHER/LEOPARD	*Panthera pardus*	4	5	0	9
7	LIONS INDIAN	*Panthera leo persica*	4	6	0	10
8	MACAQUE LION TAILED	*Macaca silenus*	1	0	0	1
9	TIGER BENGAL	*Panthera tigris*	4	3	3	10

	tigris				
10 FOUR HORNED ANTELOPE	*Tetracerus quadricornis*	1	1	2	4
11 GAUR (Indian Bison)	*Bos gaurus*	1	2	0	3
12 LEOPARD CAT	*Felis bengalensis*	1	1	0	2
13 WHITE TIGER	*Panthera tigris tigris*	1	1	0	2
14 CAPPED LANGUR	*Trachipithecus pileatus*	1	0	0	1
REPTILES (Schedule I & II)					
1 GHARIAL	*Gavialis gangeticus*	2	2	2	6
2 CROCODILE	*Crocodilus palustris*	0	3	0	3
3 PYTHON	*Python molurus molurus*	0	1	0	1
MAMMALS (Schedule I & II)					
1 BEAR HIMALYAN BLACK	*Selenarchos thibetanus*	4	3	0	7
2 BEAR SLOTH	*Melursus ursinus*	4	3	0	7
3 CIVET CAT	*Paradoxurus hemaphroditus*	1	1	1	3
4 JACKAL	*canis aureus*	1	2	1	4
5 LANGUR COMMON	*Presbyties entellus*	3	1	0	4
6 MACAQUE ASSAMESE	*Macaca assamensis*	10	11	0	21
7 MACAQUE BONNET	*Macaca radiate*	4	5	2	11
8 MACAQUE RHESUS	*Macaca mulatto*	23	12	5	40

9 MACAQUE PIG TAILED	*Macaca enmestrina*	1	2	1	4
10 OTTER SMOOTH INDIAN	*Lutra perspicillata*	1	0	0	1
Birds (Schedule III & IV)					
1 CRANE COMMON	*Grus grus*	1	0	0	1
2 CRANE SARUS	*Grus antigone*	5	0	3	8
3 DOVE	*Streptopelia chinensis*	0	0	28	28
4 DUCK SPOT BILL	*Anas poecilorthyncha*	0	0	11	11
5 DUCK BRAHMINY	*Tadorna ferruginera*	0	0	0	0
6 DUCK COMBED	Sarkidiornis melanotos	1	2	0	3
7 FOWL RED JUNGLE	*Gallus gallus*	2	8	1	11
8 GEESE BARHEADED	*Anser indicus*	2	1	0	3
9 GEESE COMMON		0	0	34	34
10 COMMON POCHARD		0	0	1	1
11 PIGEON WHITE		0	0	45	45
12 PIGEON BLACK		0	0	24	24
13 PARAKEET ROSE RINGED	*Psittacula krameri*	0	0	31	31
14 PARAKEET ALEXANDRINE	*Psittacula eupartria*	2	2	5	9
15 PARAKEET BLOSSOM HEADED	*Psittacula roseate*	3	2	0	5
16 PARTRIDGES GREY	*Francolinus pondicerianeus*	0	0	3	3

17	PARTRIDGES BLACK	*Francolinus ffrancolinus*	1	1	0	2
18	PELICANS ROSY	*Pelecanus philippensis*	1	2	0	3
19	QUAIL COMMON		1	0	0	1
20	STORK BLACK NECKED	*Xenorhychus asiaticus*	1	0	0	1
21	STORK PAINTED	*Mycteria leucocephala*	15	15	28	58
22	STORK WHITE		1	0	0	1
23	SHIKRA	Accipiter badius	1	1	2	4
24	BARNOWL	*Tyto alba*	0	0	4	4
25	GREAT HORNED OWL		0	0	1	1
26	BLACK SWAN	*Cygnus atratus*	0	1	0	1
27	SPOTTED EAGLE		0	0	2	2
28	Love Bird		0	0	6	6
	MAMMALS(Schedule III & IV)					
1	BLUE BULL	*Boselaphus tragocamelus*	4	3	2	9
2	DEER BARKING	*Muntiacus muntjak*	-1	6	11	16
3	DEER HOG	*Axis porcinus*	1	3	9	13
4	DEER SAMBAR	*Cervus unicolor*	16	20	27	63
5	DEER SPOTTED	*Axis axis*	5	12	21	38
6	HYEANA	*Hyaena hyaena*	0	2	0	2
7	PORCUPINE	*Hystrix indica*	0	0	15	15
8	GORAL	*Nemorhaedus goral*	3	0	0	3

	OTHER BIRDS					
1	EMU	*(Dromiceius novahollandiae)*	0	1	1	2
2	COCKATOO SULPHER CRESTED	*(Kokatoe galerita)*	0	1	0	1
3	COCKTIEL GREY	*(Nymphicus hollandicus)*	2	1	0	3
4	BUDGRIGAR	*(Melopsittacus undulates)*	40	40	146	226
5	PHESANT MANGOLIAN RING		0	0	4	4
6	PHEASANT GOLDEN	*(Chrysolophus pictus)*	0	1	1	2
7	PHESANT SLIVER	*(Lophura nycthemerus)*	2	1	0	3
8	PHEASANT LADY EHMREST	*Chrysolophus pictus*	1	1	0	2
9	JAPANESE GREEN PHEASANT		0	0	0	0
10	ZEBRA FINCHES		1	1	15	17
11	MUNIA FINCHES		1	1	15	17
	OTHER MAMMALS					
1	HIPPOPOMTAMUS	*Hippopotamus amphibus*	1	3	1	5
2	ZEBRA		1	0	0	1
3	BUFFALO CAPE AFRICAN	*Syocerus catter*	1	1	0	2
4	JAGUAR	*Pantheraonca*	0	1	0	1
5	WHITE BUCK	*Antelope cervicapra*	0	0	4	4
6	CHIMPANZEE	*Pan troglodytes*	1	0	0	1

7	FELLOW DEER	*Dama dama*	1	1	0	2
8	HAMADRYES BABBOON SACRED	*Papio hamadryas*	2	0	0	2
	TOTAL MAMMALS		**7**	**6**	**5**	**18**
	OTHER REPTILES					
1	TORTOISE	*(Geochelone*	6	3	6	15
	TOTAL REPTILES		**6**	**3**	**6**	**15**
83	**TOTAL ANIMALS (SCH. 1&II+ OTHERS**		**225**	**230**	**536**	**991**

ANNEXURE-10

CZA Approved Conceptual Plan of Chhatbir Zoo vide CZA letter No. F.No. 19-53/92-CZA(224) (Vol. IV) (M) dated 17.2.2009

1.	**Name of the Zoo**	Mahendra Choudhary Zoological Park, Chhatbir, Chandigarh, Punjab.
2.	**Category of the Zoo**	Large Zoo
3.	**Area of the Zoo**	202 hectares
4.	**Objective**	(i) Conservation breeding of Falcon and Tiger (ii) Conservation education and awareness (iii) Research for conservation (iv) Rescue & Rehabilitation for infirm animals.
5.	**Theme of display**	(i) Broad taxonomical display of wild animal species of national importance with special emphasis on fauna of north-west India. (ii) African/Asiatic lions Safari. (iv) Off-display conservation breeding centre for Falcons (iv) Off-display Rescue Centre for Leopards and infirm animals.
6.	**Animal Collection Plan**	Lion, Tiger, Leopard, Sloth bear, Himalayan black bear, Rhesus monkey, Common langur, Hyena, Grey wolf, Jackal, Blackbucks, Neelgai, Spotted deer, Chausinga, Chinkara, Mugger, Gharial, Water birds, Falcons.
7.	**Master (Layout) Plan**	To be prepared accordingly.
8.	**Manpower**	(i) CF/DCF level full time officer-in-charge as Director (ii) DCF/ACF level Curator (animals)-1 No. (iii) Veterinary Officers-2 Nos. (iv) Education Officer-1 No. (v) Biologist-1 No. (vi) Support staff as per needs.

ANNEXURE-11

MEDICAL RECORD SHEET

Sr. No._____ Dated_____

Species_____

Scientific Name_____

Age _____

Personal Name/ID No._____

Sex_____

Any Other Information_____

ANNEXURE -12

HISTORY OF ILLNESS PHYSICAL EXAMINATION LABORATORY TESTS CONDUCTED/REQUIRED

Veterinary Necropsy Protocol, Post Mortem Report

No ..... Dated.....

Kind of animals (with Scientific Name_____ sex_____

Personal _____Age_____ Size_____Weight_____

remarks of Name identification if any).

Time date and Place of death Time and date of Post mortem examination Short history of illness, if any

A. General description

B. Organ wise description of lesions:-

(1) Head and neck.....

(a) Skull & Brain (b) Cervical vertebrae

(2) Thorax.....

(a) Lungs (b) heart (c) Ribs

(3) Abdomen.....

(a) Liver

(b) Stomach (c) Intestines

(d) Kidney

(e) Spleen

(4) Pelvic girdle.....

(a) Uterus and Ovaries

(b) Bladder

(c) Genital Passage

(5) Limbs .....

(a) Fore Limbs

(b) Hind Limbs

(6) Any other special features:

Biological tests done (if any)

(i) Blood

(ii) Urine

(iii) Discharges

(iv) Biopsy

(7) Opinion

(8) Instructions for disposal

Place ..... Signature.....

Date ..... Designation.....

Name..... (Seal)

ANNEXURE-13

Future Action Plan for the Up gradation of Veterinary Hospital

- A well-equipped histo-pathological lab needs to be set up for a proper diagnosis in animals
- Isolation and quarantine cells for neonatal emergencies /births of cubs and fawn are required to be set up.
- Inbuilt squeeze cages for carnivores, bears and primates are required in the hospital for proper restraining of animals for treatment.
- Separate enclosures for incubation of un-hatched eggs of birds and an incubator are required.
- A mortuary and a post-mortem room need to be constructed adjoining the zoo hospital.
- Facilities for primary health care monitoring of the zoo employees shall be developed within the histo-pathological lab and the suspected cases shall be sent to nearby govt. facility for a thorough investigation.
- Other infrastructure required in the hospital is as under:
- X-ray Machine (Stationery) for diagnosis of fractures of bones and joints of large animals.
- Portable X-ray machine.
- Ultrasound Machine is required for diagnosis of pregnancy, infections and physical status of various organs like lungs, liver, heart, kidney and to also study pathological conditions of uterus and other genital organs.

- Pulse Oxymeter: To visualize pulse rate and condition of cardio vascular system in sick injured animals. Also a tool to see the recovery post operative status of animals.
- Hot Air Oven
- One Computer for the data recording.
- Trolleys for transport of animals.
- One deep freezer for kits and reagents.
- Two deep freezers for keeping carcasses

ANNEXURE-14

List of Buildings Other Than Animal Enclosures

1. Staff quarters for class IV (38 No.)
2. Staff quarters for class III (18 No.)
3. Staff quarters for class III (6 No.) (Senior class III)
4. Tube well room in staff colony
5. Old work shop near staff colony
6. Field Director office
7. Camp Office
8. Wildlife Hospital
9. New work shop
10. Feed store complex
11. Chowkidar quarter at feed store
12. Electric meter room
13. Range officers' office cum store
14. Parking area canteen
15. Ice cream parlor
16. Ticket window room
17. Security room adjoining ticket window
18. Security room at gate no.1

19. Security room at gate no.2

20. Security room at gate no.3

21. Security room at gate no.4

22. Zoo extension center

23. Toilet block near main gate

24. Toilet block near Elephants

25. Toilet block near Lion safari

26. Toilet block near Aviary

27. Toilet block near Deer safari

28. Toilet block near Swamp deer

29. Rain shelters/ pavilions (18 No.)

30 Lion safari ticket window

31. Souvenir shop (WWF)

32. Lion safari canteen

33. Jasmine Restaurant

34. Shallow lake canteen

35. Post mortem room

36. Incinerator

37. Vermi-compost shed

ANNEXURE -15

Existing Collection Plan of Wildlife Species as on 31-03-2009

	Name of Species	Origin	Present Status of Population in Chhatbir				Founder Population required			
			M	F	U	T	M	F	U	T
	MAMMALS									
1	Hoolock Gibbon	Indian	0	0	0	0	1	1	0	2
2	Stump Tailed Macaque	Indian	0	0	0	0	1	1	0	2
3	Loris	Indian	0	0	0	0	1	1	0	2
4	Clouded Leopard	Indian	0	0	0	0	1	1	0	2
5	Black Panther	Indian	0	0	0	0	1	1	0	2
6	Fishing Cat	Indian	0	0	0	0	2	2	0	4
7	Jungle Cat	Indian	0	0	0	0	2	2	0	4
8	Caracal	Indian	0	0	0	0	2	2	0	4
9	Spectacled Langoor	Indian	0	0	0	0	2	2	0	2
10	Indian Rhinoceros	Indian	0	0	0	0	1	1	0	2
11	Wild Buffalo	Indian	1	2	0	0	1	1	0	2
12	Mouse Deer	Indian	0	0	0	0	2	2	0	4
13	Wolf	Indian	0	0	0	0	2	2	0	4
14	Wild Boar	Indian	0	0	0	0	1	2	0	3
15	Sun bear	Exotic	0	0	0	0	1	1	0	2
16	Indian Fox	Indian	0	0	0	0	2	3	0	5
17	Wild Dog	Indian	0	0	0	0	2	2	0	4
18	Large Indian Civet	Indian	0	0	0	0	0	0	0	4
19	Bear Cat	Indian	0	0	0	0		1	0	2
20	Common Mongoose	Indian	1	0	0	0		1	0	2
21	Common Otter	Indian	0	0	0	0		1	0	2
22	Sikka Deer	Indian	0	0	0	0		2	0	3
24	Babboons	African	2	0	0	0		2	0	4
25	Giraffe	African	0	0	0	0		1	0	2

26	Spider Monkey	American	0	0	0	0		2	0	3
27	Kangaroo	Austrian	0	0	0	0		1	0	2
28	White Tiger	Indian	1	0	0	0		3	0	5
29	Zebra	African	1	0	0	0		1	0	2
30	Chimpanzee Sun bear	African	1	0 0	0	0 0		1 1	0 0	2 2
32		Exotic	0							
	BIRDS									
33	Great Indian Hornbill	Indian	0	0	0	0	1	1	0	2
34	Adjutant Stork	Indian	0	0	0	0		1	0	2
35	Flamingo	Indian	0	0	0	0		1	0	2
36	Demosielle Crane	Indian	0	0	0	0		1	0	2
37	Grey Jungle Fowl	Indian	0	0	0	0		2	0	3
38	Grey Lag Geese	Indian	0	0	0	0		2	0	3
39	Ostrich	African	0	0	0	0		1	0	2
40	Grey Parrot	African	0	0	0	0		2	0	3
41	Crowned Crane	African	0	0	0	0		1	0	2
42	Red Yellow Macaw	American	0	0	0	0		1	0	2
43	Blue Headed Parrot	American	0	0	0	0		2	0	3
44	Black Necked Swan	American	0	0	0	0		1	0	2
45	Black Swan	Austrian	0	0	0	0		1	0	2
46	Cassowary	Austrian	0	0	0	0		1	0	2
47	Lorikeet	Austrian	0	0	0	0		1	0	2
48	Lorry	Austrian	0	0	0	0		2	0	3
49	Nicobar Pigeon	Indian	0	0	0	0	2	3	0	5
	REPTILES									
50	King Cobra	Indian	0	0	0	0	1	1	0	2
51	Other Snakes	Indian	0	0	0	0	1	1	0	2

ANNEXURE-16

Relevant Portions of the Proceedings of the State Wildlife Advisory Board, Punjab

Recommendation No. 6

Breeding of Rare animals in zoo- regarding

It has been brought to the notice of Hon'ble Chairman that Govt. of India has already sanctioned a sum of 56.70 lac for falcon breeding centre at Chhatbir zoo. Breeding of Sarus Crane is already going on well at Chhatbir. Efforts are being made for the breeding of black and brown partridges. It has been brought on record that department had tried to locate experts in the breeding of black and brown partridges but got no success. The Hon'ble Chairman directed that more efforts regarding the above be made.

Agenda Item No. 5

Member Secretary informed that for the development of zoos in Punjab and to coordinate with Ministry of Environment and Forests and Central Zoo Authority, there was a need to make a Punjab Zoo Development Society and the draft regarding this was placed before the board. Hon'ble Chairman gave his acceptance regarding this. However, on recommendations of Governing Body of the society three nominees from the non-govt. sector and prominent wildlife enthusiasts should also be included in the society.

Agenda Item No. 7

Management of prolifically breeding black bucks in Zoos and Deer Park of the state Member Secretary brought to the notice of the members that in all zoos of Punjab, there is surplus number of black bucks in the State and due to this feeding of such animals is becoming difficult and there is less space to house animals in the zoo.

Black Buck is listed in Wildlife (Protection) Act 1972, schedule I and due to this fact repeated permissions are to be taken to release these animals from zoo. It would be useful if Chief Wildlife Warden may be delegated with powers to grant release of such animals. The board agreed to this agenda unanimously.

Agenda No. 14

Development of Lion Safari in M. C. Zoological Park, Chhatbir Financial Commissioner, Forests brought to the notice of worthy Chairman that most of the lions in Chhatbir zoo have completed their life span and there is need to bring new animals. These animals (African lions) may be imported from other countries. For this purpose Financial Commissioner requested for a sum of Rs. 30 lac from the Chairman. Worthy Chairman gave his acceptance to this. Financial Commissioner requested to the worthy Chairman that department had tried many times for bringing Asiatic lions from Gujarat to Chhatbir but could not succeed. For this Financial Commissioner requested the Chairman to personally contact Chief Minister of Gujarat State for bringing lions to Chhatbir. Worthy Chairman agreed to take up the matter urgently.

ANNEXURE-17

Proposed Animal Collection Plan

S. No	Animal name	Scientific name	Present stock			Proposed stock			Proposed to be acquired			Surplus		
SCHEDULE I OF WILDLIFE (PROTECTION ACT, 1972)														
BIRDS														
1	PEAFOWL INDIAN	*Pavo cristatus*	4	2	3	5	5	0	1	3	-3	-1	-3	3
2	PEAFOWL WHITE	*Pavo cristatus*	1	0	0	5	5	0	4	5	0	-4	-5	0
3	KALEEJ PHEASANT	*Lophura leucomelanos*	3	1	4	5	5	0	2	4	-4	-2	-4	4
4	FALCON	*Falco peregrinus*	0	0	0	5	5	0	5	5	0	-5	-5	0
5	FALCON	*Falco biarmicus*	0	0	0	5	5	0	5	5	0	-5	-5	0
6	FALCON	*and Falco chicuera*	0	0	0	5	5	0	5	5	0	-5	-5	0
7	BAZA	*Aviceda jeordone*	0	0	0	5	5	0	5	5	0	-5	-5	0
8	BAZA	*Aviceda leuphotes*	0	0	0	5	5	0	5	5	0	-5	-5	0
9	HAWKS	*Accipitridao*	0	0	0	5	5	0	5	5	0	-5	-5	0
10	GREAT INDIAN HORNBILL	*Buceros bicornil*	0	0	0	5	5	0	5	5	0	-5	-5	0
11	PIED HORNBILL	*Anthracoceros malabaricus*	0	0	0	5	5	0	5	5	0	-5	-5	0
12	PEACOCK PHEASANT	*Polyplectron bicalearaturn*	0	0	0	5	5	0	5	5	0	-5	-5	0
13	VULTURE	*Gyps indicus*	0	0	0	5	5	0	5	5	0	-5	-5	0
14	VULTURE	*Gyps bengalensis*	0	0	0	5	5	0	5	5	0	-5	-5	0
15	VULTURE	*Gyps tenuirostris*	0	0	0	5	5	0	5	5	0	-5	-5	0
MAMMALS														
16	BLACK BUCK	*Antelope cervicapra*	4	6	11	4	6	0	0	0	-11	0	0	11
17	WHITE BUCK	*Antelope cervicapra*	4	6	11	4	6	0	0	0	-11	0	0	11
18	CHINKARA INDIAN GAZELLA	*Gazella bennetti*	5	5	4	4	6	0	-1	1	-4	1	-1	4
19	DEER BROW ANTLERED	*Cervus eldi*	1	2	0	4	6	0	3	4	0	-3	-4	0
20	DEER SWAMP	*Cervus duavauceli*	6	2	2	4	6	0	-2	4	-2	2	-4	2
21	ELEPHANT INDIAN	*Elephus maximus*	2	4	0	2	4	0	0	0	0	0	0	0

22	PANTHER/LEOPARD	*Panthera pardus*	4	2	0	4	6	0	0	4	0	0	-4	0
23	LIONS INDIAN	*Panthera leo persica*	1	2	0	4	6	0	3	4	0	-3	-4	0
24	MACAQUE LION TAILED	*Macaca silenus*	1	0	0	4	6	0	3	6	0	-3	-6	0
25	TIGER BENGAL	*Panthera tigris tigris*	5	3	0	4	6	0	-1	3	0	1	-3	0
26	FOUR HORNED ANTELOPE	*Tetracerus quadricornis*	2	3	0	4	6	0	2	3	0	-2	-3	0
27	GAUR (Indian Bison)	*Bos gaurus*	2	3	1	4	6	0	2	3	-1	-2	-3	1
28	LEOPARD CAT	*Felis bengalensis*	1	1	0	4	6	0	3	5	0	-3	-5	0
29	WHITE TIGER	*Panthera tigris tigris*	1	2	0	4	6	0	3	4	0	-3	-4	0
30	CARACAL	*Felis caracal*	0	0	0	4	6	0	4	6	0	-4	-6	0
31	CLOUDED LEOPARD	*Neofelis nebulosa*	0	0	0	4	6	0	4	6	0	-4	-6	0
32	DESERT FOX	*Vulpes bucapus*	0	0	0	4	6	0	4	6	0	-4	-6	0
33	LORIS	*Loris tardigradus*	0	0	0	4	6	0	4	6	0	-4	-6	0
34	MOUSE DEER	*Tragulus meminna*	0	0	0	4	6	0	4	6	0	-4	-6	0
35	RHINOCEROS	*Rhinoceros unicornis*	0	0	0	4	6	0	4	6	0	-4	-6	0
36	SEROW	*Capricornis sumatraensis*	0	0	0	4	6	0	4	6	0	-4	-6	0
37	WILD BUFFALO	*Bubalus bubalis*	0	0	0	4	6	0	4	6	0	-4	-6	0
38	PANGOLIN	*Manisjavanica*												
REPTILES														
39	GHARIAL	*Gavialis gangeticus*	1	3	0	4	6	0	3	3	0	-3	-3	0
40	CROCODILE	*Crocodilus palustris*	0	3	0	4	6	0	4	3	0	-4	-3	0
41	PYTHON (Indian rock)	*Python molurus molurus*	1	0	0	4	6	0	3	6	0	-3	-6	0
42	PYTHON (Burmeese python)	*Python molurus bivittatus*	0	1	0	4	6	0	4	5	0	-4	-5	0
43	BENGAL MONITOR LIZARD	*Varanus bengalensis*	0	0	2	4	6	0	4	6	-2	-4	-6	2
44	YELLOW MONITOR LIZARD	*Varanus flavescens*	0	0	2	4	6	0	4	6	-2	-4	-6	2
45	PYTHON RETICULATED	*Python reticulatus*	0	0	0	4	6	0	4	6	0	-4	-6	0

46	INDIAN SOFT SHELLED TURTLE	*Lysmes punctata*	0	0	0	4	6	0	4	6	0	-4	-6	0
SCHEDULE II OF WILDLIFE (PROTECTION ACT, 1972)														
BIRDS														
47	GREY JUNGLE FOWL	*Gallus sonnerati*	0	0	0	5	5	0	5	5	0	-5	-5	0
	MAMMALS													
48	BEAR HIMALYAN BLACK	*Selenarchos thibetanus*	4	7	0	4	6	0	0	-1	0	0	1	0
49	BEAR SLOTH	*Melursus ursinus*	3	2	0	4	6	0	1	4	0	-1	-4	0
50	CIVET CAT	*Paradoxurus hemaphroditus*	2	2	1	4	6	0	2	4	-1	-2	-4	1
51	JACKAL	*canis aureus*	0	2	6	4	6	0	4	4	-6	-4	-4	6
52	LANGUR COMMON	*Presbyties entellus*	2	0	0	4	6	0	2	6	0	-2	-6	0
53	MACAQUE ASSAMESE	*Macaca assamensis*	14	3	0	4	6	0	-10	3	0	10	-3	0
54	MACAQUE BONNET	*Macaca radiate*	6	2	0	4	6	0	-2	4	0	2	-4	0
55	MACAQUE RHESUS	*Macaca mulatto*	5	5	0	4	6	0	-1	1	0	1	-1	0
56	MACAQUE PIG TAILED	*Macaca enmestrina*	1	2	2	4	6	0	3	4	-2	-3	-4	2
57	COMMON FOX	*Vulpes bengalensis*	0	0	0	4	6	0	4	6	0	-4	-6	0
58	JUNGLE CAT	*Felis chaus*	0	0	0	4	6	0	4	6	0	-4	-6	0
59	OTTERS	*Luthra, L. perspicillata*	0	0	0	4	6	0	4	6	0	-4	-6	0
60	GIANT SQURILL	*Ratufa macroura*	0	0	0	4	6	0	4	6	0	-4	-6	0
61	GIANT SQURILL	*Ratufa indica*	0	0	0	4	6	0	4	6	0	-4	-6	0
62	GIANT SQURILL	*Ratufa bicolor*	0	0	0	4	6	0	4	6	0	-4	-6	0
REPTILES														
63	COBRA	*Naja naja*	0	0	8	4	6	0	4	6	-8	-4	-6	8
64	RAT SNAKE	*Ptyas mucosa*	0	0	4	4	6	0	4	6	-4	-4	-6	4
65	CHECKERD KEELBACK SNAKE	*Xenochrophis piscatar*	0	0	0	4	6	0	4	6	0	-4	-6	0
66	KING COBRA	*Ophiophagus hannah*	0	0	0	4	6	0	4	6	0	-4	-6	0
67	MONGOOS	*Herpestes*	0	0	0	4	6	0	4	6	0	-4	-6	0

SCHEDULE III & IV OF WILDLIFE (PROTECTION ACT, 1972)														
Birds														
68	CRANE SARUS	*Grus antigone*	7	2	1	5	5	0	-2	3	-1	2	-3	1
69	DOVE	*Streptopelia chinensis*	0	0	28	5	5	0	5	5	-28	-5	-5	28
70	DUCK SPOT BILL	*Anas poecilorthyncha*	0	0	11	5	5	0	5	5	-11	-5	-5	11
71	DUCK COMBED	*Sarkidiornis melanotos*	1	2	3	5	5	0	4	3	-3	-4	-3	3
72	FOWL RED JUNGLE	*Gallus gallus*	4	8	10	5	5	0	1	-3	-10	-1	3	10
73	GEESE BARHEADED	*Anser indicus*	1	1	0	5	5	0	4	4	0	-4	-4	0
74	COMMON POCHARD	*Aythya ferina*	0	0	1	5	5	0	5	5	-1	-5	-5	1
75	PARAKEET ROSE RINGED	*Psittacula krameri*	0	0	32	5	5	0	5	5	-32	-5	-5	32
76	PARAKEET ALEXANDRINE	*Psittacula eupartria*	2	2	13	5	5	0	3	3	-13	-3	-3	13
77	PARAKEET BLOSSOM HEADED	*Psittacula roseate*	2	2	1	5	5	0	3	3	-1	-3	-3	1
78	PARTRIDGES GREY	*Francolinus pondicerianeus*	0	0	4	5	5	0	5	5	-4	-5	-5	4
79	PARTRIDGES BLACK	*Francolinus rancolinus*	0	0	4	5	5	0	5	5	-4	-5	-5	4
80	PELICANS ROSY	*Pelecanus philippensis*	1	2	0	5	5	0	4	3	0	-4	-3	0
81	QUAIL COMMON	*Coturnix coturnix*	1	0	0	5	5	0	4	5	0	-4	-5	0
82	STORK BLACK NECKED	*Xenorhychus asiaticus*	1	0	0	5	5	0	4	5	0	-4	-5	0
83	STORK PAINTED	*Mycteria leucocephala*	15	15	40	5	5	0	-10	-10	-40	10	10	40
84	STORK WHITE	*Ciconia ciconia*	1	0	0	5	5	0	4	5	0	-4	-5	0
85	SHIKARA	*Accipiter badius*	0	1	4	5	5	0	5	4	-4	-5	-4	4
86	BARNOWL	*Tyto alba*	0	0	3	5	5	0	5	5	-3	-5	-5	3
87	GREAT HORNED OWL	*Bubo virginianus*	0	0	2	5	5	0	5	5	-2	-5	-5	2
88	SPOTTED EAGLE		0	0	2	5	5	0	5	5	-2	-5	-5	2
89	WHITE IBIS	*Threskiornis melanocephala*	0	0	7	5	5	0	5	5	-7	-5	-5	7
90	FLAMINGOES	*Phoenicopteridae*	0	0	0	5	5	0	5	5	0	-5	-5	0

91	Little Grebe or Dabchick	*Podiceps ruficollis*	0	0	0	5	5	0	5	5	0	-5	-5	0
92	Large Cormorant	*Phalacrocorax carbo*	0	0	0	5	5	0	5	5	0	-5	-5	0
93	Little Cormorant	*Phalacrocorax niger*	0	0	0	5	5	0	5	5	0	-5	-5	0
94	Darter or snake bird	*Anhinga rufa*	0	0	0	5	5	0	5	5	0	-5	-5	0
95	Grey heron	*Ardea cinerea*	0	0	0	5	5	0	5	5	0	-5	-5	0
96	Purple heron	*Ardea purpurea*	0	0	0	5	5	0	5	5	0	-5	-5	0
97	Indian Pond heron or *Paddy bird*	*Ardeola grayii*	0	0	0	5	5	0	5	5	0	-5	-5	0
98	Cattle egret	*Babulcus ibis*	0	0	0	5	5	0	5	5	0	-5	-5	0
99	Large egret	*Egretta alba*	0	0	0	5	5	0	5	5	0	-5	-5	0
100	Smaller or Median egret	*Egretta*	0	0	0	5	5	0	5	5	0	-5	-5	0
101	Little egret	*Egretta garzetta*	0	0	0	5	5	0	5	5	0	-5	-5	0
102	Night heron	*Nycticorax nycticorax*	0	0	0	5	5	0	5	5	0	-5	-5	0
103	Ruddy shelduck or *Brahminy duck*	*Tadorna ferruginea*	0	0	0	5	5	0	5	5	0	-5	-5	0
104	Paintail	*Anas acuta*	0	0	0	5	5	0	5	5	0	-5	-5	0
105	Common teal	*Anas Crecca*	0	0	0	5	5	0	5	5	0	-5	-5	0
106	Spotbill duck	*Anas poecilorhycha*	0	0	0	5	5	0	5	5	0	-5	-5	0
107	Mallard	*Anas platyrhynchos*	0	0	0	5	5	0	5	5	0	-5	-5	0
108	Gadwall	*Anas Penelope*	0	0	0	5	5	0	5	5	0	-5	-5	0
109	Shoveller	*Anas clypeata*	0	0	0	5	5	0	5	5	0	-5	-5	0
110	Blackwinged Kite		0	0	0	5	5	0	5	5	0	-5	-5	0
111	Crested honey buzzard	*Pernis ptilorhynchus*	0	0	0	5	5	0	5	5	0	-5	-5	0
112	Pariah Kite	*Milvus migrans*	0	0	0	5	5	0	5	5	0	-5	-5	0
113	Sparrow Hawk	*Accipiter nisus*	0	0	0	5	5	0	5	5	0	-5	-5	0
114	Greater spotted eagle	*Aquila clanga*	0	0	0	5	5	0	5	5	0	-5	-5	0
115	Marsh harrier	*Circus aeruginosus*	0	0	0	5	5	0	5	5	0	-5	-5	0
116	Crested serpent eagle	*Spilornis cheela*	0	0	0	5	5	0	5	5	0	-5	-5	0

117	Demoiselle crane	*Anthropoides virgo*	0	0	0	5	5	0	5	5	0	-5	-5	0
118	Moorhen	*Gallinula*	0	0	0	5	5	0	5	5	0	-5	-5	0
119	Purple Moorhen	*Porphyrio porphyrio*	0	0	0	5	5	0	5	5	0	-5	-5	0
120	Coot	*Fulica*	0	0	0	5	5	0	5	5	0	-5	-5	0
121	Whitetailed lapwing	*Vanellus leucurus*	0	0	0	5	5	0	5	5	0	-5	-5	0
122	Redwattled lapwing	*Vanellus indicus*	0	0	0	5	5	0	5	5	0	-5	-5	0
123	Blackwinged stilt	*Himantopus himantopus*	0	0	0	5	5	0	5	5	0	-5	-5	0
124	Green Pigeon	*Treron phoenicoptera*	0	0	0	5	5	0	5	5	0	-5	-5	0
125	Blue rock pigeon	*Columba livia*	0	0	0	5	5	0	5	5	0	-5	-5	0
126	Turtle dove	*Streptopelia orientalis*	0	0	0	5	5	0	5	5	0	-5	-5	0
127	Ring dove	*Streptopelia risoria*	0	0	0	5	5	0	5	5	0	-5	-5	0
128	Spotted dove	*Spilopelia chinensis*	0	0	0	5	5	0	5	5	0	-5	-5	0
129	Pied crested cuckoo	*Clamator jacobinus*	0	0	0	5	5	0	5	5	0	-5	-5	0
130	Indian cuckoo	*Cuculus micropterus*	0	0	0	5	5	0	5	5	0	-5	-5	0
131	Koel	*Eudynamys*	0	0	0	5	5	0	5	5	0	-5	-5	0
132	Crow pheasant	*Centropus sinensis*	0	0	0	5	5	0	5	5	0	-5	-5	0
133	Small blue kingfisher	*Alcedo coerulescens*	0	0	0	5	5	0	5	5	0	-5	-5	0
134	Blue tailed bee eater	*Merops philippinus*	0	0	0	5	5	0	5	5	0	-5	-5	0
135	Small green bee-eater	*Merops persicus*	0	0	0	5	5	0	5	5	0	-5	-5	0
136	Hoopoe	*Upupa epops*	0	0	0	5	5	0	5	5	0	-5	-5	0
137	Grey hornbill	*Ocyceros birostris*	0	0	0	5	5	0	5	5	0	-5	-5	0
138	Large green barbet	*Megalaima zeylanica*	0	0	0	5	5	0	5	5	0	-5	-5	0
139	Lesser golden backed wood pecker		0	0	0	5	5	0	5	5	0	-5	-5	0
140	Golden oriole	*Oriolus oriolus*	0	0	0	5	5	0	5	5	0	-5	-5	0
141	Black drongo or king crow	*Dicrurus macrocercus*	0	0	0	5	5	0	5	5	0	-5	-5	0
142	Brahminy myna	*Sturnia pagodarum*	0	0	0	5	5	0	5	5	0	-5	-5	0

143	Common myna	*Acridotheres tristis*	0	0	0	5	5	0	5	5	0	-5	-5	0
144	Bank myna	*Acridotheres ginginianus*	0	0	0	5	5	0	5	5	0	-5	-5	0
145	PIED MYNA	*Sturnus contra*	0	0	0	5	5	0	5	5	0	-5	-5	0
146	Tree pie	*Dendrocitta vagabunda*	0	0	0	5	5	0	5	5	0	-5	-5	0
147	Redvented bubul	*Pycnonotus cafer*	0	0	0	5	5	0	5	5	0	-5	-5	0
148	Paradise flycatcher	*Terpsiphone*	0	0	0	5	5	0	5	5	0	-5	-5	0
149	Yellow bellied wren warbler	*Abroscopus superciliaris*	0	0	0	5	5	0	5	5	0	-5	-5	0
150	Tailor bird	*Orthotomus*	0	0	0	5	5	0	5	5	0	-5	-5	0
151	Magpie robin	*Copsychus*	0	0	0	5	5	0	5	5	0	-5	-5	0
152	Indian robin	*Saxicoloides fulicatus*	0	0	0	5	5	0	5	5	0	-5	-5	0
153	Purple sunbird	*Cinnyris asiaticus*	0	0	0	5	5	0	5	5	0	-5	-5	0
154	Baya weaver bird	*Ploceus philippinus*	0	0	0	5	5	0	5	5	0	-5	-5	0
155	Red munia or Avadavat	*Amandava amandava*	0	0	0	5	5	0	5	5	0	-5	-5	0
156	Whitethroated munia	*Euodice malabarica*	0	0	0	5	5	0	5	5	0	-5	-5	0
157	Spotted munia	*Lonchura punctulata*	0	0	0	5	5	0	5	5	0	-5	-5	0
SCHEDULE III & IV OF WILDLIFE (PROTECTION ACT, 1972)														
MAMMALS														
158	BLUE BULL	*Boselaphus tragocamelus*	2	3	1	4	6	0	2	3	-1	-2	-3	1
159	DEER BARKING	*Muntiacus muntjak*	7	7	2	4	6	0	-3	-1	-2	3	1	2
160	DEER HOG	*Axis porcinus*	3	2	1	4	6	0	1	4	-1	-1	-4	1
161	DEER SAMBAR	*Cervus unicolor*	6	20	10	4	6	0	-2	-14	-10	2	14	10
162	DEER SPOTTED	*Axis axis*	14	18	14	4	6	0	-10	-12	-14	10	12	14
163	HYEANA	*Hyaena hyaena*	0	1	0	4	6	0	4	5	0	-4	-5	0
164	PORCUPINE	*Hystrix indica*	0	0	24	4	6	0	4	6	-24	-4	-6	24
165	GORAL	*Nemorhaedus goral*	2	2	5	4	6	0	2	4	-5	-2	-4	5
166	WILD BOAR	*Sus scrofa*	0	0	0	4	6	0	4	6	0	-4	-6	0
167	HARES	*Common Indian*	0	0	0	4	6	0	4	6	0	-4	-6	0
REPTILES														

168	RED SAND BOA	*Eryx johnil*	0	0	4	4	6	0	4	6	-4	-4	-6	4
169	TORTOISE	*Geochelone sp.*	6	3	11	**4**	**6**	**0**	-2	3	-11	2	-3	11
170	LEOPARD GICKO	*Eublepharis macularius*	0	0	0	4	6	0	4	6	0	-4	-6	0
SCHEDULE OTHERS OF WILDLIFE (PROTECTION ACT, 1972) AND EXOTIC														
OTHER BIRDS														
171	EMU	*(Dromiceius novahollandiae)*	0	1	5	5	5	0	5	4	-5	-5	-4	5
172	COCKATOO SULPHER CRESTED	*(Kokatoe galerita)*	0	0	2	5	5	0	5	5	-2	-5	-5	2
173	COCKTIEL GREY	*Nymphicus hollandicus*	1	1	6	5	5	0	4	4	-6	-4	-4	6
174	BUDGRIGAR	*(Melopsittacus undulates)*	19	19	172	5	5	0	-14	-14	-172	14	14	172
175	PHESANT MANGOLIAN RING	*Phasianus colchicus*	4	2	0	5	5	0	1	3	0	-1	-3	0
176	PHEASANT GOLDEN	*(Chrysolophus pictus)*	1	1	0	5	5	0	4	4	0	-4	-4	0
177	PHESANT SLIVER	*(Lophura nycthemerus)*	1	2	0	5	5	0	4	3	0	-4	-3	0
178	PHEASANT LADY EHMREST	*Chrysolophus pictus*	1	2	0	5	5	0	4	3	0	-4	-3	0
179	ZEBRA FINCHES	*Taeniopygia guttata*	1	1	36	5	5	0	4	4	-36	-4	-4	36
180	BLACK SWAN	*Cygnus atratus*	0	1	0	5	5	0	5	4	0	-5	-4	0
181	Love Bird	*Agapornis*	0	0	5	5	5	0	5	5	-5	-5	-5	5
182	GEESE COMMON		0	0	76	5	5	0	5	5	-76	-5	-5	76
183	PIGEON WHITE	*Columba domestica*	0	0	45	5	5	0	5	5	-45	-5	-5	45
184	PIGEON BLACK	*Columba domestica*	0	0	24	5	5	0	5	5	-24	-5	-5	24
185	OSTRICH	*Struthio camelus*	0	0	0	5	5	0	5	5	0	-5	-5	0
186	RHEA	*Rhea americana*	0	0	0	5	5	0	5	5	0	-5	-5	0
187	KIWI	*Apteryx*	0	0	0	5	5	0	5	5	0	-5	-5	0
188	CASSOWARY	*Casuarius*	0	0	0	5	5	0	5	5	0	-5	-5	0
189	BLUE & YELLOW MACOW	*Ara ararauna*	0	0	0	5	5	0	5	5	0	-5	-5	0
190	SCARLET MACAW	*Ara macao*	0	0	0	5	5	0	5	5	0	-5	-5	0
191	MILITARY	*Ara militaris*	0	0	0	5	5	0	5	5	0	-5	-5	0

	MACAW													
SCHEDULE OTHERS OF WILDLIFE (PROTECTION ACT, 1972) AND EXOTIC														
OTHER MAMMALS														
192	HIPPOPOMTAMUS	*Hippopotamus amphibus*	1	4	0	2	4	0	1	0	0	-1	0	0
193	ZEBRA		0	1	0	2	4	0	2	3	0	-2	-3	0
194	BUFFALO CAPE AFRICAN	*Syocerus catter*	0	0	0	2	4	0	2	4	0	-2	-4	0
195	JAGUAR	*Pantheraonca*	1	0	0	2	4	0	1	4	0	-1	-4	0
196	FELLOW DEER	*Dama dama*	1	0	0	2	4	0	1	4	0	-1	-4	0
197	HAMADRYES BABBOON SACRED	*Papio hamadryas*	1	1	0	2	4	0	1	3	0	-1	-3	0
198	FRUIT BAT	*Pteropus giganteus*	0	0	4	2	4	0	2	4	-4	-2	-4	4
199	CHIMPANZEE	*Pan troglodytes*	0	0	0	2	4	0	2	4	0	-2	-4	0
200	ORANUTAN	*Pongo pygmaeus*	0	0	0	2	4	0	2	4	0	-2	-4	0
201	GIRAFFE	*Giraffa camelopardalis*	0	0	0	2	4	0	2	4	0	-2	-4	0
202	OKAPI	*Okapia johnstoni*	0	0	0	2	4	0	2	4	0	-2	-4	0
203	WILDBEEST	*Connochaetes gnou*	0	0	0	2	4	0	2	4	0	-2	-4	0
204	TAPIR	*Tapirus indicus*	0	0	0	2	4	0	2	4	0	-2	-4	0
REPTILES AND AMPHIBIANS														
205	GREEN IGUANA	*Iguana iguana*	0	0	0	4	6	0	4	6	0	-4	-6	0
206	RED IGUANA	*Iguana iguana*	0	0	0	4	6	0	4	6	0	-4	-6	0
FISH FOR AQURAIUM INDIGENUS AND EXOTIC (Fresh Water and Salt water)														
Sr.No.	**Animal name**	**Scientific name**	**Present stock**			**Proposed stock**			**Proposed to be acquired**			**Surplus**		
CENTRAL AMERICAN CICHLID														
207	**Honduran Red Point**	*Amatitlania sp. "Honduran Red Point"*	0	0	0	2	5	0	2	5	0	-2	-5	0
208	**Convict, Zebra Cichlid**	*Amatitlania nigrofasciatus*	0	0	0	2	5	0	2	5	0	-2	-5	0
209	**Convict, Zebra Cichlid**	*Amatitlania nigrofasciatus (Marbled)*	0	0	0	2	5	0	2	5	0	-2	-5	0
210	**Pearse Cichlid**	*exCichlasoma pearsei*	0	0	0	2	5	0	2	5	0	-2	-5	0

544	**Hazara torrent frog**	*Nanorana pleskei*	0	0	0	10	20	0	10	20	0	-10	-20	0
545	**Karez frog**	*Nanorana sternosignata*	0	0	0	10	20	0	10	20	0	-10	-20	0
546	**Marbled Sand Frog**	*Sphaerotheca rolandae*	0	0	0	10	20	0	10	20	0	-10	-20	0

ANNEXURE NO. 18

ECOTOURISM PROJECT "CHHATBIR ZOOLOGICAL PARK"

BY

DEPARTMENT OF FORESTS AND

WILDLIFE PRESERVATION

AND

PUNJAB STATE FOREST DEVELOPMENT

CORPORATION LIMITED

ECOTOURISM PILOT PROJECT-CHHATBIR ZOO

A. Eco-tourism: Concept and its Guiding Principles

Eco-tourism is defined as responsible travel to natural areas that conserve the environment, improves the well-being of local people and educate the target groups. It is environmentally, socially, culturally and economically sustainable and promotes non-consumptive use of forest resources, ensures local participation and generates income to conserve the area. It is about striking harmonious synergy between cause of conservation, aspirations of local communities and need for sustainable travel. It accommodates and entertains visitors in a way that is minimally intrusive or destructive to the environment and sustains and supports the native culture.

The main principle would be awareness generation for informed societal support to conservation efforts alongwith flow of economic benefits to local people so as to improve their quality of life and enhance their stake in natural resource conservation. Following principles will be guiding any ecotourism project:

(i) Build environmental and cultural awareness and respect

(ii) Provide positive experience for both visitors and hosts

(iii) Provide direct financial benefits for conservation

(iv) Provide financial benefits and empowerment to local people

(v) Provide facilities to the tourists with minimal external inputs and thereby having minimum impact on nature

(vi) Capacity building of local people for their active involvement

(vii) Adhering principle of carrying capacity to avoid overuse of natural resources

B. Concept of Pilot Project:

At present there is no institutionalized system through which general public can see the forest and have a quality and lasting experience. The quick visit to sanctuary or any protected area, as being practiced now cannot be called ecotourism. It is only mass tourism in the forest area as the learning aspect and sensitization towards nature is missing. There is a marginal direct economic impact to the local community on account of no local participation and weak economic linkages.

What is needed is a more focused strategy that is supply driven, awareness driven and consists of small group so as to take care of the carrying capacity of the protected area. There should be a conscious state to associate the local community by providing them alternative employment opportunity so that ensure the sustainability of the project.

With this objective in mind a detailed plan for developing ecotourism facility in Punjab has been prepared and is under active consideration for donor assistance. The Punjab ecotourism project in aimed at providing an insightful, mindful and participatory travel experience to natural and cultural environments assisting the well being of the local cultures and environment

for future generations. At the same time the project will produce viable economic opportunities for the local communities and the state.

A pilot project for Chhatbir zoo has been prepared for implementation.

The main objective of the pilot project is:

- **To introduce the concept of ecotourism in the controlled field conditions**
- **Hands on experience to field staffs**
- **To get the public/target group response**
- **Facilitate learning inputs in preparation of detailed plan for the selected eco-sites**

C. Background information

Chhatbir zoo (505 acres) is one of the largest zoos in India with about 850 animals belonging to 82 species. In some respects it is rated as the best zoo in India by the Central Zoo Authority. It houses some of the rare and endangered species of animals. Some of the unique features of Chhatbir are as follows:

- Lion Safari and Deer Safari

The lion safari within the zoo (20 acre) is out-sourced and is visited by boarding special buses of the contractor that take the visitors inside the safari for a round of 10-15 minutes. The rate fixed by the Govt. per visitor is Rs.20/-

There is also a Deer Safari (30 acre) within the zoo which the visitors can visit on their own vehicles. It has three species of deer namely Samber, Chital and Black Buck. There is no fee charged separately for the deer safari at the moment.

- Shallow Lake

There is a small artificially made shallow lake in an area of around 3 acres adjacent to the lush green lawns of the zoo which is a

'bird-watchers' paradise. Besides having a small number of resident birds, it is visited by migratory birds coming from Central Asian Republics every year between October and March in large numbers. Some of these migratory guests are painted storks, dabchicks, spot bills, cormorants and a few species of other geese. A much bigger number of birds than what the lake can accommodate, actually visit in October but due to shortage of space they fly off to other places. If the lake is expended by another 3 acre area than a larger number of birds can be accommodated and watch-towers may be constructed around the whole area for providing a much better bird watching experience.

- Large near natural forest area and specious enclosures

The fact that zoo was carved out of an existing piece of forest area by carving out only those area where enclosures were to be laid and keeping the rest of the forest intact, makes Chhatbir one of the greenest zoos in India and a very spacious too. This however, offers both advantages and disadvantages. Advantage is that it offers a visual delight to an eco-tourist that prefers long walks through woods to watch animals. The disadvantage is that the distances are too long for a normal visitors on foot and that has forced the authorities to allow vehicles to enter the zoo and go around. This however, is not a healthy practice from an environmental angle. Therefore, the situation needs to be changed and that too quite quickly considering the growing number of visitors having their own cars. A battery operated toy train offers

an environmentally sound as well as visitor friendly solution. The ring road of the zoo is around 3.5 Km. and that of the Deer Safari is around 2 Km. If the toy train is provided, it would also offer the visitors without vehicles to see deer safari which is otherwise prohibited for visitors on foot. Therefore, a hop-on, hop-off train needs to be started as an ecotourism venture.

What can be marketed to an eco-tourist at Chhatbir

1. Successful breeding programmes of rare and endangered species. Chhatbir has successful breeding of some of the rare and endangered species of following animals:

1. Tiger, Asian elephant, Chinkara
2. Chausingha (Four horned antelope)
3. Goral
4. Sarus Crane
5. Kaleej Pheasant

At the moment Chhatbir has no facilities or provision of carrying out guided tours or night stay at the zoo. A small facility is used as a rest house for official purposes though. But it is felt that a guided tour along with night facilities would give a totally different experience to the eco-tourist who would like to have strolls during early morning hours for bird watching or otherwise and listen to the roars and calls of the wild at night. Interpretation centre and library can be used for showing wildlife movies both purchased and those prepared at the zoo to show and interpret animal behaviour especially during the birth and a few days afterwards.

D. Outline of Pilot Project:

Duration: One day

Target Group: School Children

Project Period: 12 months

Activities : For School Children

- Conducted tour of enclosures with special emphasis on major species
- Exhibition, interpretation, wildlife movies
- Lion/deer safari
- Migratory bird watching
- Special activities like snake handling and other hands on experiences
- Leisure activities like quiz, tug of war, tree climbing etc.
- Nature walk and visit to animal hospital and their kitchen

Package:

In the pilot phase, it is proposed that maximum two groups of 20 students in each would be taken up for ecotourism activities.

The itinerary of the package would be as under:

S.No	Time	Activity	Remarks
1.	9 A.M: Arrival At zoo Reception		
	9- 9.45 am	Introductory briefing, visit to Exhibition hall, display of movie and distribution of handouts.	With tea/snacks/heal

			th drinks
2.	10- 11.30 am	Conducted tour upto Lion Safari,/or Bicycle tour package	
3.	11.30- 12.30 am	Conducted tour including Deer Safari	
4.	12.30- 1.30 pm	Lunch at Jasmine Restaurant	
5.	1.30- 3.30 pm	Bird watching, leisure activities, visit to small aviary and other enclosures and display of medical plant products, rest in camping tents.	
6.	3- 4 pm	Visit to animal kitchen and hospital, Quiz and concluding session including prize distribution and feedbacks	Farewell remarks with snack and health drinks.

7 4.15 pm Departure

Cost of the Package: For each student in a group

(i) Recurrent :

S.No	**Item**	**Cost (in Rupees)**	**Remarks**
1.	Welcome Kit	120	Cap, manual (pictorial) postcard, poster/badges, note pad and pencil
2.	Morning snacks	30	Sandwich, fruit, health

3.	Lunch	70	Thali system
4.	Evening snacks	30	Biscuits/sweets and health drinks
5.	Bus Entry fees	15 per student	
6.	Entry fee per student	15	
7.	Lion Safari entry fee	20	
8.	Guide Charge	60	Charge of two guides and one support staff @ Rs. (500+500+200)
9.	Price of Prize Item for quiz winner	10	
	TOTAL	370	

(ii) Capital Cost:

i)	Tents including toilet (@ 20,000 for 5 sets)	= Rs.	1,00,000
ii)	Binocular (Rs. 5000 for 10 numbers)	= Rs.	50,000
iii)	Maintenance cost of camps and its sites	= Rs.	60,000
iv)	Purchase of Bicycle	= Rs.	25,000
v)	Advertisement, Publicity and Marketing	= Rs.	3,00,000
vi)	Multimedia sets		
	Computer	= Rs.	50,000

	Projector	= Rs.	3,50,000
vii)	Furniture	= Rs.	25,000
viii)	Movie/library	= Rs.	25,000
ix)	Contingencies	= Rs.	15,000

Total = Rs. 10,15,000 (appx)

Financial Benefit:

The package would be sold at Rs. 410. Special discount could be considered to schools for sending more than two groups.

Profit per student = Rs. 40

Profit per group= Rs. 40x20= 800

Profit per day (2 groups)= 800x2= Rs. 1600

Profit per month (12 tourist days)= Rs. 1600x12= Rs. 19,200

Profit for project period (12 months)= Rs. 19,200x12= Rs. 2,30,400

ANNEXURE-19

VILLAGE CHHAT (CHHATBIR ZOO & THE ARCHEOLOGICAL SITE AT VILLAGE CHHAT) DETAILED PROJECT REPORT

Component	**Development of Rural Tourism in village Chhat (at Chhatbir zoo) in the state of Punjab.**
1. Location	The Zoological Park is located in village Chhat on the banks of river Ghaggar, about 22 km from Chandigarh and 23 km from Rajpura on Chandigarh-Patiala road. Buses ply from Chandigarh and Rajpura to the Zoological Park. The nearest Railway Station and Airport are at Chandigarh.
2.**Need/Justification**	**Introduction:**

The idea of having a modern zoological park in Punjab and establishing it near the capital city of Chandigarh was conceived in 1974 by Sh. Mahendra Chaudhary, the then Hon'ble Governor of Punjab. This

was given a shape in January 1974 by establishing a Zoological Park at Chhatbir Protected Forest on Chandigarh- Patiala road. The Zoological Park was opened to public on 13th April, 1977 and was named Mahendra Chaudhary Zoological Park.

The zoological park is spread over an area of 202 hectare and houses about 950 animals belonging to about 84 species. About 4 lac tourists, majority of them children from schools and nearby towns, visit the park every year. In addition to this famous zoo village Chhat is now also in news due to some archeological/historical materials/artifacts found in a dug-up site in the village.

Objectives:

The primary objective of establishing Zoological Park aims to complement and strengthen the national efforts in conservation of endangered and rare species of wild fauna. Since the beginning the park has aimed at the following objectives:

- To support conservation of endangered species through breeding under captive conditions.
- To educate, motivate and create awareness in the society about the need for conserving wildlife, biodiversity and natural resources.
- To provide opportunities for scientific research on wild fauna.

Why a Tourism Project is Required

Most of the zoo animals are either acquired from other zoos or are born here. The objective of the zoo has never been to collect the animals from the

wild except the ones which are rescued from the wild. The animals are kept in open enclosures so that their behavioral and physical needs can be met akin to their natural habitat. With the passage of time, the role of zoos across the world has changed from places of casual entertainment to conservation breeding, education and wildlife awareness. However, a common visitor to the zoo still considers the zoo as a random collection of animals made captive for the entertainment of public. Therefore, there is a need to educate the tourist about the changing role of zoos and thereby achieve the ultimate aim of inculcating a responsible behaviour towards wild animals and wildlife conservation. A tourism project of the kind as conceived is expected to fulfill this aim fully. An abstract of components is given as Annexure-2. In addition to the zoo animals, the tourists will also be taken around the dug-up archeological site at village Chhat to show the historical site and the historical artifacts.

Available Facilities

As far as the archeological site is concerned, no facilities exist at the site at the moment. Similarly, existing facilities in the Chhatbir zoo have become out dated and need up-gradation/ face lifting. In order to improve rural tourism, the below mentioned facilities are required to be provided.

- The most important facility for the visitors is a hygienic, neat and clean toilet. The toilets are old and need major upgradation.

- An information centre is a must in any place of tourist interest but the zoo lacks one.
- Camping/tenting facility for visitors for camping especially for groups coming from far off places.
- Proper directions and approach roads.
- Proper visitors' pavement paths around the enclosures of animals.
- Proper signage in the zoo

Component	Description of work
Solid Waste Management Sewerage Management	There is a need of a state-of-the-art toilet facility with separate sections for ladies and gents. A grant of Rs 10 lac has been provided under the item solid waste management & sewerage management. It is proposed to renovate the existing two toilets of the zoo. These toilets will be stand alone toilets with state-of-the-art septic tanks. Dust bins and solid waste disposal bins shall be put in place at appropriate places and the efforts would be made to re-cycle as much waste as possible. The ultimate aim would be to make the zoo a polythene free zone and free of solid wastes.
Direction Signs and Improvement of Roads	There were big hoardings on the main high ways in the state but during the building of new high ways NHAI and other agencies have either removed all the hoardings from these highways or have damaged them beyond repair. The directions are needed on the highways to guide the visitors. The grant of 3.85 lac rupees has been provided under the item direction & improvement of roads so the proposal is to fix the new direction boards according to the

instructions of the NHAI on the highways to guide the visitors to the zoo. A total of 12 direction boards will be fixed on different locations at all the approaching roads

Site Development (Beautification of the main gate shallow lake)

The area around the dup-up site would be suitably landscaped and beautified by planting some perennial shrubs, small ornamental trees, green areas with hedges, shrubs, grasses and some rockeries of suitable species. The proposal is also to give a new look to the main gate shallow lake by providing stone pitching on the edges ,de-silting, laying of anti seepage polythene sheet at the bottom and creating a natural looking waterfall with rockery on the central island of this lake. This would not only improve the ambience just at the entrance gate of the zoo and give soothing feeling to the tourists but also help in recycling of water through waterfall in the central island of the lake and provide a better environment and surroundings to the water birds at the lake. The grant of Rs.8.20 lac. has been provided under the item of site development.

Educational and Guiding Signage Boards

In order to educate the tourists about the historical and archeological importance of the site, some sign boards detailing the importance/history of site and the artifacts shall be installed near the dug-up site. The proposal is also to make new signage boards on the primary loop of the zoo, it would help the visitors to follow the rules and regulations in the zoo and also guide them to various facilities in the zoo. It is proposed to replace some of the major signage boards that have become very old with an amount of Rs 0.50 lac under this component. The remaining boards may

	be replaced if some more funds come from any quarters.
Tourist Accommodation	The proposal is to make a semi- permanent tenting (camping) facility on raised platforms with common toilets, kitchen, store- cum-watchman hut and lawn facilities on the south-western part of the zoo outside the wall, for which the location has already been ear-marked. It is also proposed to purchase and put in place some lawn furniture out of the grant under this component. A grant of Rs 11.90 lac has been provided under this component.
Activity Centre cum Information Centre	The proposal is to make a unique activity Centre cum Information Centre Centre near the tourist accommodation where the visitors will be provided information about the historical/archeological site, the zoo, wildlife sites, eco-tourism sites and other tourism information with pamphlets etc. The ultimate aim of the activity centre would be to educate the visitors about Punjab's rich culture and history as well as the concept of wildlife conservation and a responsible tourism ie. Taking from nature only so much that can be given back. Besides the written material, audio-visual media will also be used. A grant of Rs 12.00 lac has been provided under this component
Contingencies	Contingencies have been provided @ 3% of the total cost of the project in order to cover up for any cost escalations or some unforeseen expenses.
Architect fees	Architect fees @ 4% have been provided to make the appropriate drawings and plans so that it is ensured that the facilities created conform to state-of-the-art designs. A professional hand is indispensable in order

	to conform to world standards.
Implementing Agency	Department of Forests and Wildlife Preservation, Punjab. (Wherever required suitable NGOs or the local Panchayat shall be involved).
Perceived Benefits	• To bring people closer to nature by promoting rural based, non consumptive tourism. • Conserve ecological rural heritage. • To prepare for more informed, responsible and ecologically sensitive rural citizen. • Provide for active participation and sustainable flow of economic benefits to local rural communities. • Build strategic alliances/partnership to enlarge the scope of operations in rural area of the state • Meet the tourist's satisfactions. • To manage and operate the resource as self sustaining
Total Cost	45.55 lac. granted by Ministry of Tourism Government of India vide its letter No. 4-A& T(43)/2006(Hardware) dated 16-01-2007.
Implementation Schedule	Preparation of drawings, estimates and other approvals from 0 to 1 month. Physical implementation: Month 1 to Month 6
Operation and Maintenance	Department of Forests and Wildlife Preservation, Punjab.
Environmental Impact	Nil
Any other risks	Nil

ANNEXURE-20

Constitution of Punjab Zoos Development Society

GOVERNMENT OF PUNJAB DEPARTMENT OF FORESTS AND WILDLIFE PRESERVATION

PREAMBLE

Punjab has three zoos, one large at Chhatbir, two small zoos one each at Ludhaina and Patiala along with two Deer Parks at Neelon and Bhatinda. The Zoo at Chhatbir is known as M.C. Zoological Park having 900 animals/birds belonging to 80 species and is visited by nearly one million people in a year. It is spread over about 202 ha area on the fringe of Chandigarh City.

Ludhiana Zoo is located on Ludhiana-Jalandhar Road near Amaltas restaurant, having one tiger safari and other animals like Himalayan Black bear, Black buck, Blue bull, Barking deer, Hog deer, Sambar and birds.

Patiala Zoo, Patiala is part and parcel of Bir Moti Bagh Sanctuary, Patiala. Deer Park Bhatinda, about 5 km from Bhatinda City is located in Bir Talab forest area. Deer Park, Neelon is located on the Banks of Sirhind canal. It is 5 km from Samrala and 20 km from Ludhiana City.

These zoos and deer parks receive annual budget grants for the upkeep of animals and their habitat, but due to multiplicity of functions and roles of zoos for creation of awareness, education and ex-situ and in-situ conservation, the ever-increasing demand of funds cannot be met exclusively through Government source.

In order to complement, supplement, strengthen and expand the activities of Zoological Parks and Deer Parks in the State of Punjab in the interest of conservation and management of captive wildlife with a view to facilitate linkage between *ex-situ* and *in-situ* management of wildlife, it has

been considered appropriate to constitute Punjab Zoos Development Society for the development of zoos and deer parks in the State.

RESOLUTION

After careful consideration of the proposal mentioned in the preamble, the State Government is pleased to approve the Constitution of an autonomous body, the

"Punjab Zoos Development Society" to promote, support, assist and mobilize resources for management of the M C Zoological Park and other Zoos/Deer Parks, raise awareness for wildlife conservation, *ex-situ* and *in-situ* conservation of endangered wildlife species on the following conditions:

(1) The name of Society shall be *Punjab Zoos Development Society* (PZDS).

(2) The Society shall be registered under the Indian Societies Registration Act (XXI) of 1860.

(3) The registered office of the society shall be at M C Zoological Park, Chhatbir.

(4) The Society shall be governed as per the Memorandum and Articles of Association annexed as **Appendix I.**

(5) The Society shall be autonomous and may enter into any MoUs/contracts in pursuance of its objectives.

(6) The Society shall follow prudent financial management in its working.

(7) The amount of entry fees received in the zoos and deer parks shall be retained by the Society.

(8) The State Government will continue to give funds in the form of grants to the zoos and deer parks for capital works approved by the State Government and Central Government. For the development of the M C Zoological Park and other zoos and deer parks, recurring expenditure shall be borne by the State Government as determined on an animal basis every year. In view of the nature of the activities, the existing staff employed in zoos and deer parks will continue to draw their salary and other allowances on the pattern of Government employees. In order to supplement the efforts of conservation of wildlife in the zoos and deer parks of the State, the Society shall contribute supplementary financial assistance and efforts in the form of human resource, infrastructure etc.

(9) The Society shall be free to receive Government grants for projects, to raise donations, to invoke new ideas for raising resources and subject to the constitutional arrangement of the society be able to utilize these

funds for the objectives mentioned in the Memorandum and Articles of Association.

(10) The Society shall hire/take the staff on deputation for discharging its functions/activities as per the decision taken by its Governing Body.

(11) As per the Wildlife (Protection) Act, 1972, Forest Conservation Act, 1980 and guidelines of the Central Zoo Authority, this Society will not be entitled:

(i) To sell, lease or dispose off the whole or substantial part of its
assets.

(ii) To form a subsidiary Society.

(iii) To liquidate or wind up the Society.

without the concurrence of Ministry of Environment & Forests.

(12) The Government will have the right to issue directions to the Governing Body on the advice of Punjab State Board for Wildlife.

(13) A separate bank account in a nationalized bank shall be opened in the name of Member Secretary of the Executive Committee of the Society and the accounts of Government funds and Society's own funds shall be maintained separately by the Society.

(14) The Society shall function like a corporate entity with a social purpose and optimize public benefit for the expenditure incurred by it.

2. This issues with the approval of the Finance Department, Punjab.

By order and in the name of the Governor of Punjab

Govt. of Punjab Department of Forests and Wildlife Preservation

MEMORANDUM & ARTICLES

OF ASSOCIATION

(APPROVED VIDE GOVERNMENT RESOLUTION, DEPARTMENT OF FORESTS AND WILDLIFE PRESERVATION)

PUNJAB ZOOS DEVELOPMENT SOCIETY

(TO BE)

REGISTERED UNDER THE INDIAN SOCIETIES REGISTRATION ACT (XXI) OF 1860

1. The name of the Society shall be "Punjab Zoos Development Society"

2. The Registered office of the Society shall b e a t M C Zoological Park, Chhatbir.

3. **In this memorandum and articles, unless otherwise required**

   a) **"Society"** means Punjab Zoos Development Society.

   b) **"Central Government"** means the Government of India.

   c) **"State Government"** means the Government of Punjab.

   d) **"Member"** means the Member of the Society.

   e) **"Department"** means the Department of Forests and Wildlife Preservation, Punjab.

   f) **"Year"** means the period of 1st April to 31st March.

   g) **"Body"** means the Governing Body of the Society.

h) **"Executive Committee"** means Executive Committee of the Society.

i) **"Steering Committee"** means Steering Committee of the Society.

4. Area of activity

The activities of the Society shall cover all Zoos/Deer parks of the State and any such area which may be brought within its fold by the Government orders.

5. Aims and objectives

(i) To complement, supplement, strengthen and expand the activities of Zoological Parks and Deer Parks in the State of Punjab in the interest of conservation and management of captive wildlife with a view to facilitate linkage between *ex-situ* and *in-situ* management of wildlife.

(ii) To coordinate and liaise with Govt. of India, Central Zoo Authority, State Govt. Public Sector Undertakings, Institutes, NGOs, Bodies, Private Sector, various national and international individual experts and funding agencies to receive contribution/assistance/ funds for development of Zoos/Deer Parks of the State in kind or cash.

(iii) To promote wildlife conservation, research, education and extension and training in the State by organising seminars, exhibitions starting research projects, and bringing out publications such as books, pamphlets, posters, stickers etc.

(iv) To actively engage in conservation, breeding of endangered and rare species of wild fauna relevant to the Punjab plains for their reintroduction in the wild wherever possible.

(v) To receive and manage all contributions given to the Society in larger interests of Zoos and Deer Parks of the State to augment their financial resources for general welfare of wild animals, construction of new enclosures, enrichment and modernisation of existing enclosures, improvement of public amenities and landscape, welfare of zoo/deer parks employees.

(vi) To procure wild animals and birds for the Zoos and Deer Parks of the State through exchange programmes or gifts or through purchase within and outside India.

(vii) To facilitate provisions of technical and expert advice to the Zoos and Deer Parks of the State for preparation of their management plans, manuals and other technical documents.

(viii) To undertake all such acts and activities as are incidental or conducive to achieve the objectives or are beneficial in promoting its objectives subject to overall control of the State Government.

6. To secure the aims and objectives

(i) Frame rules, regulations and byelaws for the smooth functioning of the Society and its activities, and rescind, vary or alter the same from time to time.

(ii) Receive, use, hold and apply whenever necessary contributions, donations, grants, bequests, fees if any for carrying out the objects of Society.

(iii) Avail of the services of consultants (Indian or foreign) with or without remuneration in the area of activities of the Society and to undertake projects entrusted by the State or Central Government.

(iv) Pay out of the funds belonging to the Society or out of any particular part of such fund, all expenses that are incidental to the formation, management and administration of Society.

(v) Acquire by purchase, gift, in exchange, lease, hire or otherwise, howsoever any land, buildings, property (moveable or immovable) plants, animals, machinery, equipment, apparatus, or other articles/things required for furtherance of all or any of the objects of Society from indigenous or foreign sources.

(vi) Construct, maintain and operate any facility for any of the purposes of the Society.

(viii) Give donations, prizes, scholarships, honorarium, fellowships, stipends, or any of the aforesaid objectives of Society.

(ix) Establish and maintain a library, and procure books, periodicals, newspapers and other publications for the library.

(x) Establish, equip, maintain laboratories/hospital for the Zoo.

(xi) Establish, maintain, subscribe or become a member of training institutions, research institutions, research laboratories for collaborative research programmes related to the Zoo.

(xii) Engage and employ such staff, as may be necessary for the efficient handling and conduct of the business of the Society.

(xiii) Open accounts and deposit all such money with any nationalised or scheduled bank and to pay or withdraw money from such account/accounts as the Society may decide.

(xiv) Prepare and maintain accounts and other relevant record and to prepare annual statement of accounts including Balance Sheet of the Society.

(xv) Constitute such committee/committees which the Society may deem fit for the disposal of its business.

(xvi) True and proper accounts of all the receipts and disbursements relating to the Society shall be kept by the Member Secretary of the Executive Committee and/or the employees of the Society who have been assigned the duty in that regard. On or after the 31st day of March each year, an income and expenditure account for the whole year upto that date, and balance sheet of the assets and liabilities as on that date relating to the Society shall be prepared. These accounts and balance sheet shall be audited and examined by a Chartered Accountant which may be engaged by the Society for the purpose of such audit on such remuneration as the Society may deem necessary and desirable.

(xvii) A copy of the balance sheet together with a copy of the receipts and payments account duly audited and approved at the general meeting together with a list of the names of the members of the Governing Body shall be filed with the Registrar within 14 days of holding the general meeting, as required under Section 13 of the Act.

(xviii) All funds not immediately required for the purpose of the Society may be invested in fixed deposits of Scheduled Banks or in securities authorized by the Indian Trust Act, 1882 or any other law regulating the investments of the public funds.

7(a) Membership

(1) **Chief Patron**

The Minister, Forests and Wildlife Preservation Department, Government of Punjab will be the Chief Patron of the Society.

(2) **Government Nominees**

The Punjab State Government through may nominate members to the Society on the recommendations of the Principal Chief Conservator of Forests.

(3) **Institutional membership**

Any Institution, corporation, company, organization or body, duly constituted under relevant law and interested in promoting objectives of the Society shall also be eligible for membership to the Society.

(4) **Individual membership**

Any Indian citizen interested to pursue objectives of the Society shall be eligible to become member of the Society.

For member of category (3) and (4) above, the Society shall lay down rules and decide admission and continuation of membership procedure. Government or the Society may make appropriate changes in membership rules as and when necessary.

(5) **Honorary Members, Patrons**

The society can nominate Honorary Members and Patrons from time to time. The rules regarding this can be framed by the society separately.

7(b) Membership Fees:

Individual member	Annual fees: Rs. 100

	Life members Rs. 2500
Institutional member	Annual fees: Rs. 5,000
	Life member Rs. 50,000

The Society may make appropriate changes in the membership fees as and when necessary.

8. Governing body of the Society

The society shall be the statutory body affiliated to the Department of Forests and Wildlife Preservation, Punjab. There shall be a governing body consisting of members all of whom shall be either Government officers or nominated by Punjab Government to which by the rules of the Society, the management of assets is entrusted as required under Section 2 of Societies Registration Act of 1860.

S. No.	Name and Address	Designation	Occupation
1	Hon'ble Minister of Forests and Wildlife Preservation, Punjab.	Chairman	Public Service
2	Financial Commissioner and Secretary to the Government of Punjab Department of Forests and Wildlife Preservation.	Vice Chairman	-do-
3	Secretary to Finance Department not below the rank of Secretary (Expenditure)	Member	-do-
4	Principal Chief Conservator of Forests Punjab, Chandigarh.	Member	-do-
5	Director, Wildlife Institute of India, Dehradun or its nominee	Member	-do-
6	Member Secretary, Central Zoo	Member	-do-

	Authority or its nominee		
7	Director, Animal Husbandry, Punjab, Chandigarh.	Member	-do-
8	Conservator of Forests, Shiwalik Hills Wildlife Circle, Punjab, Chandigarh.	Member	-do-
9	Conservator of Forests (WL), Parks and Protected Area Circle, Punjab.	Member	-do-
10	Five Non-Official members conversant with Wildlife Conservation to be nominated by Govt. of Punjab.	Member	Public Service
11	Three representatives of Non-Governmental Organisations	Member	-do-
12	Chief Wildlife Warden, Punjab, Chandigarh.	Member Secretary	-do-

8(a) Powers and Duties of the Governing Body

The Governing Body shall be the Apex body of the Society. The powers and duties of the Governing Body shall be as follows: -

(i) The whole business of the Society i.e. its administration, control, supervision, regulation and management of fund and properties shall vest in the Governing Body, however this shall be subject to the overall control and policy decisions of the Government. The Governing Body may from time to time entrust to or confer upon the Member Secretary such of its powers as it may deem fit for administration of the Society. The Body may also revoke, withdraw or alter any or all of such powers delegated to the Member Secretary.

(ii) The Governing Body may frame rules and regulations for carrying out its purposes and objects thereof and the same may be varied, altered,
added or substituted from time to time by unanimous decision of the

Governing Body with a view to introduce more effective administration and carrying out the purpose and objects of the Society.

(iii) The Governing Body may appoint such employees on contract for the smooth functioning of society and regulate the terms and conditions of
their appointment.

(iv) The Governing Body may appoint a sub-committee/expert with such powers and duties as may be considered necessary or expedient and also dissolve any of the sub-committees so set up.

(v) The Governing Body shall have full powers to approve capital expenditure on individual projects, plans, scheme, deployment of new facilities for the visitors, and framing of entry rules in the Zoos including fees and charging under its jurisdiction.

(vi) The Governing Body shall have the powers to frame byelaws on any matter which are required by these regulations or by decisions arrived at in accordance with these regulations to be regulated by such bylaws
to Executive Committee.

(vii) The Governing Body shall have the powers to expel any non official member if in its opinion, any member willfully refuses to abide by or neglects any of the provisions of these rules or is found guilty of any conduct detrimental to the Society, by a resolution passed in the meeting of Governing Body by a majority of members of the Body present and voting at that time. In event of equality of votes, the Chairman shall have a casting vote in addition to his own vote. The decision of the Governing Body shall be final and legally binding on all concerned.

(viii) Should any member representing or nominated by the State Government be prevented from attending a meeting of the Society or the Body he shall be at liberty to appoint and authorize a representative to take his place at the meeting but such representative shall not have voting rights at the meeting.

The Governing Body shall reserve for the decision of the Government any proposal which in its opinion is of such importance as required to be reserved for such decision.

8(b) Cessation or Termination of Membership of Governing Body

A member of Governing Body shall cease to be such member if he ceases to hold office by virtue of which he is a member or is recommended by the Chairman from the membership of Society or fails to attend three consecutive meetings of Society without leave of Chairman.

8(c) Meeting of the Governing Body

(a) The Governing Body of the Society shall ordinarily meet twice a year at such time and place and on such date as may be determined by the Chairman provided that the Chairman may call meeting whenever he deems fit, or the Chairman can also call meeting upon the written request of not less than four members.

(b) The Chairman may also call a special or extraordinary meeting of the Authority of which due notice shall be given.

(c) Every meeting of Governing Body shall be presided over by Chairman and in his absence, by the Vice-Chairman. Each member of the Governing Body including Chairman shall have

one vote and all decisions shall be taken unanimously or by simple majority.

(d) A minimum of six of the members of the Governing Body including Chairman shall constitute the Quorum at any meeting of the Body.

(e) For every meeting, appropriate notice of the meeting specifying the date, time and the place shall be notified to the members.

8(d) Power and Duties of Chairman

(i) Chairman shall preside over all meetings of the Society and provide guidance to the Society.

(ii) The Chairman shall have the authority to review periodically the work and progress of the society and to pass appropriate orders on recommendations of the reviewing or inquiry committees.

8(e) Power and Duties of Member Secretary to Governing Body

(a) The Member Secretary shall exercise the powers as enjoyed by him in Forest Department as the case may be. In addition, The Governing Body may from time to time confer upon and entrust to Member Secretary such of its powers as it may deem fit for the smooth administration and management of the affairs of the Society.

(b) The Member Secretary shall record the minutes of the meeting of Governing Body and communicate the decision taken by Governing Body/Chairman to the Executive Committee for further compliance and execution.

9. Steering Committee of the Society

The Society shall have an Steering Committee, constitution of which shall be as follows: -

1	Hon'ble Minister of Forests and Wildlife Preservation, Punjab.	Chairman
2	Financial Commissioner, Forests and Secretary to Govt. of Punjab, Department of Forests & Wildlife Preservation.	Member
3	Principal Secretary to Govt. of Punjab, Deptt. of Finance or his representative	Member
4	Principal Secretary to Govt. of Punjab, Deptt. of Personnel or his representative	Member
5	Principal Chief Conservator of Forests, Punjab	Member Secretary
6	Chief Wildlife Warden, Punjab	Member

9(a) Duties and powers of Steering Committee

The Steering Committee shall provide financial and administrative sanction and approval necessary for the achievement of objectives of the Society. The committee shall also present cases to both State and Central Governments for the arrangement/sanction and release of funds. The steering Committee shall consider and approve the Annual Plan of Operations of the zoos/deer parks presented by Chairman of the Executive Committee of the Society. The Steering Committee shall also release the grants to the different zoos/deer parks according to the approved Annual Plan of Operations whose accounts shall be maintained by the respective incharges. The committee shall also take decisions which are not within the purview and scope of Executive Committee.

10. Executive Committee of the Society

The Society shall have an Executive Committee, constitution of which shall be as follows: -

S. No.	Name and Address	Designation
1	Chief Wildlife Warden, Punjab, Chandigarh.	Chairman
2	Conservator of Forests (WL), Parks and Protected Areas, Punjab.	Vice-Chairman
3	Conservator of Forests (WL), Shiwalik Hills Circle, Punjab.	Member
4	Deputy Conservator of Forests, Ludhiana	Member
5	Deputy Conservator of Forests, Bathinda	Member
6	Deputy Conservator of Forests (WL), Patiala	Member
7	Senior Veterinary Officer, Chhatbir Zoo.	Member
8	One retired Forest Officer/Wildlife Officer who has served in Zoo/Wildlife Department (to be nominated by CWLW)	Member
9	Field Director, M.C. Zoological Park, Chhatbir	Member Secretary

The State Government shall have the right to nominate any other member in addition to or in substitution of the above. The Committee may co-opt, invite or appoint in the committee, any other individual/organization in the interest of the cause of the wildlife conservation.

(a) All the members of the Executive Committee shall be bound to abide by the collective decisions taken either by consensus or by a majority vote.

(b) If the post of any office bearer falls vacant in case of

i) Death

ii) Voluntary resignation

iii) Failure to attend five consecutive meetings

iv) Conviction in any criminal or civil offence involving moral turpitude.

v) Working against the interests of the Society

The Society will be well within its rights to appoint any new members.

10(a) Powers and functions of the Executive Committee

The committee shall have such powers, duties and responsibilities as may be specifically delegated by the Society for the management of the affairs of the Society. It shall have powers and responsibilities in respect of all or any of the following matters:

(a) Management and administration of Society subject to the superintendence, control and direction of Executive Committee.

(b) To collect and/or generate resources and funds on behalf of Society.

(c) To prepare budget estimates and Annual Plan of Operations for different zoos/deer parks for submission to Steering Committee for approval thereof.

(d) To make and execute contracts and invest the funds of the Society and sell or alter such investments subject to prior approval, and to supervise the accounts and arrange for the audit and preparation of the annual report of the Society.

(e) To coordinate and exercise supervision of the activities of the Society.

(f) To provide for day to day management of the affairs of the Society.

(g) To institute and defend legal proceedings on behalf of the Society.

(h) The Executive Committee shall have the powers to allow procurement through exchange or otherwise of animals, birds, reptiles for zoos/deer parks of the State from other Zoos of India or abroad and to finalise the terms and conditions thereof. (i) The Executive Committee shall have the powers to regulate the entry fees of visitors to Zoos and Deer Parks of the State. (j) The Executive Committee shall have powers to sanction the expenditure on a particular Work/Project of the Society upto Rs. 5.00 Lakhs.

(k) The Executive Committee shall have the powers to do all such acts, deeds, matters, things as are incidental or conducive to the Memorandum of Association.

(l) The Executive Committee shall have the powers to regulate, enter into and execute agreements, contracts and documents on the behalf of Society and vary and rescind such agreements, contracts and documents.

(m) The Executive Committee shall prepare all business for transaction at the Annual General meeting of the Society. (n) The Executive Committee shall pass the accounts of the Society subject to the same being certified by Auditors and shall present the Annual Report and income/expenditure of the Authority in the Annual General Meeting.

(o) The Executive Committee shall take all disciplinary actions against employees of the Society including their removal, dismissal, etc. in consultation with the Governing Body.

(p) All decisions of the Executive Committee shall be intimated to the Governing Body and any directions issued by the Governing Body on any or all the decisions shall be implemented by the Society.

10(b) Power and Duties of Member Secretary to Executive Committee

(a) The Member Secretary of the Executive Committee shall convene all meetings of the Society with the permission of the Chairman.

(b) The Member Secretary of the Executive Committee shall record minutes of the meeting of the Executive Committee to be entered in a

Register and duly signed by the Chairman thereon and it shall be in the custody of the Member Secretary. He shall issue all general circulars, notices, whenever required.

(c) The Member Secretary of the Executive Committee will sign on behalf of the Authority, all such papers which are necessary.

(d) The Member Secretary of the Executive Committee will sign and give pay order on all bills for payments of the Society.

(e) The Member Secretary of the Executive Committee will transact all other business of the Society subject to the direction of the Executive Committee of the Society.

(f) The Member Secretary of the Executive Committee shall collect and receive all sorts of subscriptions, donations and deposit of money and grant receipts thereof.

(g) The Member Secretary of the Executive Committee will maintain and keep cash book and such other accounts which are necessary for the business of the Society.

(h) The member Secretary may delegate such of his powers as he may deem fit to other officers/officials of zoos/deer parks for day to day administration where deemed necessary subject to the approval by Executive Committee.

(i) The accounts of the grants given to zoos/deer parks maintained by the respective incharges shall be collected and got audited by the Member Secretary of the Executive Committee of the Society.

10(c) Meeting of the Executive Committee

(a) The committee shall ordinarily meet once in every three months provided that the Chairman shall, on a written requisition of not less than one third committee members call a special meeting. Minimum seven days notice shall be given for any meeting of the committee.

(b) One-third of the members of the Committee including the Chairman shall constitute a quorum for any meeting of the Society.

(c) In case of difference of opinion amongst the members, the opinion of the majority of members shall prevail.

(d) Each member of the committee including the Chairman shall have one vote and if there shall be an equality of votes on any question to be determined by the Committee, the Chairman shall in addition have and may exercise a casting vote.

(e) Every meeting of the committee shall be presided over by the Chairman and, in his absence by the Vice-Chairman.

(f) Any resolution, except such as may be placed before the meeting of the committee may be adopted by circulation

amongst the members and any resolution so circulated and adopted by a majority of the members who have signed their approval or disapproval of such resolution shall be as effective and binding as if such resolution had been passed at a meeting of the committee, provided that in every such case at least 51% members of the committee shall have recorded their approval of the resolution.

(g) The Chairman shall have the power to invite any person or persons, other than members of the committee to attend the meeting of the committee, but such invitees shall not be entitled to vote at the meeting.

11. Fund Generation and Utilization

The Society shall have following sources of generation of funds:

1. By membership fee
2. Funds obtained through donations, endowments, bequests, gifts, contributions, adoptions, etc., from/by national and/or international sources.
3. Grants and/or grant-in-aid, recurring and non-recurring grants from Central Government, State Government, Local Government bodies, etc.
4. Other sources as may be developed by the Society after due permission from appropriate authorities.

The Society shall be authorized to utilize funds accrued to it from above sources for various activities as per the objectives of the society. Expenditure for various activities shall be made as per the Annual Plan

of Operations (APO) duly approved by the Chief Wildlife Warden, Punjab.

12. **General Meeting**

(i) The society shall call Annual General Meeting once a year.

(ii) Attendance of one-fifth members present at the meeting shall constitute the quorum.

(iii) At the Annual General Meeting of the society, the Member Secretary of the Executive Committee shall place the report on the activities of the Society since the last General Meeting, the balance sheet, and the audit report with the audited accounts of the Society for the period in respect of which audit has been completed, future strategy on the activities of the Society, any other business that may be brought forward for discussion in the meeting with the approval of the Chairman.

(iv) The first Annual General Meeting shall be held by the Society within 18 months of its registration. The next annual general meeting of the Society shall be held within 9 months after the expiry of the year in which the first annual general meeting was held and thereafter an Annual General Meeting shall be held once a year.

(v) Every question submitted to a general meeting shall be decided by a show of hands and in case of equality, the Chairman shall have a casting vote in addition to the vote to which he is entitled as a member.

(vi) Every member member shall have one vote, which shall be exercisable personally.

(vii) Subject to the rules of the Society, as aforesaid, all general meetings shall be guided in their proceedings by the Chairman and his ruling in regard to all matters of procedure shall be final.

13. Accounts and Audits

(i) True and proper accounts of all the receipts and disbursements relating to the Society shall be kept by the Member Secretary of the Executive Committee and/ or the employees of the society who have been assigned the duty in that regard. On or after the 31st day of March each year, an income and expenditure account for the whole year upto that date, and balance sheet of the assets and liabilities as on that date relating to the Society shall be prepared. These accounts and balance sheet shall be audited and examined by a Chartered Accountant which may be engaged by the Society for the purpose of such audit on such remuneration as the Society may deem necessary and desirable.

(ii) A copy of the balance sheet together with a copy of the receipts and payments account duly audited and approved at the general meeting together with a list of the names of the members of the Governing Body shall be filed with the registrar within 14 days of holding the general meeting, as required under section 13 of the Act.

(iii) All funds not immediately required for the purpose of the Society may be invested in fixed deposits of Scheduled Banks or in securities authorised by the Indian Trust Act, 1882 or any other law regulating the investments of the public funds.

14. Legal Proceedings

(i) All suits and legal proceedings by or against the Society shall be represented by the Member Secretary of the Executive Committee of the Punjab Zoos Development Society.

(ii) All contracts and assurance of property made on behalf of the Society or concerned Zoo shall be signed on behalf of the Society by the Member Secretary and another member of the Society under the seal of the Society.

(iii) Any amendment, alteration or change in the Memorandum of Association or rules and regulations of the Society shall be in conformity with the relevant provisions of the Societies Registration Act, 1860 as amended from time to time.

(iv) In the event of any proposal for amalgamation or dissolution of the Society being affected, it shall be with the prior consent of the State Government and in conformity with the provisions of the Societies Registration Act, 1860.

(v) The Governing Body shall provide a common seal for the purpose of the Society and shall have power from time to time to destroy the same and substitute a new seal in lieu thereof. The seal shall be used in the presence of at least two members.

(vi) For acts, matters and things which have not been specifically provided for in these rules the provisions, the act and the rules framed thereunder shall apply.

(vii) All the legal matters pertaining to the Society shall be under the jurisdiction of appropriate court of law at Chandigarh.

ANNEXURE-21

Evaluation Report of Chhatbir Zoo by Central Zoo Authority

Sr. No.	Relevant Norm No.	Conditions	Time Period to comply the conditions
General			
1.	**11A**	The zoo has not prepared collection plan for animal to be housed and displayed in the zoo keeping due regard to the availability of land, water, electricity and climatic condition of the area.	Six Months
Administrative and Staffing Pattern			
2.	14	The zoo Operator should deploy second veterinarian as full time to look after the animals.	Six Months
Animal enclosures-Design, Dimensions and other Essential Features			
3.	15	The zoo should plant thorny hedges & creation of stand off barriers at Macaque enclosure, Painted stork aviary, Himalayan bear and Sloth bear enclosure, Tiger enclosure, Gharial enclosure.	Six Months
4.	16,16A, 17&18	Existing peasantries, canid enclosures, Hog deer enclosure, stop gap water bird aviary, Python enclosures, Small cat enclosure should be demolished and appropriately designed new	One year

enclosure be provided for the species.	
Porcupine enclosure should be upgraded by providing feeding cells and mud-boulder mounds.	One year
Bear enclosure should be provided with more natural enrichment by planting tall trees, tree trunks, logs and naturalistic shades. Solar powered fence provided around the trees to safeguard against the bears damaging the planted trees.	One year
Painted stork aviary near the gate and Sarus Crane aviaries should be provided with naturalistic perches including trees indigenous species. Definite viewing areas should be earmarked for visitors and rest of the enclosures should be camouflaged byb planting of bamboos and other trees. Exotic trees and plants should be phased out for these enclosures.	One year
Elephant feeding cells should be demolished and new cells constructed at alternate site in such a manner that the same are not visible to the visitors.	One year
Water bodies of sloth bear and Immediately Elephant enclosures	Immediately

should be repaired and seepage of water from the water bodies should e prevented, Mud/Sand for sand bath of Elephants should be provided	
Area of Elephant enclosure extended by joining into the Rhino enclosure.	Immediately
Gharial enclosure should be extended to ensure that adequate sandy land is available for nesting of the species and sum basking of the animals.	Immediately
Viewing are should be confined only to area adjacent to the road. More than % of the periphery should be camouflaged by planting bamboo and other thorny trees. Shade provided for the animals should be shifted to the distal end of the enclosure.	Immediately
Tiger enclosure should have adequate number of kraals/out door enclosures to ensure that no Tiger remains confined in the feeding cells. Each Tiger must get access to outdoor enclosure every day. Pucca floor in the kraal should be broken and mudy/soil covered floor provided	Immediately

		Planting of appropriate species including bamboo should be done in both the Tiger and Elephant enclosures.	Immediately
		Rotational use of enclosures should be planned for Ungulate/ Elephant enclosure to keep adequate vegetation & trees.	One year
		Water in painted stork aviary should be recycled and allowed to fall in the enclosure from a naturalistic spring.	One Year
		Area of Herbivore Safari should be extended to 30 hectares. Weeds like Adhatoda and parthenium removed and appropriate fodder species of trees and grass planted. If adequate area is not available for the purpose the Herbivore Safari should be done away with and appropriately design of enclosures provided for each spec ies.	One year
		Enclosure in which at present Emu is housed should be used for display of jackal and Emu provided appropriate facility else where.	One year
5	19	The arrangement of excess water drainage, removal of excreta is	

		required to be provided in all enclosures. The carnivore enclosures should be provided with septic tank/pit for draining waste water from the animal house.	With immediate effect
Animal Care, Health and Treatment			
6.	27	The Zoo should maintain register in every enclosure for recording daily observations and action taken thereof in addition to the individual animal history sheets for endangered species.	With immediate effect
7.	28	The zoo should carryout regular examination for parasitic check and vaccination and the details on the same should be maintained appropriately.	With immediate effect
8.	29	The zoo operator shall arrange for medical checkup of the staff responsible for upkeep of animal at least once in every six months to ensure that they do not have infections of such disease that effect of zoo animals.	With immediate effect
9.	30	Animal history sheets should be prepared for each and every animal of endangered species.	One Month
Veterinary Facilities			
10.	34	Forensic examination findings of viscera should be linked with postmortem reports and definite	One Year

		cause for death should be identified. Appropriate follow up measures should be taken to prevent such deaths in future.	
Breeding of animals			
11.	37	The zoo operator should procure appropriate mates for single animals and unpaired animals namely chimpanzee, Zebra, Jaguar, Lion tailed macaque, Sangai, Gaur and Smooth Indian otter.	One year
12.	40	Population control measures in respect of Sambar spotted, Hog deer, Black Buck should be taken on priority basis.	Continued basis
13.	41	The zoo authorities should either do away with the safari and keep the animals in off the display areas. If they are entrusted in having a Lion Safari appropriate animals of generically pure origin should be organized and area of the safari extend to 20 hectares.	One year
Education and Research			
14	45	Improving educational signage, directional sign boards, warning sign boards.	One year
15	47	Appropriate arrangements for recording of biological behaviours and population dynamics of	With immediate effect

		endangered species should be made.	
Visitor's Facilities			
16	50	Access to handicapped persons should be providing to handicapped visitors where animals can not be seen from the road.	Immediately
Developing and Planning			
17	51	The Zoo should prepare a long term Master plan for its development in the format circulated by the Central Zoo Authority. Three copies of the said plan should be submitted to the Central Zoo Authority for its approval.	

Non-statutory recommendations

1. Because of non-availability of restraining facilities at most of the enclosures, it is advised that the zoo should take appropriate measures providing restraining facilities at each enclosure, wherever feasible.

2. Flooring of the operation theatre should be joined with the wall of the room through rounded corner and not at 90 degree.

3. Zoo is in the process of preparing the master plan. There have ensured that the Master plan is prepared as envisaged and suggested in the guidelines issued by the CZA, immediately. Zoo was also advised to develop atleast few ecosystem based multi species display namely Harike Lake and Shivalik forest.

4. It is advised that zoo may encourage setting up of a friendly of zoos plan comprising of school and college students as well as examine the

possibility of allowing students to join as interns after payments of suitable honorarium.

5. Entry of motorcycle in the zoo should be prohibited because this causes lot of disturbances to the animals and visitors.

As the Central Zoo Authority has requested the M.C.Zoological Park, Chhatbir for setting up of Conservation Breeding Centre for Falcons, which shall house the Shaheen Falcons and other species of Falcons. As very little work has been done in India on captive breeding of this species. It would be appropriate if a Supervisor and Director of the zoo visit Dubai Zoo to get first hand information and hands on experience of breeding of falcons and their captive management. It is also advised that zoo Director should also visit vulture conservation breeding centre, Pinjore along with other personnel involved with the breeding programme and spend 2-3days there to see how the centre is function.

A half yearly report regarding progress made in implementation of the aforesaid conditions should be submitted to the Central Zoo Authority.

Grant of recognition beyond 30th june 2012 to M.C.Zoological Park, Chhatbir as a large category zoo would be considered on the basis of compliance of the conditions stated above, general performance and physical evaluation of the zoo.

The recognition to the M.C.Zoological Park, Chhatbir shall be revoked by the Central Zoo Authority, at any point of time if the zoo operator is found not complying with the stipulated conditions.

ANNEXURE-22

ANIMAL ADOPTION SCHEME

About our Zoos

The State of Punjab has one Zoological Park at Chhatbir, one small zoo at Ludhiana, three Deer Parks one each at Bhatinda, Patiala, Neelon and a Bird Aviary at Patiala. All the Zoos and Deer Parks are holding and exhibiting wild animals and birds to the public for education and recreation.

Mahindra Chaudhary Zoological Park, Chhatbir is one of the largest zoos in India. This Zoo is spread over an area of 202 hectares and lies in the protected forest area of Chhatbir, once a hunting reserve of Maharaja of Patiala. The zoo aims to complement and strengthen the national efforts in the conservation of endangered and rare species of wild fauna through breeding under captive conditions, education and creating awareness in the society about need for conserving wildlife, biodiversity and natural resources as well as providing opportunities for scientific research on wild fauna. The Zoo holds about 900 wild animals and birds belonging to about 85 different species. The animals are kept in open enclosures so that their behavior and physical needs can be met akin to their natural habitat. Depending upon the type of species, the zoo has been divided into 19 sections and these sections are called complexes. Each complex accommodates 2 to 4 species and subspecies of animals, reptiles or birds. The main mammals exhibited are Royal Bengal Tiger, Leopard, Lion, Jaguar, Leopard Cat, Striped hyaena, Himalayan Black Bear and Sloth Bear, Elephant, Otter, Zebra, Hippopotamus and various species of macaques and deer. The main aves exhibited are Pea-Fowl, Sarus Crane, Red Jungle Fowl, Pheasants, Parrots, Pigeons and Doves, Black Swan, Emu, Shikra, Barn Owl etc.

Ludhiana Zoo was started (1988-89) initially as a tiger safari and is spread in about 15 ha out of 85 ha area of a Reserved Forests. The tiger safari attracts a number of visitors form nearby areas. Apart from tiger, there are 6 birds and 9 animals species on display in the zoo.

The Bir Motibagh Deer Park, Patiala was established in 1968 within the Bir Motibagh Wildlife Sanctuary. it is spread over an area of about 14 ha.

It houses about 12 species each of mammals and birds. The main species are Blackbuck, Sambar, Blue bull, Spotted deer, Crocodile and various species of birds.

The Deer Park Bir Talab, Bhatinda is located in a notified protected forests about 8 kms from the city of Bhatinda. The zoo is spread over an area of 32 acres. There are about 15 animal enclosures holding more than 200 animals.

The Deer Park Neelon is situated in rural area of Punjab on Ludhiana Chandigarh Road at Neelon, District Ludhiana. The Park holds about 10 species of animals and birds. The main species are Black buck, spotted deer, porcupine, parrots, budrigers etc. A new Bird Aviary having mainly coloured pheasants has been established at Baradari Garden, Patiala.

Need for Animal Adoption Scheme :

Because of the changing management objectives and also because of the frequent interventions of institutions like Central Zoo Authority, the Hon'ble Supreme Court of India and various NGOs working for the welfare of animals, with regard to providing ideal housing facilities to zoo animals matching as closely to natural habitats as possible, the expenditure per animal is becoming exorbitant. The Govts. are hard pressed to make more allotments towards human-centric development. Hence, the animals are at a loss compared to human beings. Nevertheless, the philanthropic individuals, NGOs like SPCA, PFA, PETA, schools, colleges voluntary bodies and last but not the least the

corporate houses and companies can play a major role in sharing financial responsibilities for a proper upkeep of animals through Animal Adoption Scheme. For these reasons, Animal adoption schemes are increasingly becoming popular in the zoos of many states (Karnataka, Uttar Pradesh, Andhra Pradesh, Orissa and Tripura etc.)

What is Animal Adoption Scheme?

Animal Adoption Scheme is an innovative scheme through which the individuals, NGOs, Corporate houses, industrialists and companies shall be eligible to adopt animals of their choice in the zoos of Punjab by meeting their stipulated expenses of food and upkeep of their houses on an annual/monthly basis. The zoos have calculated the rates both for yearly and monthly charges for such adoptions. The adoption of animals can be done any time during the year by simply depositing the calculated amount in the selected zoo for the animal to be adopted.

Why Adopt?

The adoption program is a great way to show your support for wildlife conservation. By adopting your favourite animal, you contribute towards feeding of the animal for one full year/month and help support Zoos efforts in Wildlife Conservation.

Zoos are involved in captive breeding programmes for endangered species and other conservation projects all of which need the support of concerned people like you and your institution.

Finally, adopting an animal is not only a way of entertainment but a method to know every aspect of an animal both for you and your friends and family too. An adoption makes a great gift for birthdays, anniversaries etc. and is always unique. Show your concern towards conservation.

How one can Adopt an Animal?

1. Select your favourite zoo.

2. Pick your favourite animals exhibited in that zoo as given in the leaflet.

3. Choose a level of support.

4. Fill in the attached form and drop it in the mail box or hand it over to Zoo office.

5. You can also gift (virtually) an adopted animal to your friends, parents or relatives and children.

6. In case your favourite animal is already adopted, your name will be put on the waiting list, and as soon as the animal is available, you will be informed.

7. The above process (1 to 6) of booking can be followed by visiting our website www.wildlifepunjab.org and using your credit card.

Rates of Adoption

The rates of adoption (approximated to the nearest 100) worked out for the financial year 2009-10 (based on 2008-09 actual expenditure plus 10% inflation allowance) are as follows:

S. No.	Species	Rate of Adoption (yearly)	Rate of Adoption (Monthly)
	MAMMALS		
A	**CARNIVORES**		
1	Civet Cat	9800.00	850.00
2	Indian Lion	84000.00	7250.00
3	Jackal	29500.00	2550.00
4	Leopard Cat	9800.00	850.00

5	Panther	37300.00	3200.00
6	Royal Bengal Tiger	84400.00	7200.00
B	**HERBIVORES**		
1	Deer (Barking Deer, Swamp Deer, Manipur Deer, Chausingha, Black Buck, Spotted Deer, Hog Deer)	12600.00	1100.00
2	Elephant	209200.00	18000.00
3	Hippopotamus	139800.00	12000.00
4	Himalayan Black Bear	48900.00	4200.00
C	**PRIMATES**		
1	Chimpanzee	57100.00	5000.00
2	Monkey	15300.00	1325.00
D	**OTHER MAMMALS**		
1	Bison	3300.00	2750.00
2	Goral	15000.00	1300.00
3	Otter	24500.00	2100.00
4	Porcupine	11700.00	1000.00
5	Wild Buffalo	40700.00	3450.00
E	**REPTILES**		
1	Crocodile, Gharial	46300.00	3950.00
2	Tortoise	8200.00	700.00
F	**BIRDS**		
1	Budgerigar/Cockteal	500.00	50.00*
2	Common Crane	2700.00	150.00
3	Cocakatoo	6300.00	550.00

S. No.	Species	Rate of Adoption (yearly)	Rate of Adoption (Monthly)
4	Dove	400.00	40.00*
5	Duck	1600.00	150.00
6	Emu	53400.00	4500.00
7	Kalij Pheasant	2400.00	225.00
8	Parrot	4500.00	400.00
9	Pigeon	400.00	40.00*
10	Partridge	1000.00	100.00
11	Peacock	2800.00	250.00
12	Painted Stork, Black necked Stork, White Stork	6500.00	575.00
13	Sarus Crane	27200.00	2300.00
14	Shikra, Owl	8100.00	700.00

Note: For the young ones of above animals such as calves, cubs, kids, chicks and fawns etc., the charges will be half of the above amounts.

A minimum of 5 birds shall have to be adopted.

Privileges to the Animal Adopter

The following privileges will be extended to the Animal Adopter:

1. The Animal Adopter's name will be suitably displayed on a board near the adopted animal's enclosure.

2. The adopter will be allowed free entry pass for his family or for 5 persons to visit the zoo 4 times in a year. However, the adopter shall be permitted upto the animal complex to meet the adopted animal every week.

3. The adopter will be invited as a special guest during various celebrations related to wildlife where public function is involved.

4. The adopter will be ex-officio member of the Zoos Development Society.

5. The adopter shall be given the proper receipt of help rendered which he may use to get relief/exemption under the Income Tax Act.

6. The adopter shall got all related information regarding upkeep, maintenance and feed provided to the animal adopted.

7. The adopter shall get a Certificate of Adoption from the concerned Director of the Zoo.

8. The names of the persons adopting animals for one full year shall be displayed at the Entry Gate of the Zoo.

Animal Feasts:

Those who are interested to feed animals on special occasions such as marriages, birthdays, or for religious reasons have the liberty to contribute towards special feasts for wild animals of their choice. The zoo will arrange the following feed items for the animals mentioned against their names. What you have to do is:

1. Select the animal of your choice for feast.

2. Deposit the contribution at the zoo counter as per the cost of food/feed atleast 3 days before the intended date of feast.

3. Indicate the food article you wish to give out of the diet chart.

4. Indicate the number of days and time when you wish to feed.

5. A register shall be maintained to keep the record of adopters.

	Food articles provided	Cost of Feed per day per animal (In Rs.)
Elephant	Black Grams, Mixed crushed roti, Banana, Green fodder etc.	590.00
Macaque (Rhesus macaques, Bonnet macaques etc.)	Ground Nuts, Bananas, Bread, Potato, Onion etc.	40.00*
Civet Cats	Bananas, Meat etc.	20.00*
Chimpanzee	Bananas, Apple, Cabbage, Carrot etc.	115.00
Blue Bull	Black grams, Green fodder, Cattle Feed	55.00*
Deer (Barking Deer, Swamp Deer, Manipur Deer, Chausingha, Black Buck, Spotted Deer, Hog Deer)	Black Gram, Fodder, Cattle Feed etc.	30.00*
Peacock	Mixed crushed grains, Garlic, Carrot, Apple etc.	15.00*
Parrots	Green Chilly, Ground Nuts etc.	5.00*
Pigeons (Black, white pigeons)	Mixed crushed grains etc.	5.00*

Name of the Animal	Food articles provided	Cost of Feed per day per animal (In Rs.)
Doves	Mixed crushed grains etc.	5.00*
Kalij Pheasant	Mixed crushed grains etc.	15.00*
Cranes (Saras crane, common crane)	Mixed Dana (whole) etc.	25.00*
Love birds, Budgerigar	Kangni, Bajra	5.00*
Lions	Meat	225.00
Tigers	Meat	225.00
Panthers	Meat	100.00
Bears	Banana	120.00

*The minimum subscription accepted shall be Rs. 100.00 for these animals.

Note : - Names of adopters shall not be displayed under this scheme.

ANIMAL ADOPTION CERTIFICATE

Certified that Sri/Smt. ..... has adopted ..... of this Zoo, for a period of year/s from ..... to The Zoo is thankful for the contribution made towards the noble cause and involvement in conservation efforts.

Date: Field Director

Place:

ADOPTION FORM

1. Name & Address of Institution/Individual/ Company

2. Name of the animal interested for adoption

3. Period of adoption

4.

5. Mode of remittance (Cheque/DD/Cash)

Date:

Place: **Signature**

ANNEXURE-23

List of various types of animals

Primates: Rhesus Macaque, Assamese Macaque, Bonnet Macaque, Pig Tailed Macaque, Lion Tailed Macaque, Common Langur, Capped Langur.

Cats: Royal Bengal Tiger, Leopard, Asiatic Lion, Jaguar, Leopard Cat.

Dog Family: Jackal, striped hyaena

Bears: Himalayan Black Bear and Sloth Bear.

Proboscides: Elephant

Rodents: Indian Porcupine.

Deer: Samber, Hog Deer, Barking Deer, Spotted Deer, Swamp Deer, Brow Antlered Deer, Fallow Deer.

Antelopes: Black Buck, Blue Bull, White Buck, Chinkara, Chausingha.

Exotics and others: Chimpanzee, Hippopotamus, Zebra, African Cape Buffalo, Hamadryas Baboon, Emu and Ostrich.

Bovidae: Bison.

Aves:

The main bird exhibits are Pea-Fowl, White Pea-Fowl, Red Jungle Fowl, Geese, Partridges, Rose-Ringed Parakeet, Blossom Headed Parakeet, Ducks, Rosy Pelican, Cranes, Storks, Pigeons and Doves. The zoo has the pride to exhibit colourful and vibrant birds collectively called as pheasants including Golden Pheasant, Yellow Golden Pheasant, Ring-Necked Pheasant, Mangolian Pheasant, White Crested Kalij Pheasant, Lady Emhrest Pheasant. The birds of prey include Shikra, Barn Owl and the Large Indian horned Owl.

The exotic wonders in the zoo include Emu, Black Swan, Sulphur Crested Cockatoo, Grey Cockteel, Love Birds etc.

Reptiles:

Gharial, Crocodile, Tortoise, Python and Sand Boa. The zoo will soon have serpentarium to house these reptiles.

Lion Safari:

Lion Safari gives a thrilling experience to the visitors where king of the jungle roams freely. The lion safari is spread over an area of 8 hectares of natural forest having lion houses on one edge. A large number of peacocks also roam freely inside the lion safari which are an added attraction to the visitors.

Deer Safari: The zoo has a magnificent drive-in deer safari where Sambars, Spotted Deer and Black Bucks roam together in a habitat which could be the envy of their wild brethren. The deer safari is spread over an area of 12 hectares with a lot of natural vegetation. It is a photographer's delight.

Location:

The Zoological Park is located at village Chhatbir about 19 km. Buses ply from Chandigarh and Rajpura to the Zoological Park. The nearest Railway Station and Airport are at Chandigarh.

Area:

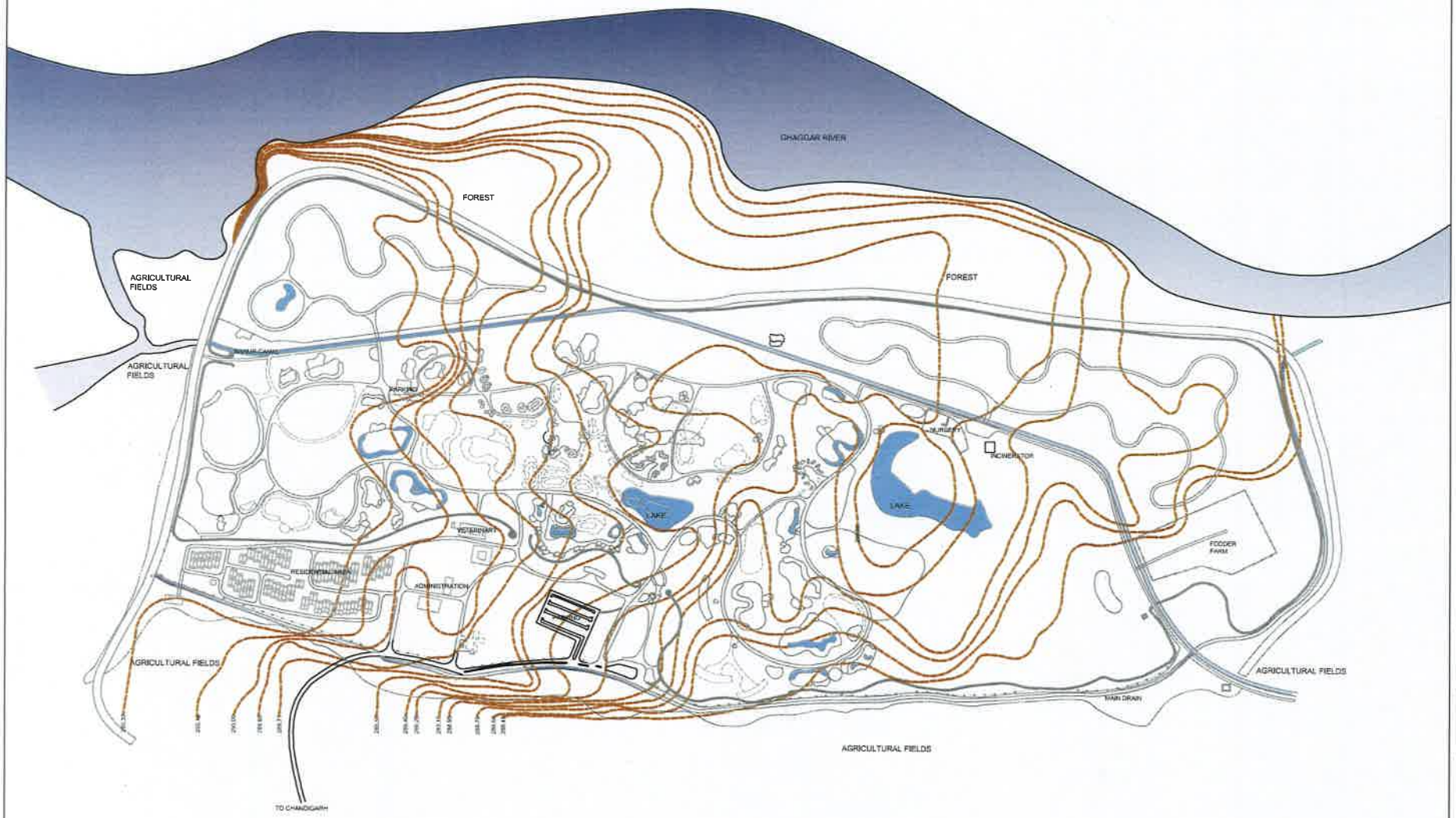
202 hectares of Protected Forest along the right bank of river Ghaggar which has young to middle-aged semi-natural forest.

ANNEXURE 24

INDEX

SATELLITE IMAGERY OF CHHATBIR ZOO

TOPOGRAPHY OF CHHATBIR ZOO



m. c. zoological park chhatbir - punjab

General Notes

1. This drawing has been issued exclusively for the purpose of initial analysis of the existing conditions of the zoo as per the drawing title. Prior permission of the architects is necessary for its use for a purpose other than intended above.
2. All dimensions are in metres.
3. The drawing is to be read only and not measured.
4. The present contours have been referred from the initial drawings issued by the administration.
5. Primary survey to record the current status of topography is recommended.

Legend

EXISTING CONTOURS

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.1R0

Drg Title
Topography of Chhatbir Zoo

Date	Scale
April, 2009	1:5000

Direction	Sheet No.
N	2

Client
m. c. zoological park chhatbir - punjab

Architect
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EXISTING FOREST COVER

m. c. zoological park chhatbir - punjab

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4. The drawing shows the current status of vegetation in the zoo. The google imagery has been taken as reference for the above. The existing forest cover is approximately 70% of the total site.

Legend

- WATER FEATURES
- CAGED ENCLOSURES
- FENCE
- BOUNDARY WALL
- EXISTING TREES
- EXISTING TREE CLUSTERS

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.3R0

Drg Title
Existing Forest Cover

Date	Scale
April, 2009	1:5000

Direction	Sheet No.
N	3

Client
m. c. zoological park chhatbir - punjab

Architect
aarti grover & associates

EXISTING MASTER LAYOUT PLAN

Legend

1. Assamese Macaque
2. Lion-tailed Macaque
3. Rhesus Macaque, Bonnet Macaque, Baboon
4. Pig-tailed Macaque
5. Empty
6. Rhesus Macaque
7. Royal Bengal Tiger
8. White tiger, Royal Bengal Tiger
9. Hog deer
10. Hippopotamus
11. Chinkara
12. Elephant
13. Hyena
14. Emu
15. Emu
16. Leopard
17. Jaguar
18. Leopard
19. Leopard
20. Leopard
21. Sloth Bear
22. H Black Bear
23. Leopard Cat
24. Civet Cat
25. Empty
26. Jackal
27. Hog Deer
28. Empty
29. Empty
30. Chimpanzee
31. Sloth Bear
32. H Black Bear
33. Peacock, Kalij Pheasant, Red-jungle fowl
34. Sarus
35. Sarus
36. Sarus
37. Sarus
38. Painted Stork, White Stork, Black-necked Stork
39. Painted Stork, White Stork, Black-necked Stork
40. Pheasantry
41. Porcupine
42. Sarus crane, Common crane
43. Barking deer
44. Manipuri deer
45. Fallow deer
46. Peacock, Spotted Dove Red-jungle Fowl,
47. Chinkara
48. Chausinga
49. Small Birds Aviary
50. Zebra
51. Spotbill Duck, Black Swan, Bar-headed Goose
52. White buck
53. Hog Deer
54. Swamp Deer
55. Indian Bison
56. Gharial
57. African Cape Buffalo
58. Goral
59. Python
60. Blue Bull
61. Smooth Indian Otter
62. Reptile House
63. Tortoise
64. Nocturnal House
65. Crocodile
66. Gharial
67. Lion Safari - 67A off Display Facility
68. Deer Safari
69. Falcon Conservation Breeding Centre
70. Butterfly Park

m. c. zoological park chhatbir - punjab

General Notes

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Legend

- WATER FEATURES
- VEHICULAR ROAD
- ENCLOSURE OPEN AREA
- NIGHT SHELTERS
- BUILT UP STRUCTURES
- CAGED ENCLOSURES
- FENCE
- BOUNDARY WALL

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.4R0

Drg Title
Existing Master Layout Plan

Date	Scale
April, 2009	1:5000

Direction	Sheet No.
N	4

Client
m. c. zoological park chhatbir - punjab

Architect
aarti grover & associates

EXISTING CIRCULATION SYSTEM

CIRCULATION SYSTEM

A MAIN LOOP OF 3.5 Km IN LENGTH TAKES THE VISITOR AROUND THE ZOO. THIS LOOP IS IN THE FORM OF A TARRED ROAD TO CARRY VEHICULAR AS WELL AS PEDESTRIAN TRAFFIC. MOST OF THE EXHIBITS/CAGES LIE ON THE PRIMARY LOOP ITSELF WHILE AT CERTAIN PLACES A SECONDARY PATH LEADS TO THE EXHIBITS/CAGES.

THIS LOOP FURTHER LEADS TO THE LION AND DEER SAFARIS. THE LION SAFARI CAN BE SEEN IN THE SPECIAL VEHICLES KEPT EXCLUSIVELY FOR THIS PURPOSE. THE DEER SAFARI CAN BE SEEN EVEN IN PRIVATE VISITOR VEHICLES.

DETAIL OF CIRCULATION SPACES

CATEGORY	FUNCTION	LENGTH	WIDTH	MATERIAL
1. METAL ROAD- MAIN LOOP	VEHICULAR ENTRY	5.5 KM	4.5 MT	TAR
2. METAL ROAD- DEER SAFARI	VEHICULAR+ PEDESTRIAN	2.0 KM	4.5 MT	TAR
3. METAL ROAD- LION SAFARI	VEHICULAR ENTRY	1.8 KM	4.5 MT	TAR
4. PEDESTRIAN	VIEWING EXHIBITS	-	0.9-1.8 MT	STONE AND CONCRETE

AREA DISTRIBUTION OF CIRCULATION SPACES

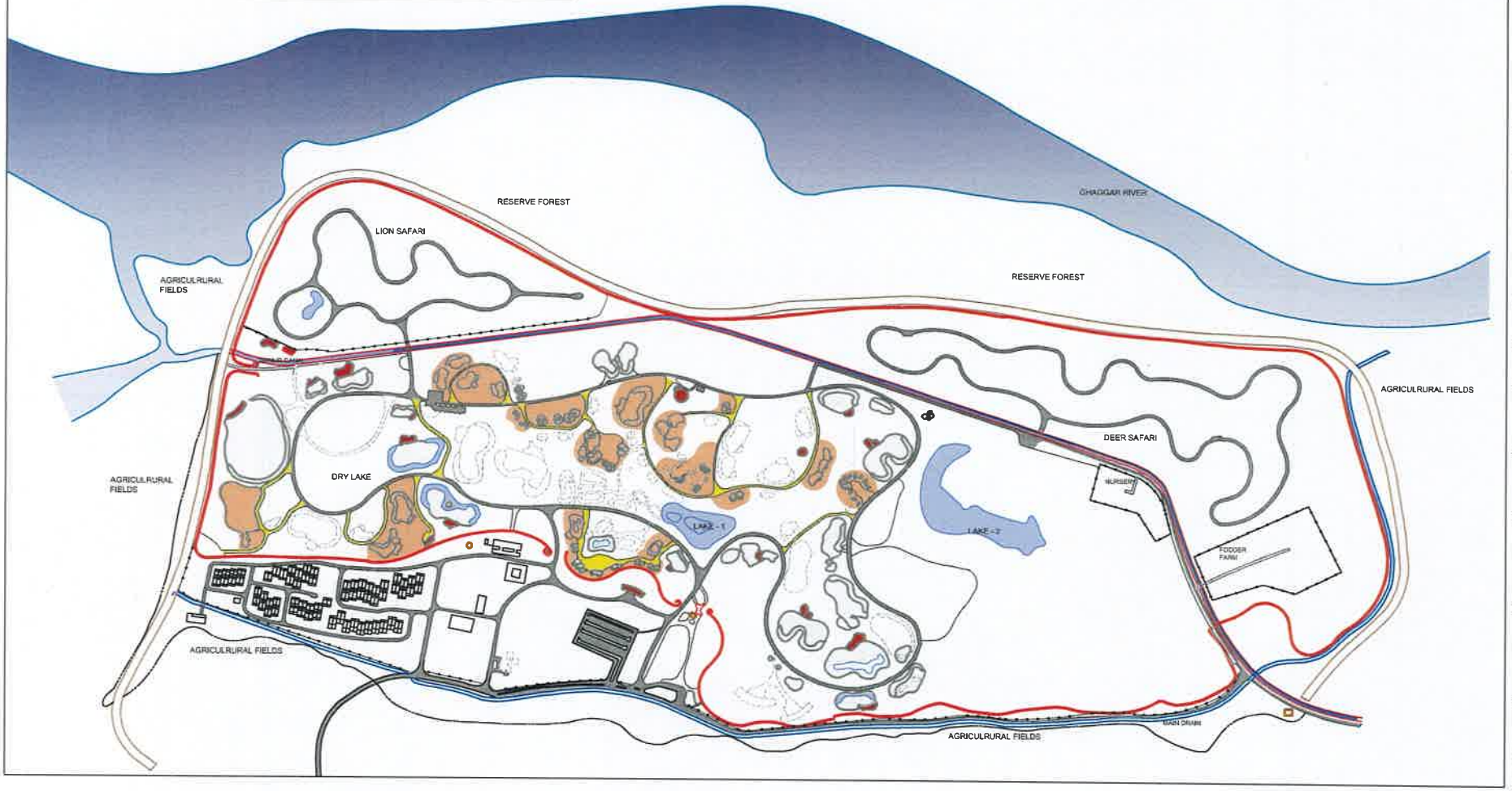
VEHICULAR CIRCULATION AREA - 12.13 ACRES
PEDESTRIAN CIRCULATION AREA - 5.78 ACRES
TOTAL CIRCULATION AREA - 17.91 ACRES

MERITS OF THE CIRCULATION SYSTEM

THE TYPE OF CIRCULATION PROVIDED IN THE ZOOLOGICAL PARK AVOIDS ANY CONFUSION AND GENERATES A SELF GUIDED MOVEMENT THROUGHOUT THE ZOOLOGICAL PARK.

DE-MERITS OF THE CIRCULATION SYSTEM

- NO SEGREGATION IN PEDESTRIAN AND VEHICULAR TRAFFIC.THE MAIN LOOP CREATES A LOT OF CONFLICT BETWEEN THE VEHICULAR AND PEDESTRIAN TRAFFIC.
- THE MOVEMENT OF VEHICULAR TRAFFIC THROUGHOUT THE ZOO CREATES A LOT OF DISTURBANCE TO THE ANIMALS BY THE NOISE AND AIR POLLUTION GENERATED THEREBY.
- HAPHAZARD PARKING ALONG THE ROAD NEAR THE EXHIBITS CREATES CHAOS AND REDUCES THE EFFECTIVE WIDTH OF THE ROAD THUS HAMPERING FREE MOVEMENT OF PEDESTRIAN AND VEHICULAR TRAFFIC.
- ABSENCE OF ANY SHORT-CUTS OR OPTIONAL ROUTES POSES PROBLEM TO THE PEDESTRIANS.



m. c. zoological park chhatbir - punjab

General Notes

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3. The drawing is to be read only and not measured.

Legend

- Primary circulation
- Secondary circulation
- Enclosures viewed from secondary circulation

Key Plan

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.5R0

Drg Title
Existing Circulation System

Date	Scale
April, 2009	1:5000

Direction	Sheet No.
N	5

Client:
m. c. zoological park chhatbir - punjab

Architect
aarti grover & associates

EXISTING WATER POINTS & TOILETS

Legend

1. Assamese Macaque
2. Lion-tailed Macaque
3. Rhesus Macaque, Bonnet Macaque, Baboon
4. Pig-tailed Macaque
5. Empty
6. Rhesus Macaque
7. Royal Bengal Tiger
8. White tiger, Royal Bengal Tiger
9. Hog deer
10. Hippopotamus
11. Chinkara
12. Elephant
13. Hyena
14. Emu
15. Emu
16. Leopard
17. Jaguar
18. Leopard
19. Leopard
20. Leopard
21. Sloth Bear
22. H Black Bear
23. Leopard Cat
24. Civet Cat
25. Empty
26. Jackal
27. Hog Deer
28. Empty
29. Empty
30. Chimpanzee
31. Sloth Bear
32. H Black Bear
33. Peacock, Kalij Pheasant, Red-jungle fowl
34. Sarus
35. Sarus
36. Sarus
37. Sarus
38. Painted Stork, White Stork, Black-necked Stork
39. Painted Stork, White Stork, Black-necked Stork
40. Pheasantry
41. Porcupine
42. Sarus crane, Common crane
43. Barking deer
44. Manipuri deer
45. Fallow deer
46. Peacock, Spotted Dove Red-jungle Fowl,
47. Chinkara
48. Chausinga
49. Small Birds Aviary
50. Zebra
51. Spotbill Duck, Black Swan, Bar-headed Goose
52. White buck
53. Hog Deer
54. Swamp Deer
55. Indian Bison
56. Gharial
57. African Cape Buffalo
58. Goral
59. Python
60. Blue Bull
61. Smooth Indian Otter
62. Reptile House
63. Tortoise
64. Nocturnal House
65. Crocodile
66. Gharial
67. Lion Safari - 67A Off Display Facility
68. Deer Safari
69. Falcon Conservation Breeding Centre
70. Butterfly Park

m. c. zoological park chhatbir - punjab

General Notes

1. This drawing has been issued subsequently to the preparation of initial sketches of the existing conditions of the site as per the drawing title. Prior permission of the architects must be obtained for its use for any purpose other than intended above.
2. All dimensions are in metres.
3. The drawing is to be read in conjunction with other relevant drawings.

Legend

- EXISTING WATER POINTS (16 Nos.)
- EXISTING TOILETS (16 Nos.)

Revision		
No.	Date	Remarks

Drg No.
MCZP-CD-EX1.6R0

Drg Title
Existing Water Pts & Toilets

Date	Scale
April, 2009	1:5000

Direction	Sheet No.
N	6

Client
m. c. zoological park chhatbir - punjab

Architect
patti grover & associates

Existing Pavillions

Legend

1. Assames Macaque
2. Lion-tailed Macaque
3. Rhesus Macaque, Bonnet Macaque, Baboon
4. Pig-tailed Macaque
5. Empty
6. Rhesus Macaque
7. Royal Bengal Tiger
8. White tiger, Royal Bengal Tiger
9. Hog deee
10. Hippopotamus
11. Chinkara
12. Elephant
13. Hyena
14. Emu
15. Emu
16. Leopard
17. Jaguar
18. Leopard
19. Leopard
20. Leopard
21. Sloth Bear
22. H Black Bear
23. Leopard cat
24. Civet cat
25. Empty
26. Jackal
27. Hogdeer
28. Empty
29. Empty
30. Chimpanzee
31. Sloth Bear
32. H Black Bear
33. Peacock, Kalij Pheasant, Red-jungle fowl
34. Sarus
35. Sarus
36. Sarus
37. Sarus
38. Painted Stork, White Stork, Black-necked Stork
39. Painted Stork, White Stork, Black-necked Stork
40. Pheasantry
41. Porquipine
42. Sarus crane, Common crane
43. Barking deer
44. Manipuri deer
45. Fellow deer
46. Peacock, Spotted dove Red-jungle fowl.
47. Chinkara
48. Chausinga
49. Small Birds Aviary
50. Zebra
51. Spot billduck, Black swan, Bar-headed goose
52. White buck
53. Hog deer
54. Swamp deer
55. Indian bison
56. Gharial
57. African cape buffalo
58. Goral
59. Python
60. Blue bull
61. Smooth Indian Otter
62. Reptile House
63. Tortoise
64. Nocturnal House
65. Crocodile
66. Gharial
67. Lion Safari - 67A Oil Display Facility
68. Deer Safari
69. Falcon Conservation Breeding Centre
70. Butterfly park

m. c. zoological park chhatbir - punjab

General Notes

1. This drawing has been based exclusively for the purpose of initial study of the urban conditions of the zoo as per the drawing title. Prior permission of the undersigned is necessary for its use for a purpose other than intended above.
2. All dimensions are in metres.
3. The drawing is to be used only and not measured.

Legend

▲ EXISTING PAVILLIONS

Revision		
No.	Date	Remarks

Drg No.
MCZP-CD-EX1.7R0

Drg Title
Existing Pavillions

Date	Scale
April, 2009	1:5000

Direction	Sheet No.
N	7

Client
m. c. zoological park chhatbir - punjab

Architect
aarti grover & associates

EXISTING LAWNS

Legend

1. Assamese Macaque
2. Lion-tailed Macaque
3. Rhesus Macaque, Bonnet Macaque, Baboon
4. Pig-tailed Macaque
5. Empty
6. Rhesus Macaque
7. Royal Bengal Tiger
8. White tiger, Royal Bengal Tiger
9. Hog deer
10. Hippopotamus
11. Chinkara
12. Elephant
13. Hyena
14. Emu
15. Emu
16. Leopard
17. Jaguar
18. Leopard
19. Leopard
20. Leopard
21. Sloth Bear
22. H Black Bear
23. Leopard Cat
24. Civet Cat
25. Empty
26. Jackal
27. Hog Deer
28. Empty
29. Empty
30. Chimpanzee
31. Sloth Bear
32. H Black Bear
33. Peacock, Kalij Pheasant, Red-jungle fowl
34. Sarus
35. Sarus
36. Sarus
37. Sarus
38. Painted Stork, White Stork, Black-necked Stork
39. Painted Stork, White Stork, Black-necked Stork
40. Pheasantry
41. Porcupine
42. Sarus crane, Common crane
43. Barking deer
44. Manipuri deer
45. Fallow deer
46. Peacock, Spotted Dove Red-jungle Fowl,
47. Chinkara
48. Chausinga
49. Small Birds Aviary
50. Zebra
51. Spotbill Duck, Black Swan, Bar-headed Goose
52. White buck
53. Hog Deer
54. Swamp Deer
55. Indian Bison
56. Gharial
57. African Cape Buffalo
58. Goral
59. Python
60. Blue Bull
61. Smooth Indian Otter
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63. Tortoise
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65. Crocodile
66. Gharial
67. Lion Safari - 67A Off Display Facility
68. Deer Safari
69. Falcon Conservation Breeding Centre
70. Butterfly Park

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Legend

EXISTING LAWNS (11 Nos.)
ENCLOSURE WITH NIGHT SHELTER
EXISTING WATER BODIES

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.8R0

Drg Title
Existing Lawns

Date
April, 2009

Scale
1:5000

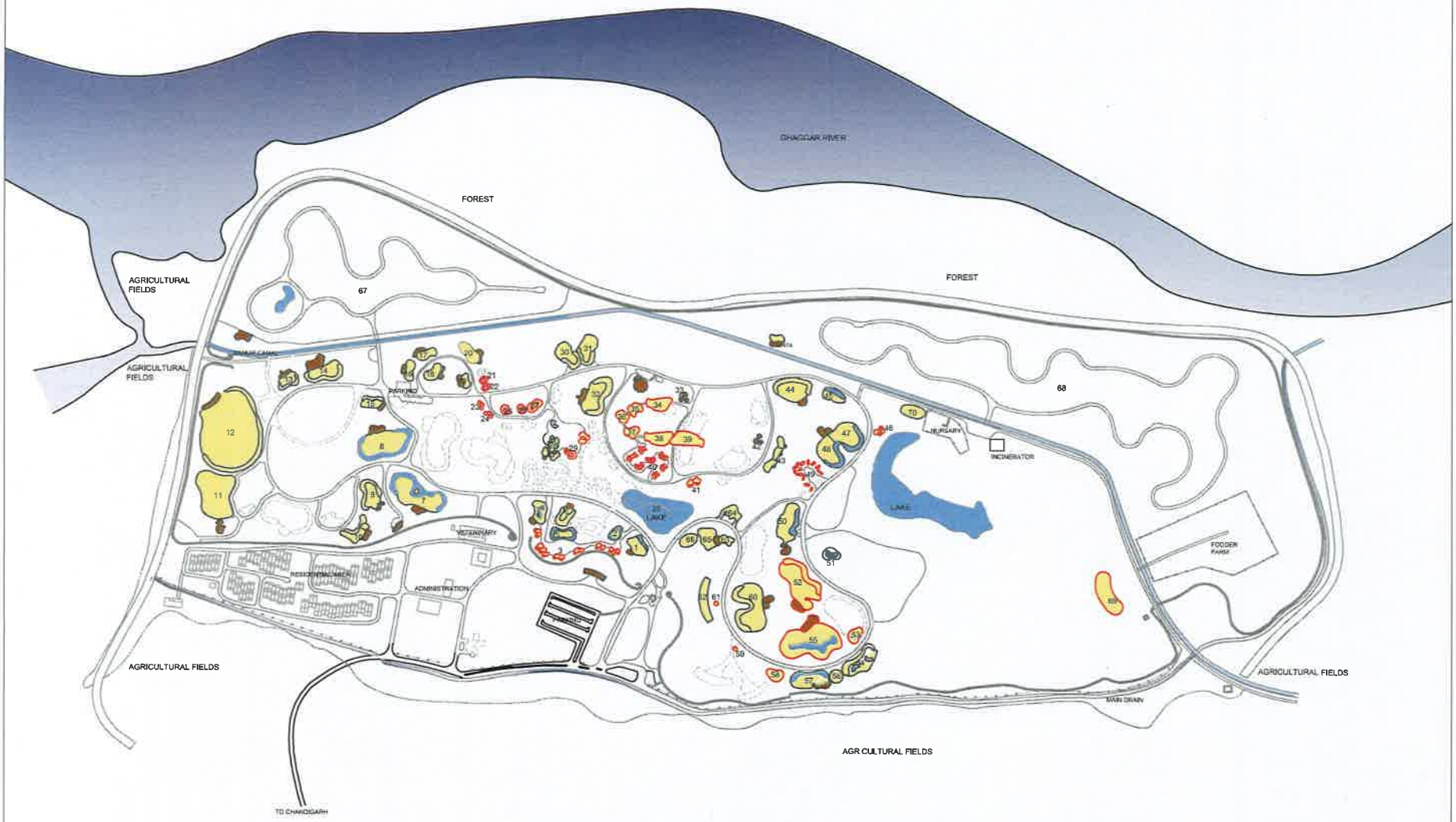
Direction
N

Sheet No.
8

Client
m. c. zoological park
chhatbir - punjab

Architect
aarti grover & associates

EXISTING ANIMAL DISTRIBUTION



Legend

1. Assamese Macaque
2. Lion-tailed Macaque
3. Rhesus Macaque, Bonnet Macaque, Baboon
4. Pig-tailed Macaque
5. Empty
6. Rhesus Macaque
7. Royal Bengal Tiger
8. White tiger, Royal Bengal Tiger
9. Hog deer
10. Hippopotamus
11. Chinkara
12. Elephant
13. Hyena
14. Emu
15. Emu
16. Leopard
17. Jaguar
18. Leopard
19. Leopard
20. Leopard
21. Sloth Bear
22. H Black Bear
23. Leopard Cat
24. Civet Cat
25. Empty
26. Jackal
27. Hog Deer
28. Empty
29. Empty
30. Chimpanzee
31. Sloth Bear
32. H Black Bear
33. Peacock, Kalij Pheasant, Red-jungle fowl
34. Sarus
35. Sarus
36. Sarus
37. Sarus
38. Painted Stork, White Stork, Black-necked Stork
39. Painted Stork, White Stork, Black-necked Stork
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48. Chausinga
49. Small Birds Aviary
50. Zebra
51. Spotbill Duck, Black Swan, Bar-headed Goose
52. White buck
53. Hog Deer
54. Swamp Deer
55. Indian Bison
56. Gharial
57. African Cape Buffalo
58. Goral
59. Python
60. Blue Bull
61. Smooth Indian Otter
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64. Nocturnal House
65. Crocodile
66. Gharial
67. Lion Safari
67A. Off-Display Facility
68. Deer Safari
69. Falcon Conservation Breeding Centre
70. Butterfly Park

m. c. zoological park chhatbir - punjab

General Notes

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2. All dimensions are in metres.
3. The drawing is to be read only and not measured.
4. The drawing shows the current status of enclosures and animal distribution in the zoo.

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.9R0

Drg Title
Existing Animal Distribution

Date	Scale
April, 2009	1:5000

Direction	Sheet No.
N	9

Client
m. c. zoological park chhatbir - punjab

Architect
aarti grover & associates
master planning landscape architecture architecture interiors
#300 rca society sec-46a chandigarh pin-160047
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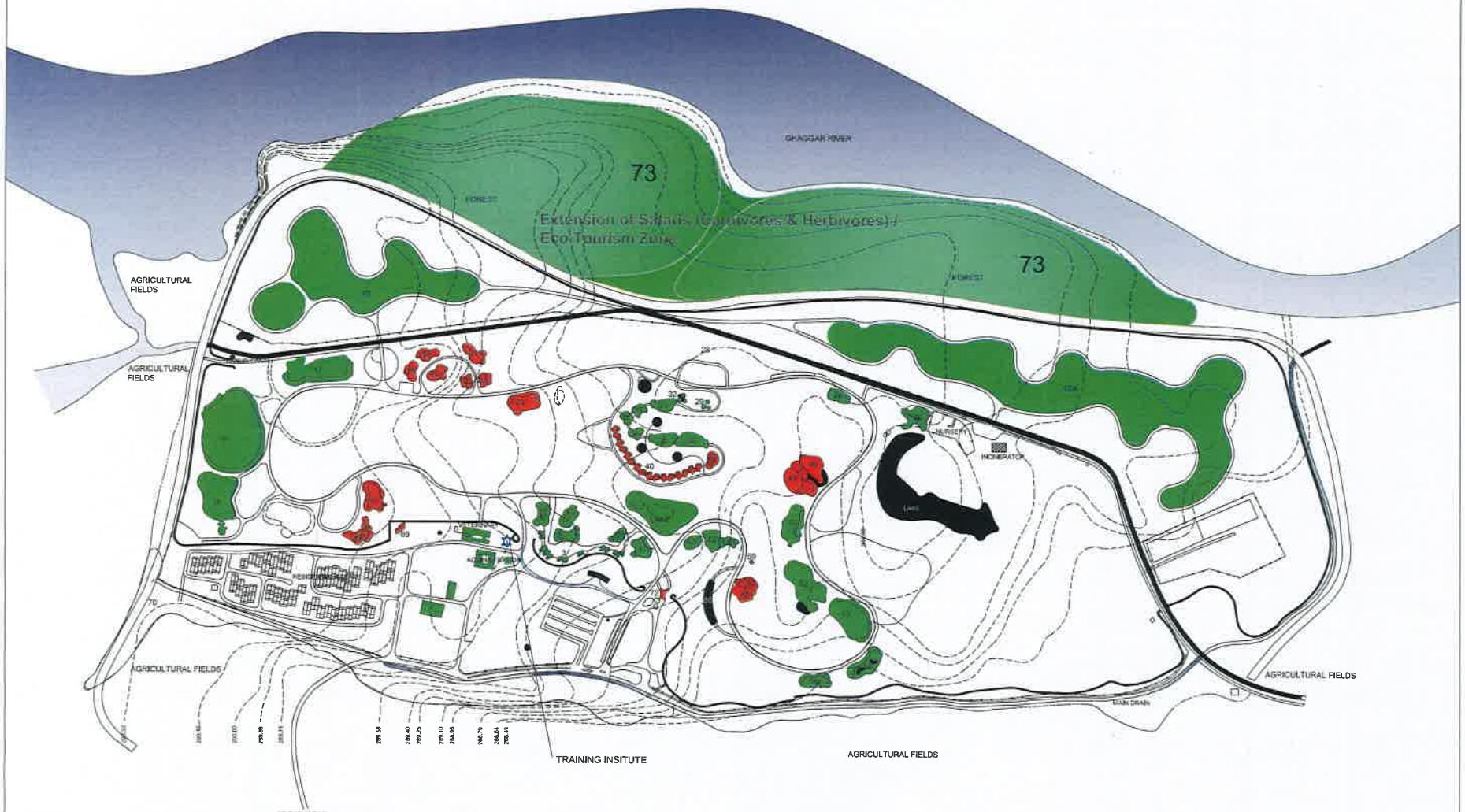
PROPOSED ENCLOSURES REMOVED RELOCATED OR RENOVATED



COMPLEX 1
1. Chimpanzee / Orangutan
2. Capuchin Macaque
3. Rhesus Macaque, Bonnet Macaque, Baboon, Capped langoor, Marmoset Macaque Hoolock Gibbon, Stump tailed Macaque, Loris, Spider Monkey
4. Pig-tailed Macaque
5. Assamese Macaque
6. Common/Spect. Langoor

COMPLEX 2
10. Leopard
11. Jaguar

COMPLEX 3
15. Rhinoceros
16. Elephant
17. Indian Bison, Wild Buffalo

COMPLEX 4
18. Jackal
19. Wolf
20. Hyena
21. Fox
22. Wild Dog, Grey Wolf

COMPLEX 5
23. Sloth Bear

COMPLEX 7
29. Birds / Parrots
33. Serus
34. Ibis
35 Cranes
36. Cranes & Storks
37. Water Birds
38. Egrets
39. Ducks / Swans
40. Pheasants

COPMPLEX 8
44. Fallow deer
45. Black Buck
48. White Buck
49. Hog Deer
50. Sambar
51. Blue Bull

COMPLEX 9
53. Zebra
54. Giraffe
56. Tapir
57. Hippopotamus
58. Wild Beast, Kangaroo, African Gazelle Lemurs, Okapi.

COMPLEX 10
60. Reptiles / Snakes
61. Tortoise / Turtle
62. Crocodile
63. Gharial
64. Nocturnals

65. Carnivores Safari
65A Herbivores Safari
65B Off Display Facility
66. Butterfly Park
67. Conservation Breeding Facility for Raptors / Falcon
68. Aquarium
69. Quarantine
70. Rescue & Rehabilitation Centre
71. Conservation Zone for Tigers
72. Interpratation Center
73. Extension of Safaris (Carnivores & Herbivores) / Eco Tourism Zone

M. C. ZOOLOGICAL PARK CHHATBIR - PUNJAB

General Notes
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ENCLOSURES TO BE MODIFIED
ENCLOSURES TO BE REDONE AFTER DEMOLITION

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.10 R0

Drg Title
Enclosures removed relocated or renovated

Date	Scale
April 2009	1:5000

Direction	Sheet No.
N	10

Client
M. C. ZOOLOGICAL PARK CHHATBIR - PUNJAB

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PROPOSED ENCLOSURES RETAINED & ADDED

COMPLEX 2
7. Royal Bengal Tiger
8. Lion (Asiatic / African)
9. White/Bengal Tiger
12. Puma
13. Jungle / Fishing Cat / Small Cats
14. Clouded Leopard, Black Leopard, Caracal, Civet Cat

COMPLEX 3
17. Indian Bison, Wild Buffalo

COMPLEX 5
24. H Black Bear
25. Sun Bear
26. H Black Bear, Wild Boar

COMPLEX 6
27. Toads
Frogs
Rodents
Hare

COMPLEX 7
28. Birds / Birds of Prey
30. Ostrich
31. Emu / Non flying Birds
38. Ducks / Swans
40. Pheasants

COMPMPLEX 8
41. Swamp Deer
42. Spotted Deer
43. Manipuri deer
45. Black Buck
46. Chinkara
47. Chausinga

COMPLEX 9
55. African Cape Buffalo
57. Hippopotamus
58. Wild Beast, Kangaroo, African Gazelle Lemurs, Okapi.

COMPLEX 10
59. Otter
60. Reptiles / Snakes
64. Nocturnals

65B Off Display Facility
66. Butterfly Park
67. Conservation Breeding Facility for Raptors / Falcon
68. Aquarium
69. Quarantine
70. Rescue & Rehabilitation Centre
71. Conservation Zone for Tigers
72. Interpretation Center
73. Extension of Safaris (Carnivores & Herbivores) / Eco Tourism Zone

M. C. ZOOLOGICAL PARK CHHATBIR - PUNJAB

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Legend

EXISTING ENCLOSURES

PROPOSED NEW ENCLOSURES

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX.11R0

Drg Title
Proposed Enclosures Retained & Added

Date	Scale
April 2009	1:5000

Direction	Sheet No.
N	11

Client
M. C. ZOOLOGICAL PARK CHHATBIR - PUNJAB

Architect
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CONCLUSIONS FROM SITE ANALYSIS

THE PRESENT SCHEME DEPICTS THE TAXONOMIC ORGANIZATIONAL THEME PARTIALLY. THERE IS A NEED TO ORGANIZE THE SHEME COMPLETELY AS PER ORGANIZATIONAL THEME.

IN THE RECENT YEARS THERE HAVE BEEN A LOT OF URBANIZATION AROUND THE ZOO. THERE IS A NEED TO TAKE INTO CONSIDERATION THE IMPACT OF THESE DEVELOPMENTS AND CHANGING LANDUSES.

THE PRESENT SITUATION IN WHICH PRIVATE VEHICLES ARE ALLOWED INSIDE THE EXHIBIT ZONE IS THE CAUSE OF GENERATING A LOT OF POLLUTION AND NOISE. THERE IS A NEED TO STOP THE ENTRY OF PRIVATE VEHICLES AND INTRODUCE BETTER OPTIONS LIKE BATTERY-OPERATED VEHICLES.

OPTIMUM UTILIZATION OF THE PRESENT NATURAL RESOURCES LIKE THE RIVER AND THE FOREST AREAS SHALL BE DONE.

PEDESTRIANS AND VEHICULAR TRAFFIC MOVE TOGETHER ON THE MAIN LOOP WHICH CREATES A LOT OF CONFLICT BETWEEN THE TWO. THERE IS A NEED FOR SAFE AND SEPARATE PEDESTRIAN PATHS.

THE HEIRARCHY OF ROADS IS MISSING IN THE CURRENT SCHEME WHICH NEEDS TO BE TAKEN INTO CONSIDERATION WHILE DEVELOPING THE NEW MASTERPLAN.

THERE IS A NEED TO SEPARATELY DEFINE THE SERVICE CIRCULATION ROUTES WHICH DO NOT CREATE CONFLICT WITH THE VISITOR CIRCULATION.

THERE IS A NEED TO STRENGTHEN THE EXISTING VEGETATION BY PLANTING THE SUITABLE SPECIES TO RECREATE THE DESIRED HABITATS.

PUBLIC SPACES AND GARDENS NEED TO BE PLANTED WITH A BALANCED MIX OF ORNAMENTAL AND SHADE-GIVING TREE SPECIES.

MANY ANIMAL ENCLOSURES AND NIGHT SHELTERS ARE INAPPROPRIATE AND SMALL AS COMPARED WITH THE CZA NORMS. THEY NEED TO BE ADEQUATELY REVISED.

TEMPORARY STRUCTURES AND CAGES NEED TO BE REPLACED BY NATURAL-LOOKING SIMULATED HABITATS FOR THE ANIMALS AS FAR AS POSSILBLE.

THE EXISTING SAFARI PARKS ARE NOT IN ACCORDANCE WITH THE STANDARDS. THEIR AREAS SHALL BE REVISED AS PER THE CZA NORMS.

THE FLORA-FAUNA RELATIONSHIP SHALL ALSO BE TAKEN CARE OF.

THE PRESENT SCHEME LEAVES A LOT OF INACTIVE/PASSIVE AREAS WHICH NEED TO BE ACTIVATED THROUGH DESIGNATION OF APPROPRIATE ACTIVITY. THERE IS A NEED TO RELOCATE CERTAIN ENCLOSURES FOR UNIFORM DISPERSAL IN THE SITE.

THE RESIDENTIAL AREA HAS BEEN PLACED OUTSIDE THE EXHIBIT ZONE TO ENSURE LEAST DISTURBANCE TO THE ANIMALS. IT SHALL BE RETAINED IN ITS ORIGINAL POSITION.

THERE IS A NEED TO PROVIDE SEPARATE ENTRANCES FOR VEHICULAR (MAJORLY SERVICE VEHICLES) AND PEDESTRIAN TRAFFIC TO THE ZOO.THE ROAD BETWEEN THE ADMINISTRATION ZONE AND THE RESIDENTIAL ZONE CAN BE USED AS SERVICE ENTRY.

THERE IS NO SEPARATE QUARANTINE SECTION IN ORDER TO KEEP THE ANIMALS ARRIVING AT THE ZOO.

THERE IS A NEED TO REORGANIZE THE THE ENTRANCE ZONE AND ESTABLISH A SEQUENCE OF PARKING AREA, TICKETING AREA AND ENTRANCE GATEWAY.

THERE IS A NEED TO PROVIDE AN EXTRA SPACE FOR PARKING THE VEHICLES WHICH IN THE CURRENT SITUATION ARE ALLOWED IN THE ZOO EXHIBIT AREA.

THERE IS NO AQUARIUM & TERRARIUM TO EDUCATE THE VISITORS ABOUT THE AQUATIC WILDLIFE & AMPHIBIANS RESPECTIVELY.

m. c. zoological park chhatbir - punjab

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Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.12R0

Drg Title
Conclusions-Existing scheme

Date	Scale
April, 2009	NTS

Direction	Sheet No.
N	12

Client
m. c. zoological park chhatbir - punjab

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master planning landscape architecture architecture interiors

PROPOSED CONCEPT & DESIGN BRIEF FOR FUTURE DEVELOPMENT

THE PROPOSED SCHEME SHALL DEPICT THE TAXONOMIC ORGANIZATIONAL THEME COMPLETELY.

TAKING INTO CONSIDERATION THE IMPACT OF RECENT DEVELOPMENTS AND CHANGING LANDUSES AROUND THE ZOO, THE BOUNDARY PLANTATION SHALL BE STRENGTHENED TO CREATE APPROPRIATE BUFFER. WIND BREAKS & SHELTER BELT PLANTATION WILL BE TAKEN UP ON THE BOUNDARY.

ENTRY OF PRIVATE VEHICLES INSIDE THE ZOO PREMISES SHALL BE STOPPED AND BETTER OPTIONS LIKE BATTERY-OPERATED VEHICLES SHALL BE ENCOURAGED.

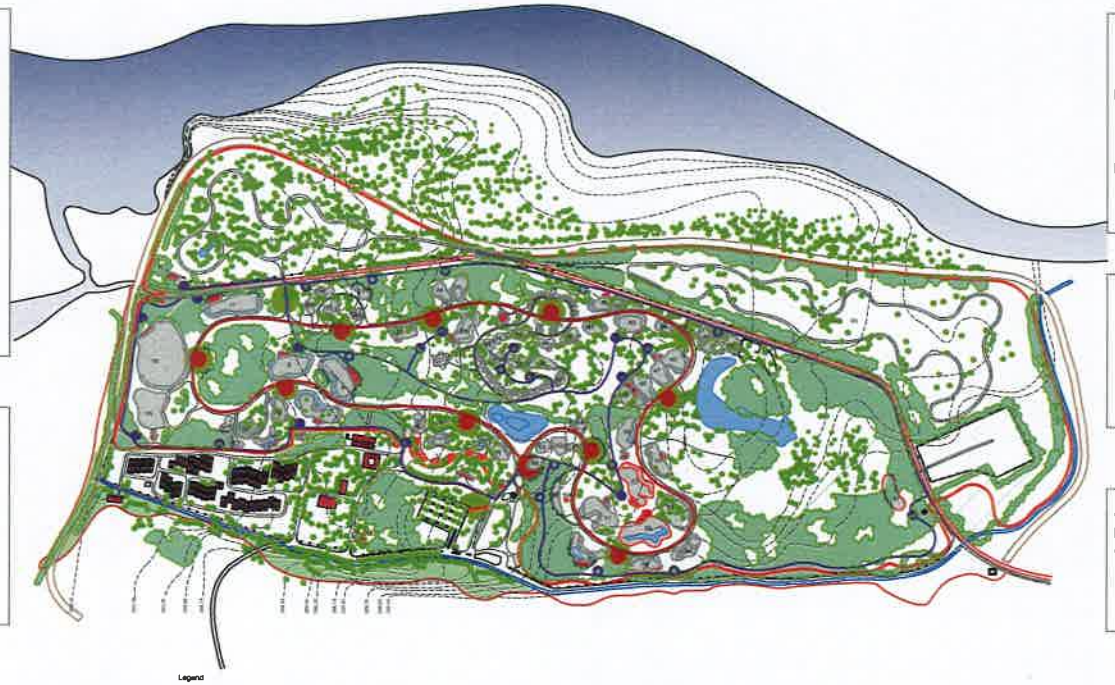
OPTIMUM UTILIZATION OF THE PRESENT NATURAL RESOURCES LIKE THE RIVER AND THE FOREST AREAS SHALL BE DONE.

PRIVATE VEHICLES SHALL BE RESTRICTED TO THE OUTSIDE OF THE EXHIBIT ZONE.

SEPARATE ROUTES SHALL BE DEFINED FOR BATTERY-OPERATED VEHICLES & PEDESTRIANS TO AVOID CONFLICT BETWEEN THE TWO.

THE HEIRARCHY OF ROADS SHALL BE FOLLOWED IN THE PROPOSAL.

SEPARATELY DEFINED SERVICE CIRCULATION ROUTES SHALL BE PROPOSED.



MANY ANIMAL ENCLOSURES AND NIGHT SHELTERS ARE INAPPROPRIATE AND SMALL AS COMPARED WITH THE CZA NORMS. THEY SHALL BE ADEQUATELY REVISED IN THE DESIGN STAGE.

TEMPORARY STRUCTURES AND CAGES NEED TO BE REPLACED BY NATURAL-LOOKING SIMULATED HABITATS FOR THE ANIMALS AS FAR AS POSSILBLE.

THE EXISTING SAFARIS SHALL BE JOINED TO FORM ONE LARGE SAFARI FOR CARNIVORES.

THE FLORA-FAUNA RELATIONSHIP SHALL ALSO BE TAKEN CARE OF.

THE EXISTING VEGETATION SHALL BE STRENGTHEND BY PLANTING THE SUITABLE SPECIES TO RECREATE THE DESIRED HABITATS.

PUBLIC SPACES AND GARDENS SHALL BE PLANTED WITH A BALANCED MIX OF ORNAMENTAL AND SHADE-GIVING TREE SPECIES.

CERTAIN ANIMAL ENCLOSURES SHALL BE RELOCATED TO REALIZE THE TAXONOMIC ORGANIZATIONAL THEME AS INTENDED.

SEPARATE ENTRANCES SHALL BE PROVIDED FOR SERVICE VEHICLES AND VISITORS TO THE ZOO.THE ROAD BETWEEN THE ADMINISTRATION ZONE AND THE RESIDENTIAL ZONE SHALL BE USED AS SERVICE ENTRY.

EXTRA SPACE FOR PARKING THE VEHICLES WHICH IN THE CURRENT SITUATION ARE ALLOWED IN THE ZOO EXHIBIT AREA SHALL BE PROVIDED.

A PROPER QUARANTINE SECTION SHALL BE BUILT ADJOINING THE VETERINARY HOSPITAL COMPLEX. SEPARATE SUB-SECTIONS FOR HERBIVORES, CANIVORES & BIRDS SHALL BE DESIGNED.

A STATE-OF-THE-ART AQUARIUM & A TERRARIUM FOR AMPHIBIANS SHALL BE BUILT TO EDUCATE THE VISITORS ABOUT THE AQUATIC WILDLIFE & ABOUT AMPHIBIANS ESPECIALLY FROGS & TOADS.

m. c. zoological park chhatbir - punjab

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Legend

- ANIMAL ENCLOSURES
- LOOP FOR TOY TRAIN
- SERVICE CIRCULATION
- PUBLIC SPACES
- WATER BODIES
- TREES
- VEGETATION CLUSTERS

Revision No.	Date	Remarks

Drg No. MCZP-CD-EX1.13R0

Drg Title: Design Brief/Concept

Date: April, 2009

Scale: NTS

Direction: N

Sheet No. 13

Client: m. c. zoological park chhatbir - punjab

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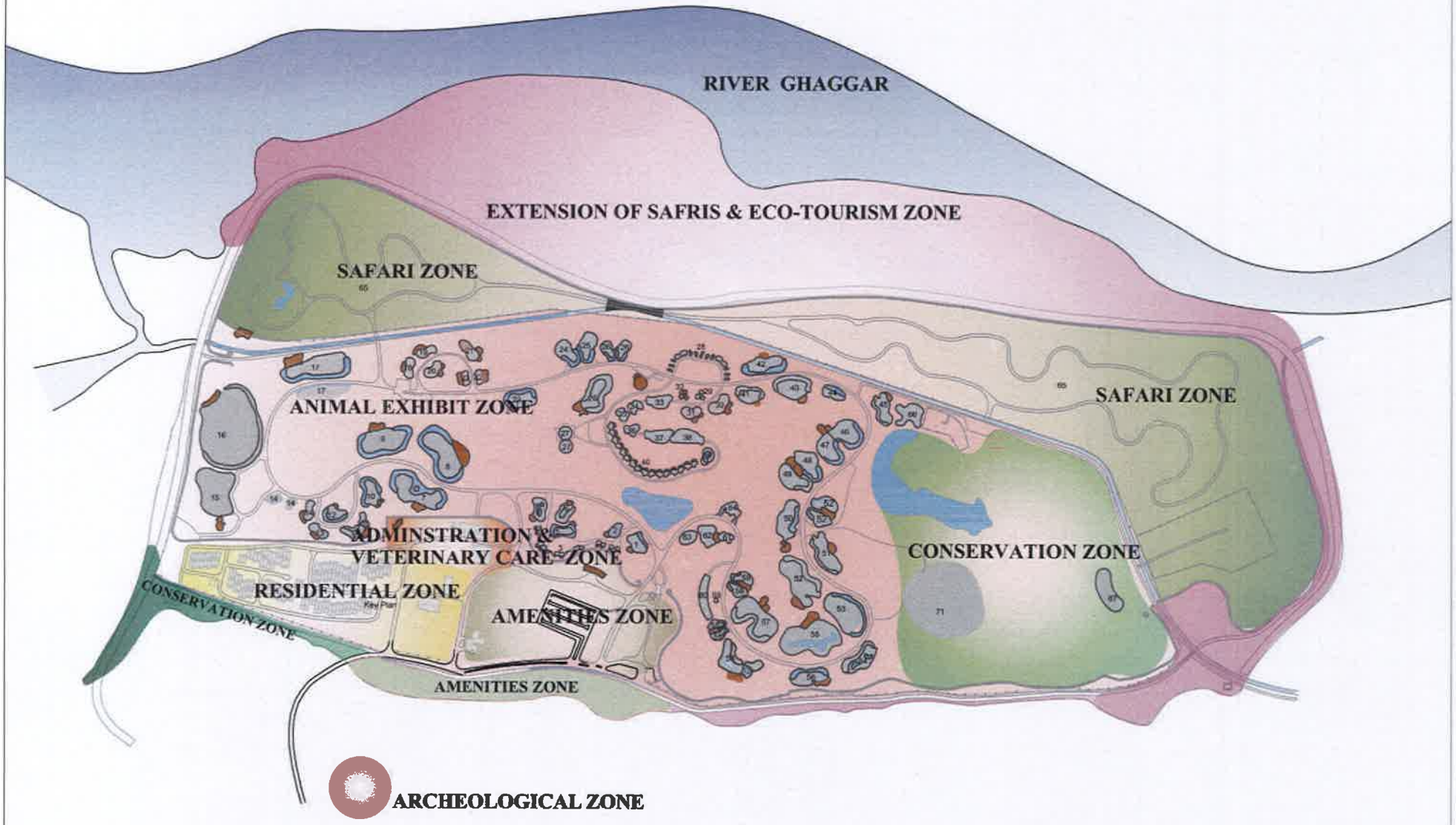
PROPOSED LANDUSE ZONING FOR FUTURE DEVELOPMENT



m. c. zoological park
chhatbir - punjab

General Notes

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Key Plan

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.14R0

Drg Title Proposed Landuse Zoning for Future Development

Date: May, 2008

Scale: 1:5000

Direction: N

Sheet No. 14

Client
m. c. zoological park
chhatbir - punjab

Architect
aarti grover & associates

PROPOSED FUTURE ACTIVITY PLAN

COMPLEX 1
1. Chimpanzee / Orangutan
2. Capuchin Macaque
3. Rhesus Macaque, Bonnet Macaque, Baboon, Capped langoor, Marmoset Macaque Hoolock Gibbon, Stump tailed Macaque, Loris, Spider Monkey
4. Pig-tailed Macaque
5. Assamese Macaque
6. Common/Spect. Langoor

COMPLEX 2
7. Royal Bengal Tiger
8. Lion (Asiatic / African)
9. White/Bengal Tiger
10. Leopard
11. Jaguar
12. Puma
13. Jungle / Fishing Cat / Small Cats
14. Clouded Leopard, Black Leopard, Caracal, Civet Cat

COMPLEX 3
15. Rhinoceros
16. Elephant
17. Indian Bison, Wild Buffalo

COMPLEX 4
18. Jackal
19. Wolf
20. Hyena
21. Fox
22. Wild Dog, Grey Wolf

COMPLEX 5
23. Sloth Bear
24. H Black Bear
25. Sun Bear
26. H Black Bear, Wild Boar

COMPLEX 6
27. Toads
Frogs
Rodents
Hare

COMPLEX 7
28. Birds / Birds of Prey
29. Birds / Parrots
30. Ostrich
31. Emu , Non flying Birds
32. Small Birds / Sparrows
33. Sarus
34. Ibis
35 Cranes
36. Cranes & Storks
37. Water Birds
38. Egrets
39. Ducks / Swans
40. Pheasants

COPMPLEX 8
41. Swamp Deer
42. Spotted Deer
43. Manipuri deer
44. Fallow deer
45. Black Buck
46. Chinkara
47. Chausinga
48. White Buck
49. Hog Deer
50. Sambar
51. Blue Bull
52. Goral, Mouse Deer, Barking Deer
Serow

COMPLEX 9
53. Zebra
54. Giraffe
55. African Cape Buffalo
56. Tapir
57. Hippopotamus
58. Wild Beast, Kangaroo, African Gazelle
Lemurs, Okapi.

COMPLEX 10
59. Otter
60. Reptiles / Snakes
61. Tortoise / Turtle
62. Crocodile
63. Gharial
64. Nocturnals

65. Carnivores Safari
65A Herbivores Safari
65B Off Display Facility
66. Butterfly Park
67. Conservation Breeding Facility for Raptors / Falcon
68. Aquarium
69. Quarantine
70. Rescue & Rehabilitation Centre
71. Conservation Zone for Tigers
72. Interpretation Center
73. Extension of Safaris (Carnivores & Herbivores) / Eco Tourism Zone

m. c. zoological park chhatbir - punjab

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Legend
- ANIMAL ENCLOSURES
- LOOP FOR TOY TRAIN
- SERVICE CIRCULATION
- PUBLIC SPACES
- WATER BODIES
- TREES
- VEGETATION CLUSTERS
- CONTOURS

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.15R0

Drg Title
Proposed Future Activity Plan

Date	Scale
May, 2009	1:5000

Direction	Sheet No.
N	15

Client
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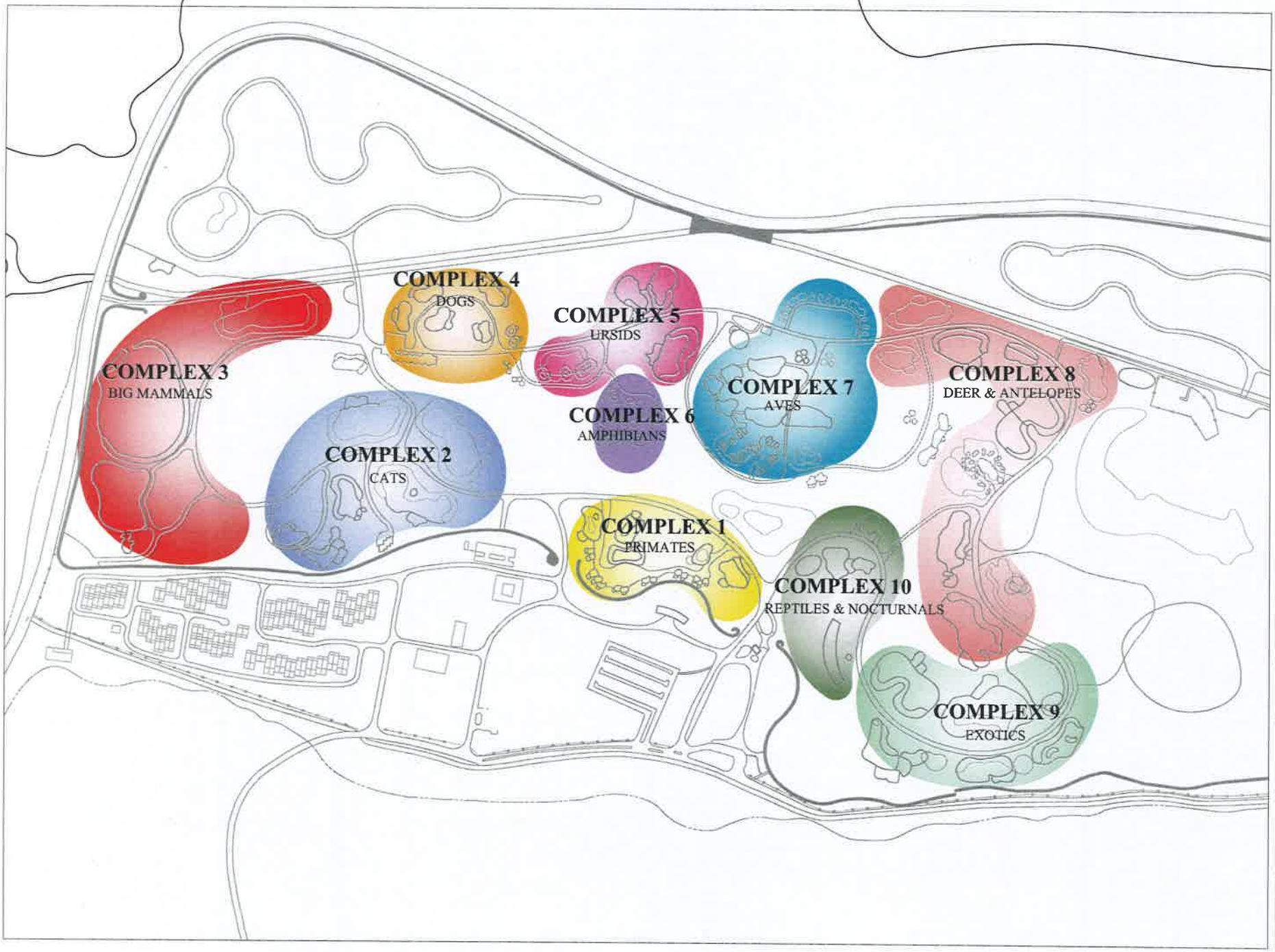
PROPOSED ZONING-ANIMAL DISTRIBUTION



m. c. zoological park chhatbir - punjab

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Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.16R0

Drg Title Proposed Zoning Animal Distribution

Date	Scale
April, 2009	1:3000

Direction	Sheet No.
N	16

Client
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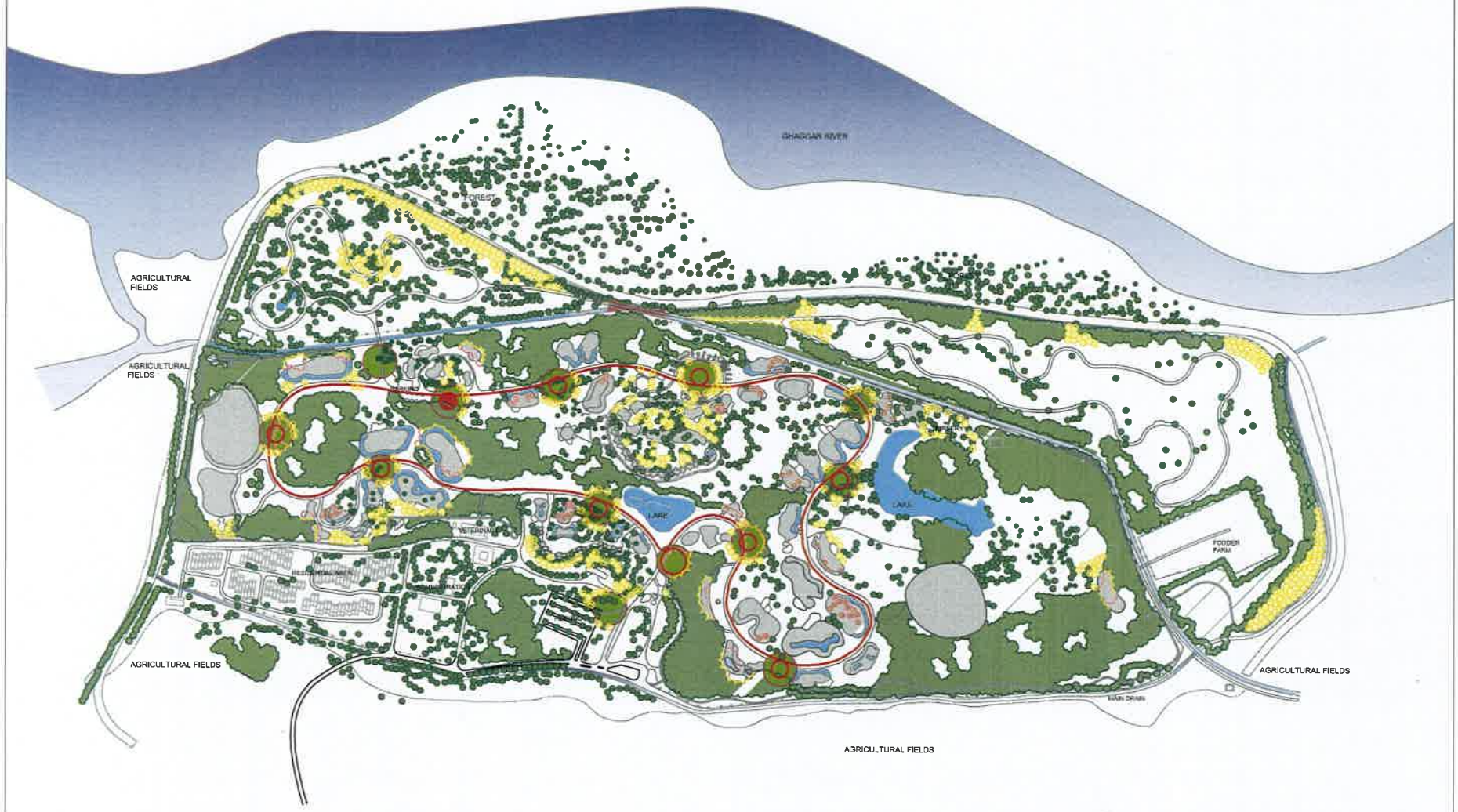
PROPOSED VEGETATION PLAN



m. c. zoological park chhatbir - punjab

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Proposed Species of Trees & Shrubs :

1. Pink cassia
2. Silver oak
3. Sukhchain
4. Amaltas
5. Neem
6. Kusum
7. Seemal
8. Bauhinia
9. Hibiscus
10. Golden bamboo
11. Budha belly bamboo
12. Cassia glauca
13. Acacias
14. Shisham
15. Frangipani

Legend

- TREES RETAINED
- TREES PROPOSED
- TREES TRANSPLANTED/REMOVED
- CLUSTERS RETAINED
- CLUSTERS PROPOSED
- CLUSTERS REMOVED

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.17R0

Drg Title
Proposed Vegetation Plan

Date	Scale
April, 2009	1:5000

Direction	Sheet No.
N	17

Client
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PROPOSED TOY-TRAIN LOOP

m. c. zoological park chhatbir - punjab

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4. The red curve shows the loop for toy-train and red bubbles indicate the proposed positions of stop stations for the toy-train.

Legend

LOOP & STATION FOR TOY TRAIN

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.18R0

Drg Title
Proposed Toy-train Loop

Date	Scale
April, 2009	1:3500

Direction	Sheet No.
N	18

Client
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PROPOSED PRIMARY & SECONDARY CIRCULATION

m. c. zoological park chhatbir - punjab

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4. The secondary paths shall be treated as footpaths except in the Carnivores Sallet.

Legend

PRIMARY LOOP

SECONDARY PATH

Key Plan

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.19R0

Drg Title Proposed Primary & Secondary Circulation

Date	Scale
April, 2009	1:5000

Direction	Sheet No.
N	19

Client

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PROPOSED CIRCULATION

m. c. zoological park chhatbir - punjab

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Legend

- LOOP & STATIONS FOR TOY TRAIN
- PRIMARY LOOP
- SECONDARY PATHS
- SERVICE CIRCULATION & STATIONS

Key Plan

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.20R0

Drg Title
Proposed Circulation

Date	Scale
April, 2009	1:5000

Direction	Sheet No.
N	20

Client
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PROPOSED SERVICE CIRCULATION

m. c. zoological park chhatbir - punjab

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Legend

SERVICE LOOP WITH DTROP-OFF POINTS

Key Plan

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.21R0

Drg Title
Proposed Service Circulation

Date	Scale
April, 2009	1:5000

Direction	Sheet No.
N	21

Client
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PARKING

PARKING DATA FOR NO. OF BUSES,TWO & FOUR WHEELERS ON DIFFERENT DAYS

NO. OF VEHICLES COMING TO THE ZOO							
			TYPE OF VEHICLE				
Date	Day	Time	Buses	Cars	Auto Rickshaw	2 Wheelers	Bicycle
12 June,07	Tuesday	9:00am - 5:00 pm	NIL	36	NIL	30	5
13 June,07	Wednesday	9:00am - 5:00 pm	NIL	25	NIL	20	2
14 June,07	Thrusday	9:00am - 5:00 pm	NIL	36	NIL	30	NIL
15 June,07	Friday	9:00am - 5:00 pm	NIL	59	NIL	19	3
16 June,07	Saturday	9:00am - 5:00 pm	3	88	NIL	51	3
17 June,07	Sunday	9:00am - 5:00 pm	5	157	3	185	21

AVERAGE PARKING

WEEKDAYS

30 - 40 CARS
30 TWO-WHEELERS

WEEKENDS

VEHICLES GOING IN THE ZOO
100 - 150 CARS
150 - 200 TWO-WHEELERS

VEHICLES IN THE OUTER PARKING AREA
100 - 150 CARS
4 - 6 BUSES
8 - 10 AUTORICKSHAW

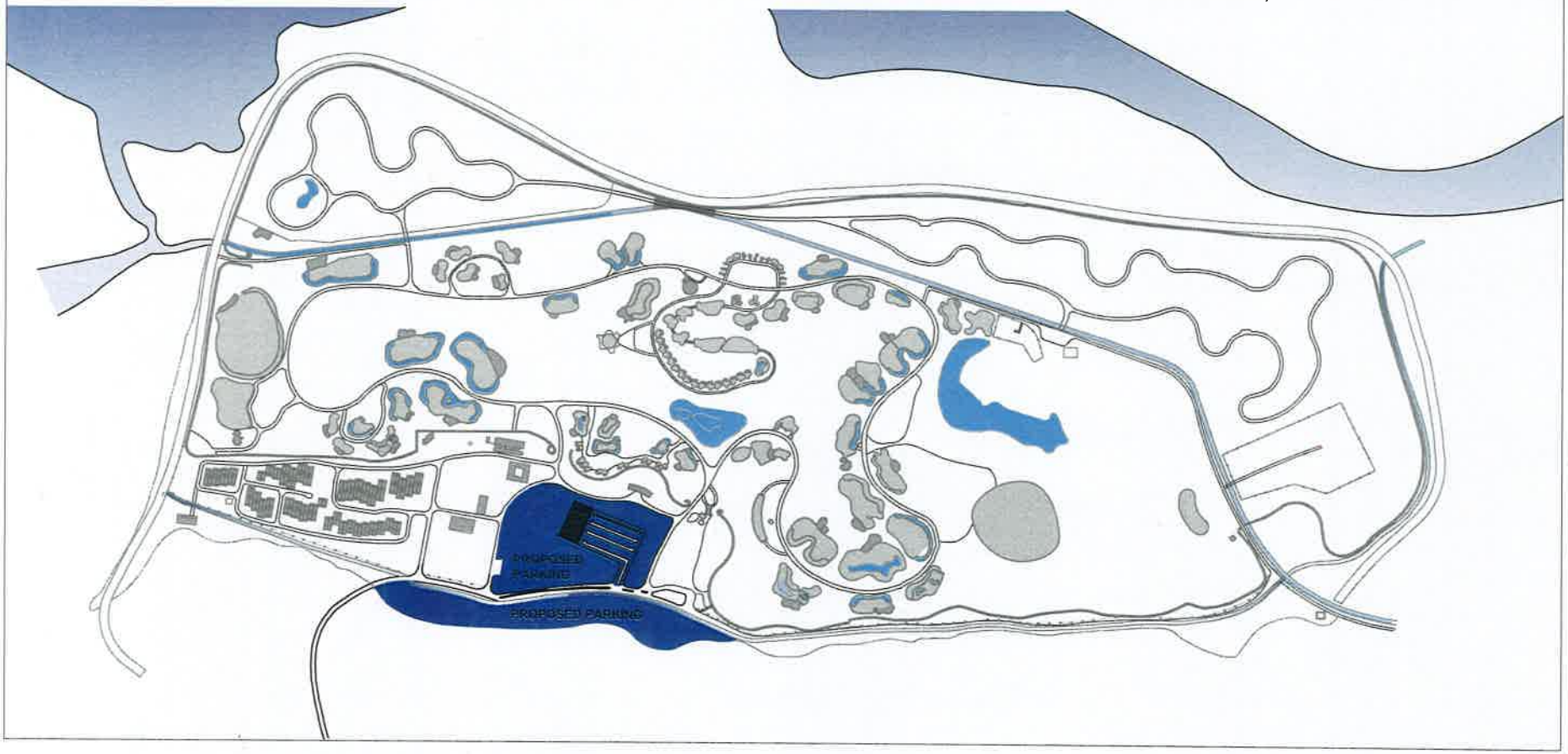
TOTAL NO. OF VEHICLES ESTIMATED

TWO-WHEELERS - 200
CARS - 275 - 300
AUTORIKSHAW - 8 - 10
BUSES - 4 - 5

INFERENCE

TOTAL AREA PROVIDED - 6000 SQ. M
TOTAL AREA REQUIRED - 10000 SQ. M
EXTRA AREA REQIRED - 4000 SQ. M

Note
(IN CASE, PRIVATE VEHICLES ENTRY IS BANNED INSIDE ZOO IN FUTURE, THE PARKING AREA REQUIRED WILL INCREASE BY MANY FOLDS.)



m. c. zoological park
chhatbir - punjab

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Legend
EXISTING PARKING AREAS
PROPOSED PARKING AREAS

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.22R0

Drg Title
Parking

Date
April, 2009

Scale
1:5000

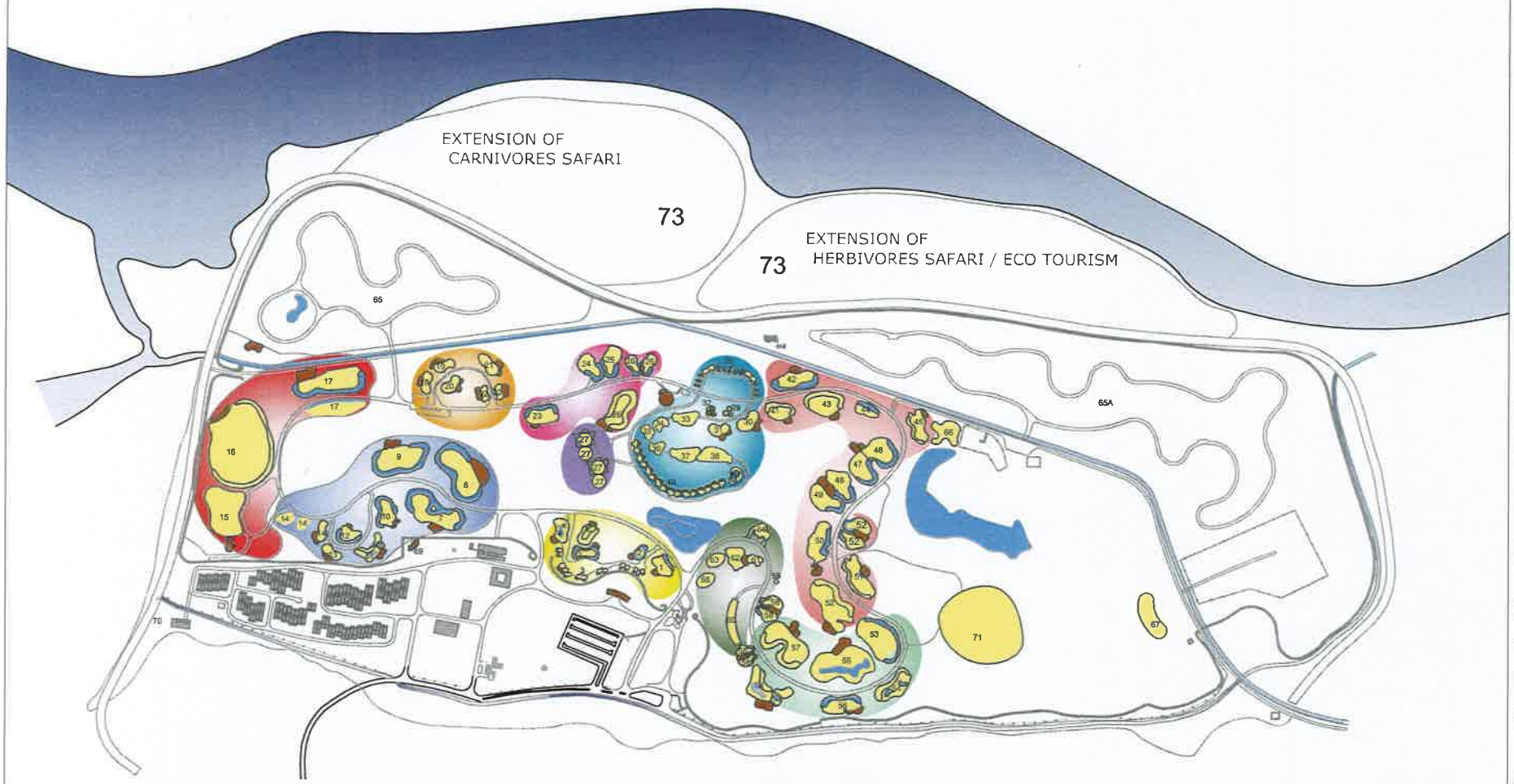
Direction
N

Sheet No.
22

Client
m. c. zoological park
chhatbir - punjab

Architect
aarti grover & associates
master planning landscape architecture architecture interiors
4000 rcs society sector49a chandigarh pin160047

PROPOSED ANIMAL ENCLOSURE DISTRIBUTION



COMPLEX 1
1. Chimpanzee / Orangutan
2. Capuchin Macaque
3. Rhesus Macaque, Bonnet Macaque, Baboon, Capped langoor, Marmoset Macaque Hollok Gibbon, Stump tailed Macaque, Loris, Spider Monkey
4. Pig-tailed Macaque
5. Assamese Macaque
6. Common/Spect. Langoor

COMPLEX 2
7. Royal Bengal Tiger
8. Lion (Asiatic / African)
9. White/Bengal Tiger
10. Leopard
11. Jaguar
12. Puma
13. Jungle / Fishing Cat
14. Clouded Leopard , Black Leopard , Caracle , Civet Cat

COMPLEX 3
16. Rhinoceros
16. Elephant
17. Indian Bison, Wild Buffalo

COMPLEX 4
18. Jackal
19. Wolf
20. Hyena
21. Fox
22. Wild Dog , Grey Wolf

COMPLEX 5
23. Sloth Bear
24. H Black Bear
25. Sun Bear
26. H Black Bear , Wild Boar

COMPLEX 6
27. Toads & Frogs & Rodents & Hare

COMPLEX 7
28. Birds
29. Birds
30. Ostrich
31. Emu / Non flying Birds
32. Birds
33. Sarus
34. Sarus
35. Sarus
36. Cranes (All Cranes)
37. Storks
38. Storks
39. Water Birds
40. Pheasants

COMPLEX 8
41. Swamp Deer
42. Spotted Deer
43. Manipuri deer
44. Fallow deer
45. Black Buck
46. Chinkara
47. Chausinga
48. White Buck
49. Hog Deer
50. Sambar
51. Blue Bull
52. Goral , Mowna Deer , Barking Deer

COMPLEX 9
53. Zebra
54. Giraffe
55. African Cape Buffalo
56. Tapier
57. Hippopotamus
58. Wild Beast , Kangaroo , Tapir , Afrian Gazzel Lemurs

COMPLEX 10
59. Otter
60. Reptiles / Snakes
61. Tortoise / Turtle
62. Crocodile
63. Gharial
64. Nocturnals

65. Carnivores Safari
65A Herbivorns Safari
66B Off Display Facility
66. Butterfly Park
67. Conservation Breeding Facility for Falcon
68. Aquarium
69. Quarantine
70. Rescue & Rehabilitation Centre
71. Conservation Zone for Tigers
72. Interpretation Center
73. Extension of safaris / Eco Tourism

m. c. zoological park chhatbir - punjab

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Revision		Remarks
No.	Date	

Drg No. MCZP-CD-EX1.23R0

Drg Title Proposed Animal Enclosure Distribution

Date	Scale
April, 2009	1:5000

Direction	Sheet No.
N	23

Client: m. c. zoological park chhatbir - punjab

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in association with tutorials e: a_aartigrover@yahoo.com

PROPOSED PUBLIC SPACES FOR FUTURE AMENITIES

m. c. zoological park chhatbir - punjab

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Legend

PROPOSED PUBLIC SPACES

Revision		Remarks
No.	Date	

Drg No.
MCZP-CD-EX1.24R0

Drg Title
Proposed Public Spaces

Date	Scale
April, 2009	1:5000

Direction	Sheet No.
N	24

Client
m. c. zoological park chhatbir - punjab

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MASTER LAYOUT PLAN OF M.C ZOOLOGICAL PARK CHHATBIR (PUNJAB)

IN PRESCRIBED COLOR CODE AS PER CZA NEW DELHI, GUIDELINES

COMPLEX 1
1. Chimpanzee / Orangutan
2. Capuchin Macaque
3. Rhesus Macaque, Bonnet Macaque, Baboon, Capped langoor, Marmoset Macaque Hoolock Gibbon, Stump tailed Macaque, Loris, Spider Monkey
4. Pig-tailed Macaque
5. Assamese Macaque
6. Common/Spect. Langoor

COMPLEX 2
7. Royal Bengal Tiger
8. Lion (Asiatic / African)
9. White/Bengal Tiger
10. Leopard
11. Jaguar
12. Puma
13. Jungle / Fishing Cat / Small Cats
14. Clouded Leopard, Black Leopard, Caracal, Civet Cat

COMPLEX 3
15. Rhinoceros
16. Elephant
17. Indian Bison, Wild Buffalo

COMPLEX 4
18. Jackal
19. Wolf
20. Hyena
21. Fox
22. Wild Dog, Grey Wolf

COMPLEX 5
23. Sloth Bear
24. H Black Bear
25. Sun Bear
26. H Black Bear, Wild Boar

COMPLEX 6
27. Toads
Frogs
Rodents
Hare

COMPLEX 7
28. Birds / Birds of Prey
29. Birds / Parrots
30. Ostrich
31. Emu / Non flying Birds
32. Small Birds / Sparrows
33. Sarus
34. Ibis
35. Cranes
36. Cranes & Storks
37. Water Birds
38. Egrets
39. Ducks / Swans
40. Pheasants

COPMPLEX 8
41. Swamp Deer
42. Spotted Deer
43. Manipuri deer
44. Fallow deer
45. Black Buck
46. Chinkara
47. Chausinga
48. White Buck
49. Hog Deer
50. Sambar
51. Blue Bull
52. Goral, Mouse Dear, Barking Dear
Serow

COMPLEX 9
53. Zebra
54. Giraffe
55. African Cape Buffalo
56. Tapir
57. Hippopotamus
58. Wild Beast, Kangaroo, African Gazelle
Lemurs, Okapi.

COMPLEX 10
59. Otter
60. Reptiles / Snakes
61. Tortoise / Turtle
62. Crocodile
63. Gharial
64. Nocturnals

65. Carnivores Safari
65A Herbivores Safari
65B Off Display Facility
66. Butterfly Park
67. Conservation Breeding Facility for Raptors / Falcon
68. Aquarium
69. Quarantine
70. Rescue & Rehabilitation Centre
71. Conservation Zone for Tigers
72. Interpretation Center
73. Extension of Safaris (Carnivores & Herbivores) / Eco Tourism Zone

Manish Kumar
Field Director
M.C. Zoological Park,
Chhatbir (Pb.)

M. C. ZOOLOGICAL PARK CHHATBIR - PUNJAB

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Legend
- EXISTING ENCLOSURES
- ENCLOSURES TO BE MODIFIED
- ENCLOSURES TO BE REDONE AFTER DEMOLITION
- PROPOSED NEW ENCLOSURES

Revision		Remarks
No.	Date	

Drg No.
JULY 2012 - R0

Drg Title
Master Layout Plan

Date
July, 2012

Scale
1:5000

Direction
N

Sheet No.
25

Client
M. C. ZOOLOGICAL PARK CHHATBIR - PUNJAB

Architect
aarti grover & associates