

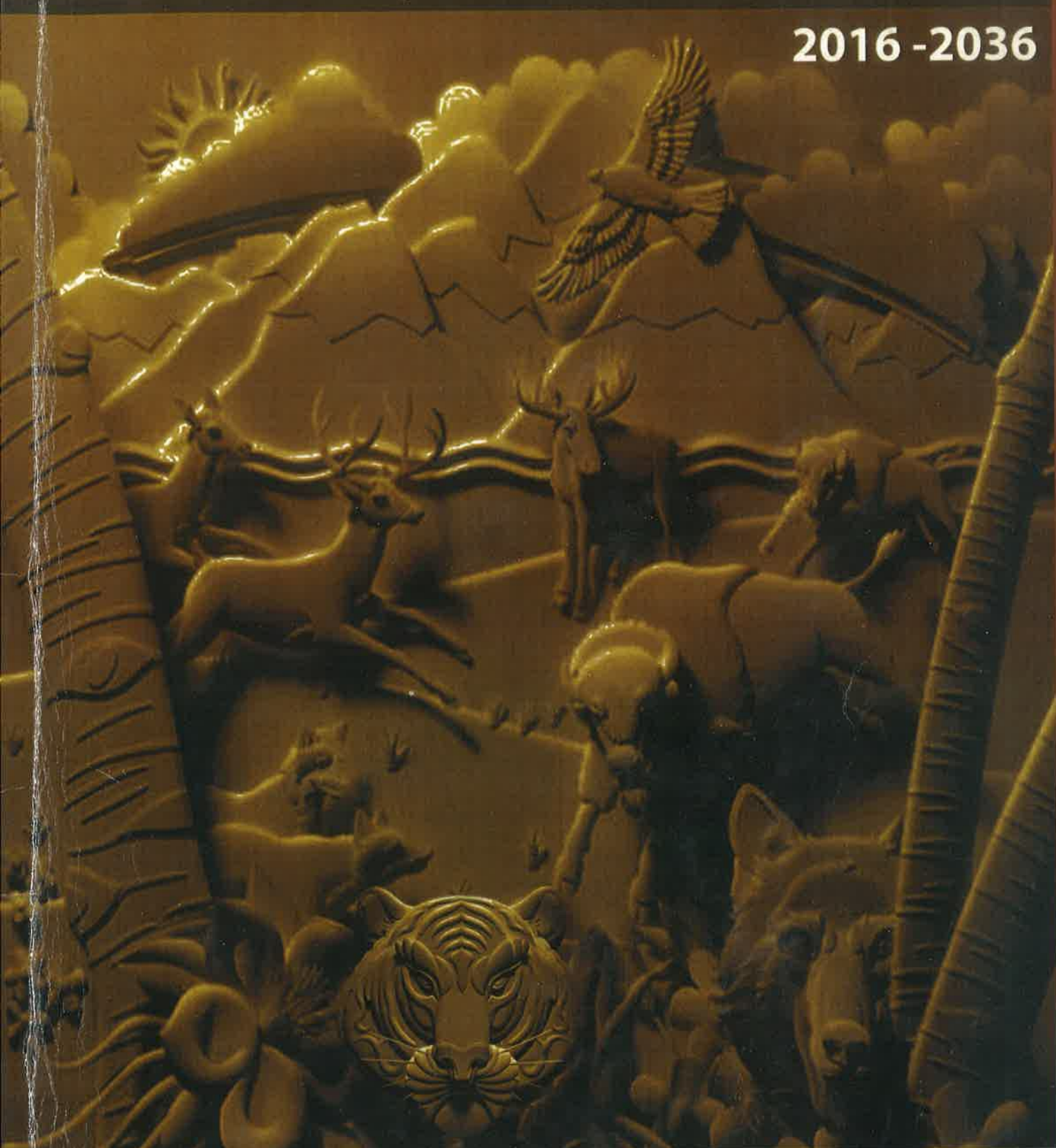


The Master Plan

JAWAHAR LAL NEHRU BIOLOGICAL PARK

Bokaro Steel City

2016 - 2036



STEEL AUTHORITY OF INDIA LIMITED
BOKARO STEEL PLANT

2016



MASTER PLAN

Jawaharlal Nehru Biological Park

Bokaro, Jharkhand

(2016 -2036)

Operator of the Zoo



Steel Authority of India Limited

Bokaro Steel Plant

CERTIFICATE

It is to certify that the Master Plan of Jawaharlal Nehru Biological Park, Sector-IV, Bokaro Steel City has been prepared by Bokaro Steel Plant through its consultant Sri Naresh Kumar Sinha as per the guidelines of CZA.

Naresh Kumar Sinha

Naresh Kumar Sinha
Consultant
Ex-Supdt. (SQC&OR), SAIL/BSL

G. Chakraborty

G. Chakraborty
A.G.M. (TA-Horticulture)
JNB Park, SAIL/BSL

Raj Vir Singh

Raj Vir Singh
GM (Town Administration)
SAIL/BSL

10/11/2016

Member Secretary,
Central Zoo Authority

Member Secretary
Central Zoo Authority
Ministry of Environment and Forests
Govt. of India, New Delhi

Master Plan of Jawaharlal Nehru Biological Park, Bokaro for 2016 to 2036 is approved in the 80th Meeting of the Technical Committee of the Central Zoo Authority held on 04.11.2016 subject to the condition that the responsibility of mobilizing the financial resources for implementation of the Master Plan will be sole responsibility of the Steel Authority of India Limited.



GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FORESTS & CLIMATE CHANGE

Central Zoo Authority



F. No. 19-14/92-CZA(44)(Vol. IV)(M) 5860

DATE: 22.09.2014

To

The General Manager (TA)
Steel Authority of India Limited,
Bokaro Steel City,
Bokaro - 827 001 (Jharkhand).

**Sub:- Master (layout) Plan of the Jawaharlal Nehru Biological Park,
Bokaro, Jharkhand.**

Sir,

Submitted Master (layout) Plan of the Jawaharlal Nehru Biological Park, Bokaro was scrutinized by the Expert Group on Zoo Designing of the Central Zoo Authority held on 11th August, 2014 and recommended for approval. Accordingly, the Master (layout) Plan was placed before the 71st Meeting of the Technical Committee of the Central Zoo Authority held on 2nd September, 2014 and approved the revised Master (layout) Plan of the Jawaharlal Nehru Biological Park, Bokaro.

In order to send you a copy of the duly signed and approved Master (layout) Plan of the Jawaharlal Nehru Biological Park, Bokaro, you are requested to submit the soft copy of the digitized Master (layout) Plan, showing contour details in any of the format i. e. AUTOCAD/ COREL DRAW/JPEG/TIFF/PDF files on a CD/DVD to this office, at the earliest.

Detailed Master Plan should be prepared accordingly as per the guidelines and Check-llst of CZA and expeditious submission for approval.

Yours faithfully,

(B. S. Borral)

Member Secretary

[Handwritten signature]
24/9/14

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

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ACKNOWLEDGEMENT

To achieve the proper role of zoo as per National Zoo Policy, the zoos have to prepare Master (Layout) Plan and get approval for preparation of long term development.

Based upon the check list, guidelines and various suggestions given to us from time to time, the Master Plan of JNB Park has been prepared.

We have tried to include all suggestions given by CZA while preparation of Master Plan of JNB Park and the long term conceptual plan will assist Jawaharlal Nehru Biological Park into proper future growth.

I am grateful to Sri Raj Vir Singh, GM (TA) for his constant encouragement and keen interest in the preparation of this master plan.

I am indebted to higher management of SAIL, Bokaro Steel Plant for their encouragement and support.

I am also thankful to our consultant Sri Naresh Kumar Sinha, for taking keen interest in the preparation of this master plan.

I am sincerely thankful to Shri B S Bonal, Member Secretary, Central Zoo Authority, New Delhi for his encouragement and suggestions.



G. Chakraborty
G. Chakraborty
AGM (TA - Horticulture)
JNB Park, SAIL/BSL



PREFACE

The master (layout and management) plan of Jawaharlal Nehru Biological Park at Bokaro Steel City, Jharkhand under the control & management of SAIL, Bokaro Steel Plant is a foot step ahead to fulfill the objective of National Zoo Policy.

The concept plan of JNB Park has been approved and for the management of the JNB Park, Bokaro - it needs a proper planning and implementation of action plans in future also. The management of zoo is a type of integrated management and it needs involvement at every moment for well maintenance and up-keeping the entire area and for taking proper healthcare of our majestic wild residents.

JNB Park Management is an integrated Management in which deep study of wild species behavior, their needs and urge of freedom, conservation and population growth and their control, arrangement of feeding, cleanliness and up keeping of entire area, all types of public health, sanitation, garbage disposal, civil, mechanical and electrical maint, health care of species, zoo education, finance management and above all public dealing and their satisfaction all are involved. Every fraction of time, non-stop activities are bound to run as a story which never comes to an end....

The revised Master (Layout) Plan of JNB Park has been approved by the Technical Committee of the Central Zoo Authority before the 71st meeting held on 2nd September, 2014.

Preparation of Master Plan was a task as needed by Central Zoo Authority and based upon their subsequent directives sent to us from time to time, it was prepared which I think is according to the guidelines issued by CZA.



Raj Vir Singh
Raj Vir Singh
GM (TA), SAIL/BSL



FOREWORD

Trees breathe fresh air into our fast industrialising existence. The 126.42 acres lush green areas of the Jawaharlal Nehru Biological Park, with around a hundred varieties of plants, are the veritable lungs of Bokaro Steel City.

The vision behind establishing this Park was to provide a window that offers the people a peek into our magnificent bio-diversity within the confines of a modern township. JNB Park has played this role admirably over the past two decades, and continuously enriched its flora and fauna through the tireless efforts of its team of veterinarians and support staff. The provisions of the Central Zoo Authority have guided the efforts of the Park in becoming a catalyst for the ecological sensitisation of people from a vast catchment area around Bokaro. The toy train facility has also been big draw for the children, who then get exposed to the lure of nature at an impressionable age and learn to value our shared ecosystem.

Establishing and managing a zoo or a biological park is a complex and specialised process. The original concept of this Park has steered its growth through the past decades. As the Park embarks upon a new phase of evolution, it is only apt that a fresh Master Plan be adopted so as to give a meaningful direction to its future efforts. I applaud the efforts of the Park collective for taking the initiative to rope in experts, put together a route map for their journey ahead, and get it vetted by the CZA.

My best wishes for translating the Master Plan into reality and evolving into the ecological anchor of Bokaro Steel City in the decades to come.



Anutosh Maitra
CEO, SAIL/BSL

Part - I

Chapter - 01
Chapter - 02

INTRODUCTION

A. HISTORY OF JNB PARK:

JAWAHARLAL NEHRU BIOLOGICAL PARK *is the dream turned to reality, of the great Visionary, Sri S. R. Ramakrishnan, the then Managing Director of Bokaro Steel Plant who thought to utilize the abundant thick forest area in the heart of the city, Sector-IV, Bokaro Steel City of the Jharkhand State.*



It is 130 KM from Ranchi Airport, which is connected by flight from Delhi, Kolkata, Patna, Raipur, Bangaluru and Hyderabad. The nearest railway stations are Bokaro Steel City, 13KM from it and Dhanbad Rly. Station, 53km away from it.

The story of JNB Park is a saga of foresight, imagination, engineering skill and nature care by those whose first love is steel making.

It is stretched across 126.42 Acres of land having minimal surface gradients (3%) in the heart of Steel Township at Sector-IV.

Early in 1959, this area used to be a thick forest covered with trees of different varieties.

The foundation stone of the Park's first structure, the FISH AQUARIUM was laid in November '1986. The fish aquarium, a unique place of architectural

excellence has now become an abode for various species of fish in myriad hues and shapes.

Our feathered friend's colorful birds such as the Rosy Pelican, Pheasants, Cockatiel, inhabit the Park in their multi-hued splendor.

Combining ingenuity with engineering skill, two Artificial Lakes have been created in the Park. What earlier used to be a Nullah carrying seepage water from Cooling Pond no. 2 has now become a Water Reservoir for Park.

A Pond was constructed to conserve the water of Nullah and thus, a large Water body was born. From this Artificial Lake, the water was pumped to another lake. The first water body has now become a home for a large no. of resident & migratory birds.

An artificially made attractive island has been developed in the mid of Lake for the safety, security & availability of food for migratory birds.

One of the specialties of JNB Park is that due care has been taken to develop the enclosures without disturbing the existing trees. In a way, therefore, the Park is an example of Wild beauty of Nature tended to perfection by loving human care.

The lush sylvan surroundings of JNB Park are an invitation to relax away from the din and bustle of industrial life, to lose oneself amidst the tall green trees, to experience aroma of different varieties of flower, to see and enjoy the amazing varieties of birds, chattering and walking of animals.

One can feel surprising bursts of wild colors, the tranquility, the peace. This park is a seductive invitation to become ONE with NATURE.

B. VISION :

The vision of JNB Park is to sensitize people for caring and conservation of wild flora and fauna.

C. MISSION :

- I. Conservation and breeding of wild animals/birds of Chotanagpur region, Jharkhand and nearby states.
- II. Provide naturalistic enclosures to various animals for conservation and propagation of wildlife.
- III. As a zoo is a living laboratory, visitors, particularly students will learn habit, habitat, behavior, biology and other interesting information of wildlife at the shortest time which will be useful for protection and conservation of wildlife.

D. STRATEGY :

- I. Broad taxonomic display of wild animal species of the Chotanagpur Plateau in naturalistic enclosures.
- II. To maintain viable population of species kept inside the park through balanced diet.
- III. To provide proper signage facilities that will enable visitors to understand eco-balance of the area.

E. OBJECTIVE :

JNB Park is a condensed source of information about nature and wildlife and the objective of the park will be spreading of conservation education and create awareness among visitors.



F. PHYSICAL FEATURES LIKE THE TOPOGRAPHY OF THE AREA:

JNB Park is located in the Damodar Valley Region, 209 Meters above Sea Level. JNB Park stands in GONDWANA geological structure of Damodar Valley region. The surface level varies from 192 mtrs. above sea level to 298 mtrs. above sea level. It has natural water bodies, forest patch, earthen mound, and is very suitable for wild species due to its natural greenery and environment.

G. GEOLOGY:

The Area of this Park is 126.42 acres. Due to tropical deciduous forest vegetation of JHARKHAND Saal and Mahua Trees are found in large nos. inside the Park. The Park is surrounded by deep woods of different varieties with a good green cover in area making it ecologically suitable for Zoo. At later stage teak, mahogany trees were also planted.

Summer Temperature ranges between 30-48.5 degree, and Winter Temperature 02-21 degree Celsius.

H. ROCK & SOIL:

The Area is mountainous with valleys still having very fertile red soil.

I. FLORA & FAUNA:

There are various growing and planted trees inside the Park. They are SAAL (Shorea robusta), MAHUA (Madhuca latifolia), TEAK (Tectona grandis), BARGAD (Ficus bengalensis), NEEM (Azadirachta Indica), PEEPAL (Ficus religiosa), ARJUN (Terminalia arjuna), AMAL TAASH (Cassia fistula), GULMOHUR (Deionix regia), ASHOKA (Polyaithia longifolia), KARANJ (Pongamia pinnata), BAHERA (Terminalia belerica), PALASH (Butea monosperma), KURCHI, SHISHAM, HARRE etc.

Inside JAWAHAR LAL NEHRU PARK forests various types of animals, snakes and birds are also found. Among animals, Jackal, Mongoose and squirrel are

found. Pythons, Cobra, Kraits and viper are seen frequently among snakes. Different kinds of birds like Parakeets, Water hens, Cormorants, crow pheasant, wood pecker, babbler, cuckoo, owl and myna have been observed.

J. CLIMATE:

The climatic condition of Bokaro Steel City is influenced by the monsoon winds coming from the Bay of Bengal and the Arabian Sea. Tropic of Cancer passes through Ranchi, which is 150 KM away from the Park. The monsoon starts in July and ends in September or early October. Winter is observed from October to February. Bokaro Steel City is in Humid Sub regional (Warm Summer) Climatic Region of India.

K. RAINFALL:

Annual Rainfall ranges between 1500 mm to 1900 mm.

L. SEASON:

Humidity varies between 30-90%. The **wind** blows south east to north east at Bokaro Steel City. The force of the wind becomes quite severe during month of May and June with storm. The **terrain** of the area being mountainous, the rain water is drained very fast. No natural wet land is therefore found.

M. APPROACH:

It is situated in the heart of the city in Sector-IV, surrounded by different roads.

N. DEMOGRAPHY OF THE SURROUNDING AREA:

This is the part of Steel City under complete control of SAIL/Bokaro Steel Plant and surrounded by Plant Quarters, Institutions, Markets, Temples etc and is not very thickly populated.

O. LEGAL STATUS OF THE LAND:

The land of the Park is legally owned by SAIL, BOKARO STEEL PLANT.

P. SOURCES OF POLLUTION:

JNB Park is the lung of Bokaro Steel City as therein good vegetation covers the area of the park.

Since JNB Park is an existing zoo, the present ground situation layout of different enclosures are as shown in Plate (Page E)



“Zoo is a source of information about nature at the quickest possible time. Even some animals are found / observed in zoo, but lost in nature.”

APPRAISAL OF THE PRESENT ARRANGEMENT AND CONSTRAINTS

A. DIFFERENT SECTIONS OF JNB PARK :

(i) ANIMAL SECTION

There are 23 nos. of existing animal enclosure / structure as shown in the Plate (Page No.- E). In addition to that, there are 3 water bodies.

All animal enclosures are well designed by our architect and city planning department, done as early as 1994-95.

JNB Park has adopted broad taxonomic display of wild animal species of the area as suggested by CZA vide letter no. 19-14/92- CZA (44)/(vol. IV)M dated 03.09.2008.

Constraints – In the existing zoo, visitors path and service path has not been separated.

(ii) VETERINARY SECTION

JNB Park had veterinary hospital, which was distantly located. The new zoo hospital is going to be built on approved place as per approved master (layout) plan for proper utility.

Constraints – The zoo hospital is built in far off remote area from the Adm. Building of zoo. It is advisable to shift the veterinary section near service gate of the park for quick remedial action in case of emergency.

(iii) STORE AND FEED SUPPLY SECTION

Park has a commissary section with dry ration store house, vegetable weighing house, meat weighing place with weighing facilities etc.

There is a prescribed animal diet for all the animals/birds and are supplied through four annual tenders Like (i) supply of fresh buffalo meat (ii) Supply of food grains, (iii) Supply of fruits and vegetables, (iv) Supply of green grass, live telopia fish, live chicken, hen eggs, etc for feeding of animals/birds of Park. These tenders are finalised based on the normal tender procedure existing in BSL. The feeding materials such as meat, fish, fruits, vegetables, green grass and leaves are received on daily basis, the weightment of quality materials are taken by staff and the same is distributed to different enclosure of animals/birds.

One employee is posted in commissary section to look after the store and keeping records of all materials.

(iv) SANITATION SECTION

JNB Park maintains high degree of sanitation and cleanliness of surroundings. With pride, we are to say that during visit of JNB Park, Bokaro visitors do not face bad smells near animal cages.

- Total Park area is cleaned regularly through sweeping staff and the work is outsourced on annual contract basis.
- There are provisions of dustbins at various places inside the park.
- All the waste materials of kitchen and garbage from enclosures including animal excreta are filled in the dustbins.
- The garbage filled dustbins are lifted and taken away outside the park by the dumper/truck of Public Health section of Bokaro Steel Plant.

(v) MAINTENANCE SECTION

Civil maintenance work, Electrical maintenance work and Water supply line maintenance works of JNB Park are maintained by Town Engineering (Civil), (Electrical) and (Water supply) departments of Bokaro Steel Plant as per requirement.

(vi) SECURITY SECTION

The Security coverage of JNB Park is looked after by the BSL security deptt. The Security Deptt. is responsible for the deputation of Security guards at JNB Park. They are deployed in four shifts, General, A, B and C at different important points such as monkey enclosure, aquarium, tiger, lion, reptile house, hippo enclosure, apart from the main gate. This section is responsible for providing security to staff, animals, visiting public and managing crowd on New Year's Day, 26th Jan, 15th Aug, 2nd Oct & important festivals days. Elaborate arrangements are made to control the crowd in the park. Lady security staff are also deployed to control the vandalism etc.

Constraints – Security sub post inside the zoo is to be made for better control of animal teasing and vandalism during rush time.

(vii) WATER SUPPLY SECTION

JNB Park is supplied with water from the drinking water supply line maintained by Town Administration (Water Supply) deptt. A overhead tank is situated on the top of the Aquarium building from which water is distributed to all animal enclosures and buildings of Park. The water pool of Hippo enclosure is also connected with a direct line from Main water supply line. During emergency/crisis hours, water tankers are requisitioned from Water Supply deptt.

Constraints – The pipelines laid inside the zoo have become damaged and rusted, which need complete overhauling with a new pipe line distribution network inside the park.

(viii) DISPOSAL OF SOLID WASTE & LIQUID WASTE-SEWERAGE

It is well said that prevention is better than cure. Measures have been taken to maintain proper hygiene in rooms/night shelter rooms as well as in the outdoor enclosures to reduce incidence of diseases.

In JNB Park following steps have been taken for managing sanitation and garbage

- ❖ Good drainage system has been provided to flush out the excreta, food refuses, other debris, and rain water.
- ❖ The room/night shelter room including Nursery area is cleaned daily with Turmeric (Haldi) Powder because Haldi is having a natural germicidal power. It does not contaminate food, provides healing effect to the skin of animals and has very low aroma.
- ❖ All the drinking pots of animals are cleaned daily and filled with fresh drinking water.
- ❖ Corners of the rooms and drainage systems are disinfected with antiseptic solution.
- ❖ Phenyl is used only in drains.
- ❖ Hygienic measures are further improved by use of blow lamp sterilization over the walls, its corners and roofs, iron structures etc. twice a year and as per requirement.
- ❖ Yearly white washing of the building of enclosures is done including painting of all iron structures inside the zoo.
- ❖ Special care of animals is taken during painting of enclosures and surrounding to avoid lead poisoning.
- ❖ In outdoor enclosures improvement of hygiene is done by cutting of grasses, bushes and weeds at periodic intervals regularly. This helps uprooting of parasites which suck blood of animals very fast.
- ❖ In greenery areas, dry leaves are collected and disposed to different collection pits.
- ❖ All the moats, water pools, sewer lines, urinals, toilets etc. are cleaned at regular intervals.
- ❖ Park follows high degree of solid waste disposal system.

Filled dustbins are lifted and taken outside the park by dumper of Public Health Section of Bokaro Steel Plant at regular intervals.

A disinfection/cleaning schedule of enclosures of JNB Park has been chalked out and is followed.

Table-1

Sl.	Name of enclosures	Activity	Date /days
1.	Lion Tiger & leopard enclosure	a) Cleaning of cells with Haldi Powder	Daily
		b) Sterilization of cells with blow lamp	6 months in a year
		c) Cleaning of tiger moat	Monthly
		d) Bush cutting of enclosures	Daily
2.	Bear enclosure	a) Cleaning of cells with Haldi Powder	Daily
		b) Sterilization of cells with blow lamp	Every 6 month
		c) Bush cutting in enclosure area	Monthly
3.	Deer & Antelopes enclosure	a) Removal of dung from enclosure	Weekly
		b) Cleaning of cells, verandah	Daily
4.	Monkey, Langur enclosure	a) Cleaning of night shelters & cells	Weekly
		b) Sterilization of cells with blow lamp	6 months
5.	Birds & pheasant enclosure	a) Haldi Powder mixed with water spreading in cells	Weekly
		b) Turning of soil inside the cells	Once in a year
		c) Change water from small ponds	Daily
6.	Hippo enclosure moat	a) Change of water	Fortnightly
		b) Removal of dung spreading in moat and enclosure	Twice a month
7.	Crocodile Enclosure	Change of water	Continuous
8.	Emu enclosure	Removal of dung	Twice a month
9.	Roads/Paths of the zoo	Sweeping	Daily

(ix) VISITOR AMENITIES

The ticket counter is located at the right side of main entrance gate. A public toilet is present on the left side area of park. Besides, there is provision of ladies toilet in two places (i) Near Aquarium and (ii) Near main office of park. About 11 nos. rain shelter sheds are existing in different locations of the park, in order to provide comfort to the visitors. A Toy Train Ticket counter cum passenger's shed has been constructed near Bird enclosure for visitors i.e. on starting point of toy train, 4 nos. of water tanks for providing hygienic drinking water to visitors have been installed in addition to many more drinking facility for visitors. All around the road, proper signage for particular enclosures has been displayed to avoid confusion. To avoid visitors getting disoriented and moving haphazardly in all direction, we have one main entrance having verandah, cemented pathway and pathway connecting sub-path way and also moorum laid sub path way, every turning well directed and showing direction to different animal homes minimises the visitors getting disoriented and moving haphazardly. Proper educative signage, also different species, tree, saving earth and display of different free ranging species are in the way which automatically give educative diet to visitors. Visitors shed at different location are being renovated for their rest with nearby drinking water facilities.

It is proposed that a visitor circulation pathway connecting all enclosure will be built as per approved Master (layout) Plan.

Park has taken care to provide all required facilities to the visitors e.g. drinking water points, shelters, toilet, benches, restaurant, toy train, children park, wheel chair, first aid box, interpretation, etc.

(x) HORTICULTURE SECTION

There is a well-equipped horticulture section to maintain the Nursery, Mist chamber, Garden lawns, hedges around enclosures and trees of the Park. The nursery is well stocked with saplings and is located

western side of the park administrative building. A Mist chamber has been constructed for early propagation of foliage and shrub plants. Work of maintenance of gardens has been outsourced on annual contract basis. The work of contractual staff is looked after by a horticulture supervisor and a garden assistant.

A new rose garden was developed by the side of the main gate, hedges were planted along the lion, tiger, leopard, bear, monkey and bird enclosures.

There are three commemoration Parks, by the side of the main gate for the tree plantation purposes by the visiting dignitaries and VIPs.

(xi) ELECTRICAL SUPPLY SYSTEM

A separate Electrical Transformer has been installed inside the park to ensure uninterrupted power supply to the park.

(xii) ADMINISTRATIVE BUILDING OF JNB PARK

This is located left side of the main entrance gate and is a single storeyed building for park administration staffs.

(xiii) STAFF ACCOMMODATION

The staff has been provided accommodation as per entitlement in company quarters in different sectors of Bokaro Steel City.

B. ANIMAL COLLECTION PLAN (EXISTING) :

JNB Park, being small in nature, will increase collection of native/locally found animals of Jharkhand Habitats. The park acts on an animal collection plan as per the guidelines of National Zoo Policy and Central Zoo Authority (CZA).

Table-2

Sl No	Animal Name	Scientific Name	Existing stock as on 31.03.2016			
			M	F	U	T
	BIRD					
1	Peafowl	Pavo cristatus	4	5	0	9
2	Pheasant Kalij	Lophura leucomelanos	0	0	0	0
3	Budgeriger	Melopsittacus undulatus	5	8	0	13
4	Cockatiel	Nymphicus hollandicus	3	4	0	7
5	Duck Brahminy (Ruddy Shelduck)	Tadorna ferruginea	1	1	0	2
6	Emu	Dromaius novaehollandiae	5	2	0	7
7	Love Birds	Agapornis sps	5	4	0	9
8	Parakeet Alexandrine	Psittacula eupatria	3	3	0	6
9	Parakeet Rose Ring	Psittacula krameri	3	7	0	10
10	Pelican Rosy / White	Pelecanus onocrotalus	1	1	0	2
11	Pheasant Lady Amherst	Chrysolophus amherstiae	1	0	0	1
12	Pheasant Silver	Lophura nycthemera	2	0	0	2
13	cockatoo Moluccan / Salmoncrested	Cacatua moluccensis	1	0	0	1
14	Helmet Guinefowl	Numido meleagris	4	4	0	8
15	Goose	Anser spp	2	2	0	4
16	Common / Grey Quail	Coturnix coturnix	4	4	0	8
	TOTAL	BIRDS	44	45	0	89
	MAMMAL					
17	Bear Himalayan Black	Ursus thibetanus	1	1	0	2
18	Black Buck - Krishna Mrig	Antelope cervicapra	21	21	0	42
19	Civet Common Palm - Cat Toddy	Paradoxurus hemaphroditus	2	1	0	3
20	Langur Common	Semnopithecus entellus	6	2	0	8
21	Leopard - Panther	Panthera pardus	1	3	0	4
22	Macaque Bonnet	Macaca radiata	4	1	0	5
23	Rhesus Macaque	Macaca mulatta	13	5	0	18
24	Tiger Bengal	Panthera tigris tigris	0	1	0	1
25	Deer Sambar	Cervus unicolor	2	3	0	5
26	Deer Spotted - Chital	Axis axis	20	21	0	41
27	Hippopotamus	Hippopotamus amphibius	1	0	0	1
28	Lion	Panthera leo	0	1	0	1
29	Nilgai - Blue Bull	Boselaphus tragocamelus	3	0	0	3
30	Hyaena Stripped	Hyaena hyaena	1	1	0	2
31	Porcupine Indian	Hystrix indica	1	0	0	1
32	Deer Barking - Kakar	Muntiacus muntjak	1	3	0	4
	TOTAL	MAMMAL	77	64	0	141
	REPTILE					
33	Crocodile Marsh - Muggar	Crocodylus palustris	1	0	0	1
34	Python Indian Rock	Python molurus	1	2	0	3
	TOTAL	REPTILE	2	2	0	4
	TOTAL	ANIMALS	123	111	0	234

(i) **ANIMAL ENCLOSURES**

Though the existing wild animal's enclosures are well designed and spacious, yet we shall modify some of animal's enclosures as advised by CZA in a planned manner and as per our approved Master (layout) Plan.

(ii) **EXISTING ANIMAL HOUSE (ENCLOSURE)**

This section is the most attractive section in Jawaharlal Nehru Biological Park. The enclosures are spacious to accommodate birds/animals. Out of 48 no. of enclosures/substructures, 18 nos. are open and 30 nos. closed cages / aviaries.

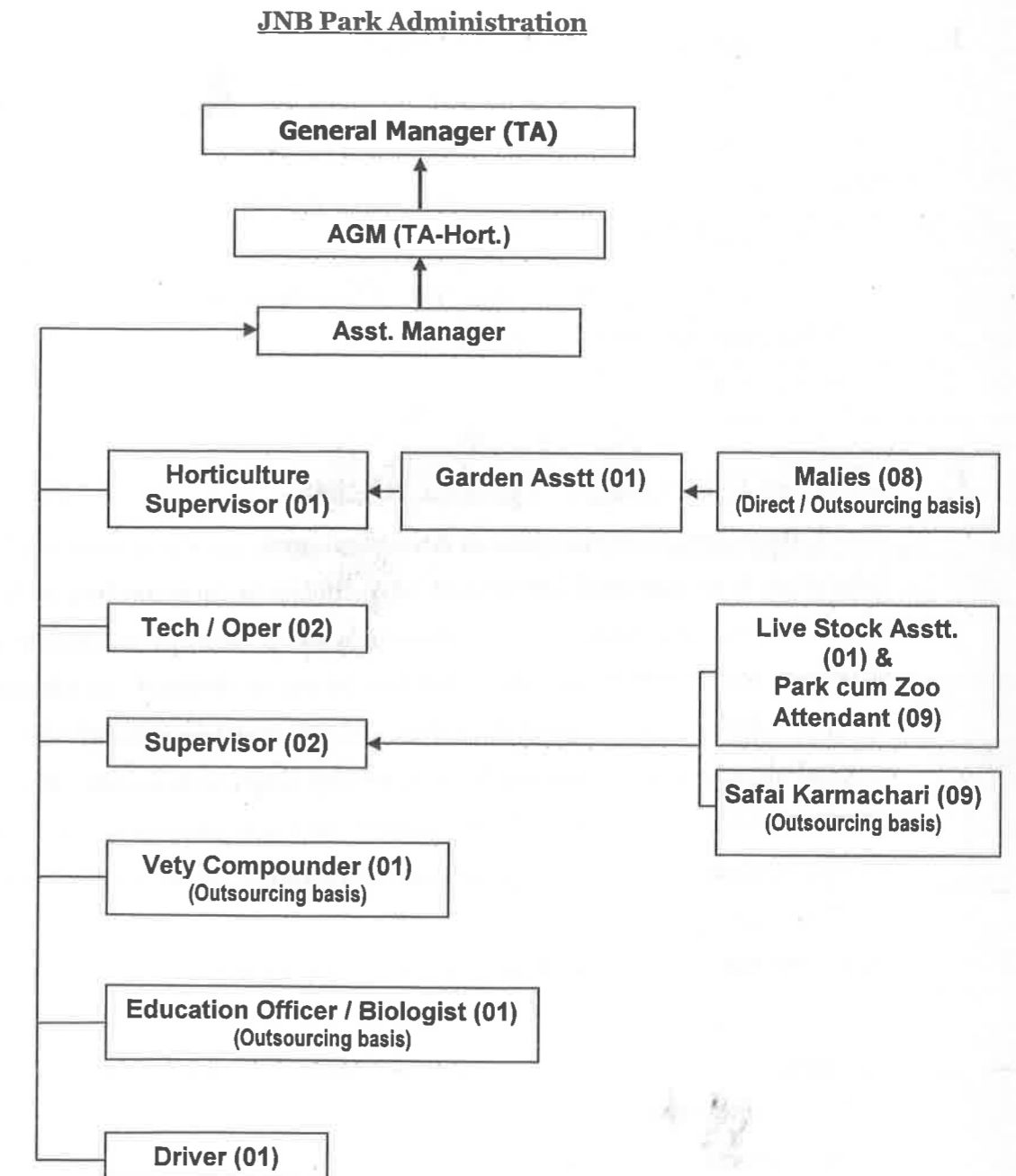
The table indicates the distribution of animal/bird enclosure:

Table-3

Animal Section	Species	No. of Enclosures / substructures		No. of night cells
		Open	Closed	
Mammal	Tiger	2	-	6
	Lion	2	-	6
	Leopard	-	1	6
	Hyena	2	-	4
	H. Black Bear	1	-	6
	Indian Palm civet	-	1	2
	Herbivores	7	-	9
	Primates	-	6	12
	Porcupine	1	-	1
	Pheasants and other birds	-	20	-
Birds	Emu	1	1	-
Reptiles	Mugger	1	-	-
	Gharial	1	-	-
	Python	-	1	-
Total		18	30	53

C. **GENERAL ZOO ADMINISTRATION SECTION:**

The present administrative set-up of JNB Park is given below :



As per CZA approved concept plan of JNB Park, manpower have been deployed. To implement activities of the zoo, shortage of manpower has been filled by outsourcing.

D. RESEARCH :

Research work will be carried out in the field of animal behaviors, diseases, nutrition and other activities.

E. CONSERVATION BREEDING :

Breeding of endangered species will be given priority for conservation and visitors will be given education for ecological balance.

Some of the research activities undertaken by zoo staff are :

- Captive breeding of python.
- Care, management and breeding of Himalayan Black bear.
- Captive breeding of Pheasants.
- Captive breeding of Emus.

F. EDUCATION AND AWARENESS:

Zoo Education, Interpretation And Signages

Education is an essential function of zoos, therefore each zoo has to develop an educational programme commensurate with its financial resources, infrastructure and support facilities. Interpretation is defined as educational activity, which aims to reveal meaning and relationship through the use of original objects by firsthand experience, and by illustrative media, rather than simply communicating factual information. In a zoo such programme helps visitors to understand the uniqueness of each animal and its relationship to its surroundings.

Interpretation can be done through a variety of means and media –

Exhibits

- Signage
- Nature interpretation centre
- Publications
- Booklets & brochures
- Guided tours
- Organizing programmes

The park has provided proper signage (interpretive labels or sign boards) at each enclosure, guide maps, brochure / pamphlet / guidebook, information booth or counter and guided tours for school children.

There is a well furnished interpretation centre having 160 seat capacities, provided with TV, DVD and CD regarding wild life management.

- It is shown twice in a week in second half of the day and on important occasions. Signage has been put in different enclosures. And other important turnings, places and entrance to the gate.
- JNB Park has been conducting different educational programmes for generating public awareness and mobilizing people's compassion towards animals and birds. We have organized different competitions like essay, sit and draw competition, quiz among school children on the occasion of Animal welfare fortnight and wild life week. A lecture and sapling plantation session is also organized on World Environment Day every year. Summer Camp is also organized in summer months for spreading awareness for flora & fauna of park.

Due to these small but effective activities in the field of education, it has gained tremendous popularity among school children and Nature lovers.

The triumph of our Biological Park is directly related with visitor's concern & affection towards the animals and birds.

Every year there is an increasing trend of visitors, though our city is neither a Tourist Centre nor a big commercial centre.

Part - II

Chapter
03 - 10

FUTURE OBJECTIVES

A. VISION OF THE ZOO :

We are determined to protect the human values and their relationship with wild species, flora and fauna of our Universe and to make this zoo as the centre of knowledge by using state of art techniques & skills for maintaining healthy and pollution free ambience.

B. MISSION OF THE ZOO:

Our Mission is to

1. Simulate Natural Habitats of various species of animals of Chotanagpur region and nearby areas suitable for their conservation to the extent possible.
2. Spread the theme of Nature conservation & save the Earth by mass awareness and by continual zoo educational activities.
3. Inspire the people to change their attitude towards wild species, flora and fauna.

C. THEME:

JNB Park has adopted broad taxonomic display of wild animal species of the area.

Free Ranging Category of Birds, Mammals and Reptiles in JNB Park:

Bird species of various types are generally found inside the park area. This included little cormorant, crow pheasant, koel, water hen, king fisher, rose ring parakeet, hoopoe, owl, oriole, wood pecker, drongo, babbler, Indian Myna, Pahari Myna, Tree pie, Bulbul, Dove, Pegin, Magpie Robin, Wagtail, Flower Pecker, etc excluding migratory birds.

In the free ranging category of animals, we find, Jackals, foxes, mongoose abundantly moving around the Park area and also Reptiles like Pythons, Cobras, Dhamins, Kraits are seen frequently in the area.

D. STRATEGY OF THE ZOO:

We intend to use state of the art technology for betterment of the Park and want to give a naturalistic habitat. Also, we intend to connect nationally with all Zoo communities.

E. OBJECTIVE:

Our objectives are to

1. Conserve, Educate and propagate awareness about wild life and Nature's beautiful creation.
2. Arrange exchange programme from other zoos of India in the field of wildlife management and education, breeding, conservation and research, by inviting Externals.
3. Conduct all our activities in an environment friendly manner.
4. Inculcate knowledge of wild life to children and spread the message of love with species available in the zoo.
5. Share the knowledge of flora to all visitors.
6. Comply with applicable legal and statutory requirements as per guidelines of Central zoo authority.

Our one line Future Mission is

***To Educate, Involve,
Conserve and Inspire***

FUTURE ACTION PLAN

I. PROPOSED FUTURE ANIMAL COLLECTION PLAN :

Table-4

Sl No	Animal Name	Scientific Name	Existing stock				Proposed collection				Animals to be acquired or removed			
			M	F	U	T	M	F	U	T	M	F	U	T
BIRD														
1	Peafowl	Pavo cristatus	4	5	0	9	4	5	0	9	0	0	0	0
2	Pheasant Kalij	Lophura leucomelanos	0	0	0	0	2	2	0	4	2	2	0	4
3	Budgeriger	Melopsittacus undulatus	5	8	0	13	10	10	0	20	5	2	0	7
4	Cockatiel	Nymphicus hollandicus	3	4	0	7	10	15	0	25	7	11	0	18
5	Duck Brahminy (Ruddy Shelduck)	Tadorna ferruginea	1	1	0	2	2	2	0	4	1	1	0	2
6	Emu	Dromaius novaehollandiae	5	2	0	7	5	3	0	8	0	1	0	1
7	Love Birds	Agapornis sps	5	4	0	9	10	10	0	20	5	6	0	11
8	Parakeet Alexandrine	Psittacula eupatria	3	3	0	6	5	5	0	10	2	2	0	4
9	Parakeet Rose Ring	Psittacula krameri	3	7	0	10	3	7	0	10	0	0	0	0
10	Pelican Rosy / White	Pelecanus onocrotalus	1	1	0	2	2	2	0	4	1	1	0	2
11	Pheasant Lady Amherst	Chrysolophus amherstiae	1	0	0	1	2	2	0	4	1	2	0	3
12	Pheasant Silver	Lophura nycthemera	2	0	0	2	2	2	0	4	0	2	0	2
13	cockatoo Moluccan / Salmoncrested	Cacatua moluccensis	1	0	0	1	2	2	0	4	1	2	0	3
14	Helmet Guinefowl	Numido meleagris	4	4	0	8	5	5	0	10	1	1	0	2
15	Goose	Anser spp	2	2	0	4	2	2	0	4	0	0	0	0
16	Common / Grey Quail	Coturnix coturnix	4	4	0	8	6	6	0	12	2	2	0	4
TOTAL BIRDS :			44	45	0	89	72	80	0	152	28	35	0	63

MAMMAL														
17	Bear Himalayan Black	Ursus thibetanus	1	1	0	2	2	2	0	4	1	1	0	2
18	Black Buck - Krishna Mrig	Antelope cervicapra	21	21	0	42	10	10	0	20	11	11	0	22
19	Civet Common Palm - Cat Toddy	Paradoxurus hemaphroditus	2	1	0	3	2	2	0	4	0	1	0	1
20	Langur Common	Semnopithecus entellus	6	2	0	8	3	6	0	9	3	4	0	7
21	Leopard - Panther	Panthera pardus	1	3	0	4	2	2	0	4	1	1	0	2
22	Macaque Bonnet	Macaca radiata	4	1	0	5	2	4	0	6	2	3	0	5
23	Rhesus Macaque	Macaca mulatta	13	5	0	18	3	6	0	9	10	1	0	11
24	Tiger Bengal	Panthera tigris tigris	0	1	0	1	2	2	0	4	2	1	0	3
25	Deer Sambar	Cervus unicolor	2	3	0	5	2	3	0	5	0	0	0	0
26	Deer Spotted - Chital	Axis axis	20	21	0	41	5	10	0	15	15	11	0	26
27	Hippopotamus	Hippopotamus amphibius	1	0	0	1	1	1	0	2	0	1	0	1
28	Lion	Panthera leo	0	1	0	1	2	2	0	4	2	1	0	3
29	Nilgai - Blue Bull	Boselaphus tragocamelus	3	0	0	3	2	5	0	7	1	5	0	6
30	Hyaena Stripped	Hyaena hyaena	1	1	0	2	2	2	0	4	1	1	0	2
31	Porcupine Indian	Hystrix indica	1	0	0	1	1	1	0	2	0	1	0	1
32	Deer Barking - Kakar	Muntiacus muntjak	1	3	0	4	2	5	0	7	1	2	0	3
33	Sloth Bear	Melursus ursinus	0	0	0	0	2	2	0	4	2	2	0	4
34	Jackal		0	0	0	0	2	4	0	6	2	4	0	6
35	Mongoose	Herpestes edwardsi	0	0	0	0	2	3	0	5	2	3	0	5
36	Indian Wolf	Canis lupes	0	0	0	0	2	4	0	6	2	4	0	6
37	Indian Fox		0	0	0	0	2	2	0	4	2	2	0	4
38	Jungle Cat	Felis chaus	0	0	0	0	2	2	0	4	2	2	0	4
TOTAL MAMMAL :			77	64	0	141	55	80	0	135	62	62	0	124
REPTILE														
39	Crocodile Marsh - Mugger	Crocodylus palustris	1	0	0	1	2	3	0	5	1	3	0	4
40	Python Indian Rock	Python molurus	1	2	0	3	1	3	0	4	0	1	0	1
41	Gharial		0	0	0	0	2	5	0	7	2	5	0	7
TOTAL REPTILE :			2	2	0	4	5	11	0	16	3	9	0	12
TOTAL ANIMALS :			123	111	0	234	132	171	0	303	93	106	0	199

JUSTIFICATION OF KEEPING THE ENDANGERED SPECIES

Since inception of the zoo these species were arranged to make JNB Park a place of attraction and the animals have adapted well for conservation of the species.

II-IV. DESCRIPTION OF REVISED LAYOUT PLAN OF JNB

PARK :

The layout map has been drawn on a scale of 1:2000 where in **existing features** like various categories of Ponds, Paths & sub paths, Forest patch, Shelter shed, Drinking water taps, Railway tracks for toy train, Valley, Marshy land, Zoo hospital, Administrative building & Water bodies have been clearly shown.

The colour code which has been used in the map is black for the existing animal enclosures, green for the enclosures which are to be modified, red for the enclosures that need to be redone after demolishing the old structure and blue colour is for the construction of new enclosures.

The revised layout plan of JNB Park has been approved by the technical committee of the Central zoo authority in its 71st meeting held on 2nd September, 2014.

The copy of revised layout plan is placed at Plates (Page G):

1. List of proposed new structures :

- a) Muggar
- b) Gharial
- c) Naturalistic Python enclosure
- d) Small Mammal enclosure
- e) Hyaena
- f) Butterfly park
- g) Sloth Bear
- h) Zoo Hospital
- i) Zoo Restaurant

The new animal enclosures will be constructed after getting the design approved from CZA.

2. List of structures to be modified :

- a) Souvenir Shop
- b) Rain Shelter
- c) Children park
- d) Rescue centre I
- e) Rescue centre II
- f) Rescue centre III
- g) Water birds
- h) Porcupine

3. Visitor Circulation :

The visitor circulation pathway has been well defined. The visitors enter the park through entrance plaza will move to see different varieties of herbivores. Thereafter visitor will move in a way to see Himalayan Black Bear, different varieties of Primates followed by enclosures of Lion, Leopard, Tiger, Spotted Deer enclosure and finally Birds on their way to exit the park. Signages board will be put in different crossing to guide the visitors properly.

A. THE FUTURE LAYOUT PLAN:

The Future Layout Plan is prepared after due consultation and approval of the committee including Member, CZA which shows all existing features, future new enclosures and visitors and service circulation plan.

B. VISITORS & SERVICE CIRCULATION:

The revised Service Path & Visitor's Circulation Path has been incorporated in **Plate (Page G)**, shown by two different colour.

PLANNING FOR GROWTH OF VISITORS AND PARKING AREA OF JNB PARK:

Table-5

Annual average attendance of visitors (based upon three years data)	4,00,000
Extreme peak day attendance (1 st January, 26 th January, 15 th August & 14 th November)	14,000
Typical peak attendance	8,500
Design day (85%)	7,225
Max. Simultaneous attendance (75% per day) (Visitors in park at one time)	5,400 (approx)
Arrival by Motorcycle/scooters (40%) 5400×0.4 $2160 \div 2$ per motorcycle	= 2,160 people = 1080 m.cycle
Arrival by Car (10%) 5400×0.10 $540 \div 4$ per car	= 540 people = 135 Cars
Arrival by coach / school bus (10%) 5400×0.10 $540 \div 50$	= 540 people = 10 coaches
Area required for parking motorcycle, cars and buses	
Motorcycle $1080 \times 2M^2$	= 2060 M ²
Car $135 \times 20M^2$	= 2700 M ²
Coaches/Buses $10 \times 120 M^2$	= 1200 M ²
Total area for parking required	= 5960 M ²

JNB Park have sufficient parking area as giving under.

$$\left. \begin{array}{l} *36A = 1610.60 M^2 \\ *36B = 1735.84 M^2 \\ *36C = 3168.96 M^2 \end{array} \right\} \begin{array}{l} \text{Total} = 6515.4 M^2 \\ \text{[See Plate (Page G)]} \end{array}$$

C. OTHER AMENITIES :

Lock Room, Zoo Information Centre & Nature Shop has been added newly in the modified design.

D. SITE FOR DISPOSAL OF CARCASS :

Site for disposal for carcass has been ear marked as number 34 in **Plate (Page E)**.

E. ELECTRICITY SUPPLY LINE & WATER DISTRIBUTION OF PARK:

It has been shown in **Plate (Page F)**.



“Conservation challenges in India are a series of unattended small sparks that have over time evolved into raging fires, needing huge manpower and resources to quell. The solution, therefore, lies in nipping the problem in the bud.”

PERSONNEL PLANNING

As per CZA approved concept plan of JNB Park, manpower has been deployed. To implement present activities of the zoo, shortage of manpower has been filled by contractual staff.

Table-6

Name of Post	Post sanctioned	Post filled up (Direct / Contractual)	Proposed
(1)	(2)	(3)	(4)
GM (TA)	One (01)	Direct	Nil
AGM (TA- Hort)	One (01)	Direct	Nil
Asstt. Mgr. JNB Park	One (01)	Direct	Nil
Horticulture Supervisor	One (01)	Direct	Nil
Supervisor	Two (02)	Direct	Nil
Tech / Oper	Two (02)	Direct	Nil
Vet. Compounder	One (01)	Outsourcing basis	01
Education Officer/ Biologist	One (01)	Outsourcing basis	01
Store Keeper	One (01)	Vacant	01
Garden Asstt.	One (01)	Direct	Nil
Office Asstt.	One (01)	Vacant	01
Live Stock Asstt.	One (01)	Direct	Nil
Pump Operator	One (01)	Vacant	01
Malies	Eight (08)	Direct / Outsourcing basis	Nil
Park-cum-Zoo Attendant	Nine (09)	Direct	Nil
Safai Karmchari	Nine (09)	Outsourcing basis	Nil
Driver	One (01)	Direct	Nil

Note: Word 'Direct' refers to posts filled by promotion / placement from internal sources on superannuation basis.

DISASTER MANAGEMENT

Disasters like cyclone, cloud bursts and earthquake though not reported in past several years cannot be ruled out and preparedness is required to face them.

The following facilities have been provided in our park for managing any type of disaster, may it be natural, climatic, manmade and animal made.

- ⊗ Tranquilizing gun
- ⊗ Nylon net
- ⊗ Rope
- ⊗ Movable cage
- ⊗ Gunny bag
- ⊗ Fire extinguisher
- ⊗ 24 hrs. Assistance from fire brigade Dept. BSL.
- ⊗ Assistance from district administration.
- ⊗ Water hose pipe fixed with jet.
- ⊗ Tranquilizing medicines mixed with animal food.
- ⊗ Axe and rope.
- ⊗ Gum Boot
- ⊗ Searchlight/Torch

However the following equipments required to be available handy :

Add Equipment

- ⊗ Diesel Generator Set
- ⊗ Diesel Pump
- ⊗ Portable Power Saw
- ⊗ Flash Lights
- ⊗ Torches
- ⊗ Shovels
- ⊗ Pick Axes

The Staff Training should be conducted for handling the equipment and to meet the emergencies.

Periodic drills to be conducted to ensure preparedness of staff, operational readiness of the equipment.

The consumables to be replenished when they are either exhausted or get discharged or expiry date over etc.

The line of command or alternate line of command in the absence of any senior functionary needs to be drawn and be made known to all concerned. Their consent also requires to be recorded in black & white.

Some interesting events that we have managed by way of disaster management :

Drunken man fell into Tiger Enclosure on 1st Jan' 1995

Normally during new years day we have to face huge rush in our Park and sometimes it becomes unmanageable in spite of all our good efforts. On 1st Jan' 1995 a drunken man was challenged by the person of his own group to jump in the tiger enclosure. By doing so he was to be rewarded Rs. 500/-. He jumped inside the enclosure of tiger. When he saw the tiger standing away five meters, he felt seriousness of the situation and started weeping. The visitors shouted aloud and immediately our staff entered the cage and put a plyboard of adequate size to make drunken man out of the sight of the tiger & with the help of rappers and mufflers pulled the man out of the enclosure and was handed over to the Police.

Escape of a female leopard from enclosure

Our curator did not see the female leopard in her enclosure. He immediately informed the concerned authority and the disaster team came into action. Search was made vigorously, local administration was informed to take safety measure of population at B. S. City. Even tree were not ignored during inspection. One of our staff suddenly saw leopard climbing on the big sal tree near about 40 ft. above the ground inside the Park. Our team came into action and female leopard was tranquilized with gun. Net was spread around the tree and the animal fell after 15 minutes on the net. It was captured and taken into the enclosure.

Escape of Indian Python:-

During visit to the park some mischievous people had broken the glass of Python enclosure which was kept unnoticed till late night. Though concerned maint. section was informed, its search was postponed till morning. Local arrangements were done by covering the broken area into bricks and M. S. Sheet. But during night due to the joint effort of all the pythons somehow enclosures were disturbed and all pythons escaped from the enclosure. Vigorous search was done during morning and after 3 hrs. we were able to catch hold of the Pythons from dense bushes throughout the park.

Effort for escaping by a Himalayan bear

Normally at B. S. City climate conditions are such that we normally face vigorous storms during summer. During one of the storm in May 2007 the tree adjacent to enclosure of bear fell down inside the outdoor enclosure. The female bear out of curiosity climbed over the fallen tree and took a chance to see the outside world. Normally our practice is to visit all the enclosures after any calamities. One of our staff noticed climbing of the bear on the fallen tree. The bear was threatened with sound and wooden log and compelled her to come down from the tree. The cage was opened and food (Khichri with honey) was offered. She went inside the cage and was trapped.

Such types of interesting happening do occur every year but our way of managing disasters always helps us to overcome it. The park being surrounded by neighborhoods have to manage such types of disasters like Monkey menace, Python entering into the garages of quarters etc.

Our disaster team is managing successfully all types of happenings when it occurs. In addition to our policy of **firmly discouraging rumours.**

“Every creatures made by God has its own utilities. We should try to know how it can be utilized for the welfare of mankind.”

CONTINGENCY PLAN

A. FOR LABOUR STRIKES :

Our Park is fully managed by Bokaro Steel Plant, a unit of SAIL. Therefore deployments of all the officials are as per the rules of SAIL, BSL.

Though a no. of labour unions are in existence and there is a chance of experiencing strike as a result of Labour Management disputes but at such times, our Industrial Relations section, a wing of Personnel Management Deptt. tackles the situation very nicely. Moreover, our unions also understand the need and they never pressurize and affect Emergency services like, Hospital, civic amenities, schools & zoos.

Our Park has never faced such type of situation in the Past. However, we have made provisions to secure minimum animal care services through services on outsourcing basis.

In future we are proposing to involve the volunteers, animal welfare groups, NGOs, community service groups and a group of retired BSL staff & executive who have knowledge of Animal life and love Nature & environment.

We are also proposing to select a small group of society and train them accordingly.

We have ensured uninterrupted supply of essential diet and other items during strike period, if it occurs in future by outsourcing the supply.

Nonperishable food items or substitutes required for at least a week are always maintained in store/ Commissary as reserve.

In case of preservation of Meat, Egg etc. we are going to process Deep Freeze Procurement.

B. FOR ESCAPE OF ANIMALS:

There is always a chance of escaping of an animal from its enclosures. After all animals are animals and they always want freedom.

To ensure its non-occurrence, we have made the following provisions:

- Circular has been issued and it is maintained also, that after 5.00 pm, all animals should be kept in closed Night cell.
- Our security staff in all the shift (A, B & C) have been deputed for each and every enclosure and communicate the Authority immediately in case of facing any type of Problem.
- Two display boards for managing disaster and contingency have already being fixed for general information of the visitors.

C. FOR DOG & SNAKE BITING:

In JNB Park, animals like Jackals, foxes and Mongoose are commonly found. There is prevalence of street dogs in the area. As such fear of dog biting can't be ruled out.

In JNB Park special arrangements have been done on non-entry of dogs, foxes etc. inside the enclosure of animals. Following different types of enclosure barriers have been provided in the zoo.

- Chain link fencing.
- Wet & dry moat
- Wire-mesh fencing
- Glass / plastic panels
- High tensile vertical wire and
- Standoff barriers with layers of hedge/chain link

All enclosures are covered with wire-mesh fencing; entrance to the enclosure is well ensured and locked which can be opened only by the zoo attendant after receiving keys from Concerned authority and after signing on the prescribed proforma.

The fencing is such that animals are clearly visible to the visitors as well as total stoppage of entry of dogs, foxes etc. inside the animal enclosure is ensured.

However to face with any eventuality, immediate medical remedy is available for the zoo. Anti-venom-serum, injections and other such medicines are always made available in the adjacent hospital (Bokaro General Hospital).

D. FOR VANDALISM:

Millions of people of diversified educational, economic, cultural and educational backgrounds and different age groups visit zoos each year. Such large congregations of people also include some elements who indulge in undesirable activities such as pick pocketing, molestation of children and women, teasing and causing injuries to zoo animals by throwing stones, prodding with sticks, rods, offering food items, plastic bags, nuts, bolts, nails, balloons etc. to the animal; trespassing into zoo enclosure areas, entering animal enclosures; defacing labels, signboards, damage enclosure structures, fittings, prune the tree top, plants, trees, monuments, buildings; picking up fights with zoo personnel on duty; causing torture to animals by creating loud noise.

In order to cope with such offences peculiar to zoos, the following guidelines are evolved on the basis of experiences of other zoos in the country and abroad to minimize the incidences of vandalism :

- Park has formed at least three mobile squads of security personnel. Each squad consists of minimum two persons who constantly patrol the zoo on foot or bicycles depending on the area of the zoo to deal with such offences.

- The Park have posted additional staff at sensitive places such as primate enclosures, aviaries, tiger, deer and bear enclosures etc. to check undesirable activities.
- In order to deal with such offences a security post is established at the gate of JNB Park.
- Park is planning to invite and involve volunteers from local voluntary bodies (NGOs) in organizing educational programmes for zoo visitors and to assist. Zoo personnel to prevent vandalism.



“Science has invented many colour combinations but none can match with colour combination of different flowers and leaves. This is the greatest gift given by nature to this universe.”

CAPACITY BUILDING

A. CAPACITY BUILDING:

JNB Park, though having very less zoo staff, are sent to different workshops organized by zoos in INDIA and by CZA to upgrade their skills. They interact with other zoo staffs/officials and by mutual communication exercise they upgrade themselves. The upgradation of skill and knowledge of staff is a continuous process and they get the chance to know and understand the new process and findings for better management of animals.

Even in JNB Park, quarterly interactions with higher officials and sometimes externals help to maintain zoo premises safely and nicely. They are always motivated by doing so. The park staff including outsourced manpower are provided knowledge upgradation by inhouse interactions.

B. ADOPTING TOTAL QUALITY MANAGEMENT:

Jawaharlal Nehru Biological Park, Sector-IV, Bokaro Steel City has been certified under ISO 9001:2008 Quality Management System.

Some of its salient features, charts etc. are given as under :

Process description

- JNB Park Management is an integrated Management in which deep study of wild species behaviour, their needs and urge of freedom, conservation and population growth and their control, is carried out. Arrangement of feeding, cleanliness and up keeping of entire area, all types of public health, sanitation, garbage disposal, civil, mechanical and electrical maint, health care of species, zoo education, finance management and above all public dealing and their satisfaction are all involved. Every fraction of time, non stop activities are bound to run as a story which never comes to an end....

- JNB Park Management complies with applicable legal and statutory requirements as per guidelines of Central Zoo Authority, Ministry of Forests & Environment, Govt. of India and applicable statutes under frame work of SAIL/Bokaro Steel Plant.

Details of input

- Different types of Food grains, Fruits & Vegetables, Meat & Chicken, Medicines, Sanitary appliances, Tech. Brochures, periodicals, Books and Guidelines from CZA.

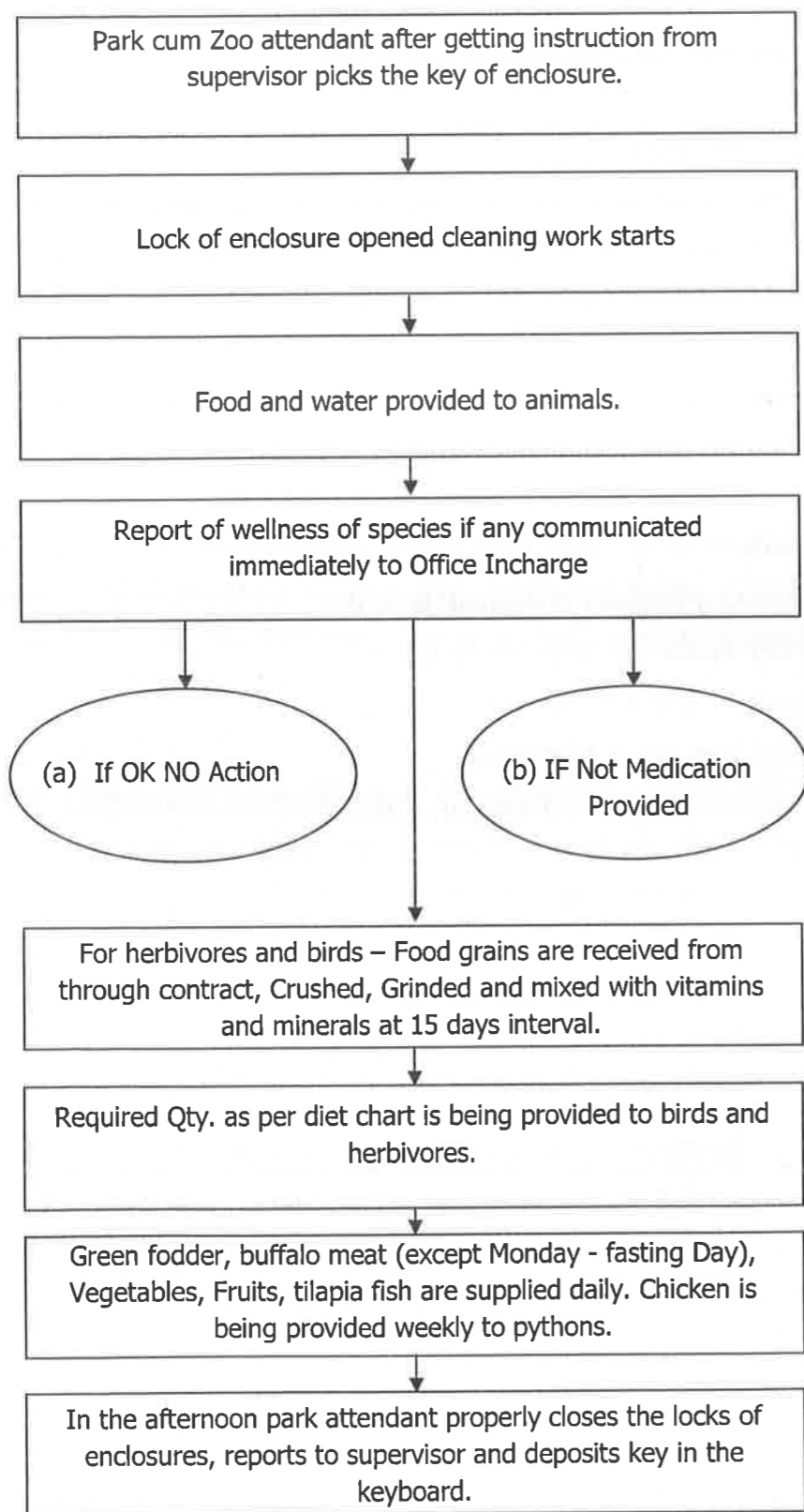
Output

- A healthy and sustainable zoo environment

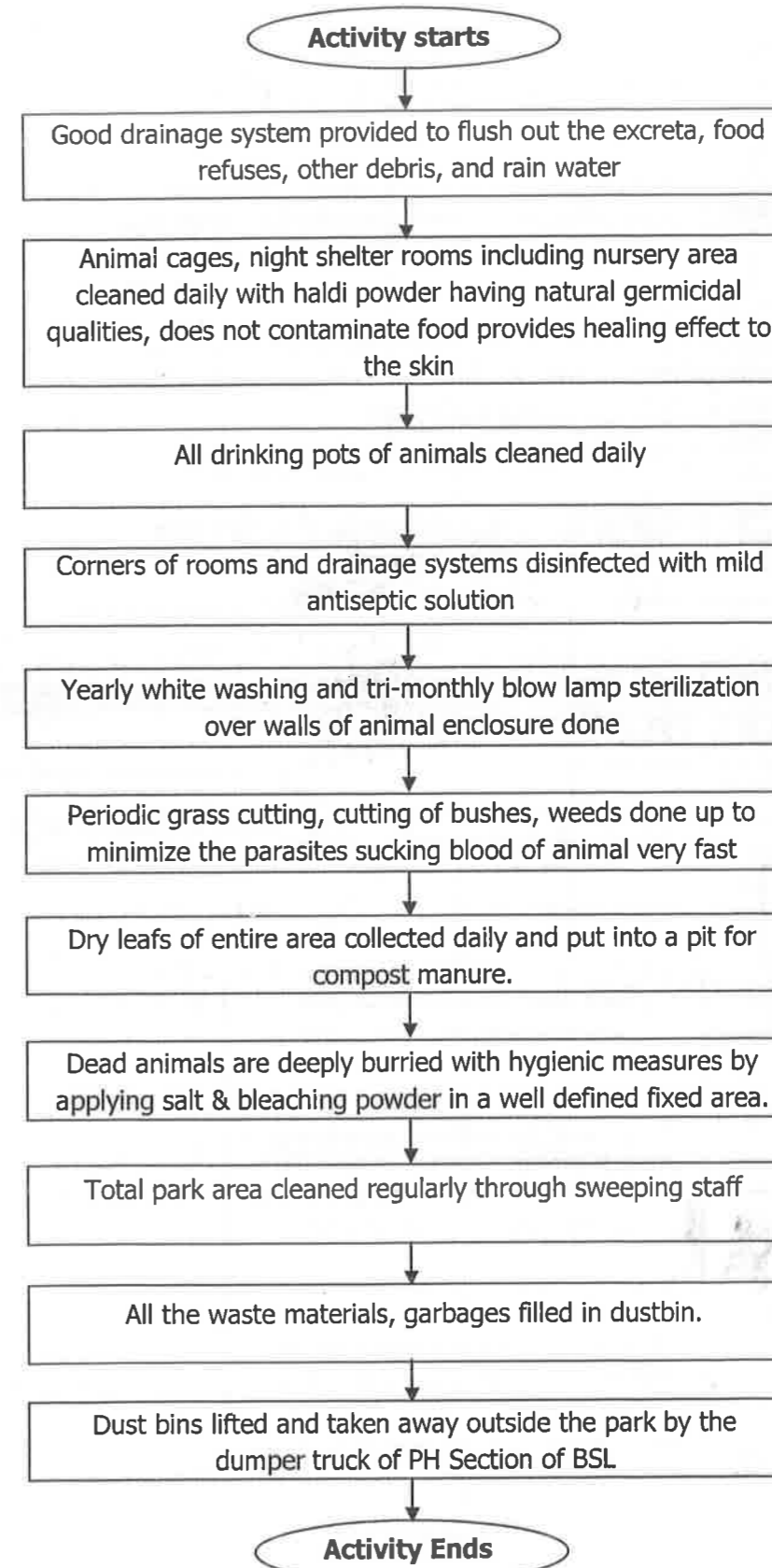
Records

- Inventory Register of Animals & Birds.
- Entry Ticket Sale Proceeds Register.
- Stock & Issue Register of Food Items.
- Stock Register of Medicines.
- Treatment Register of Animals & Birds.

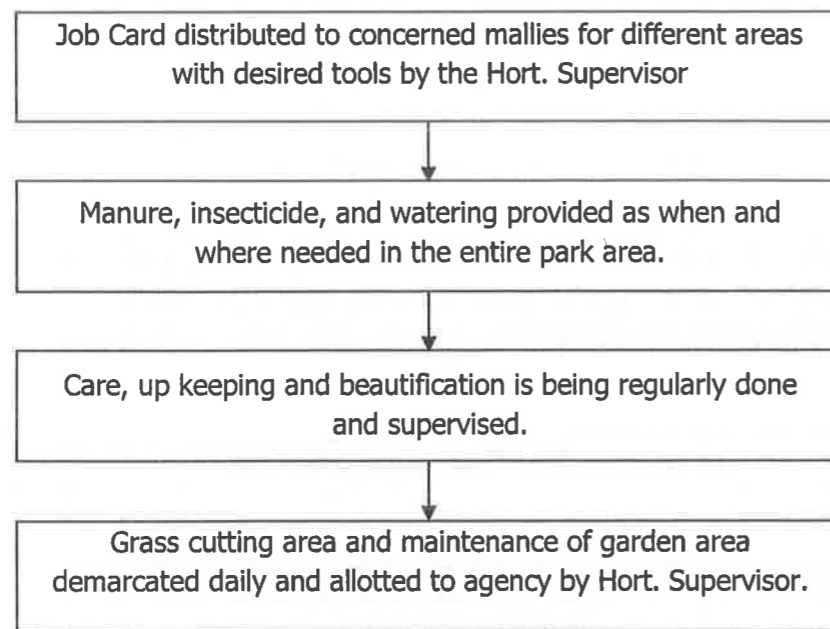
C. FLOW CHART FOR CLEANING & FEEDING INSIDE ANIMAL ENCLOSURES:



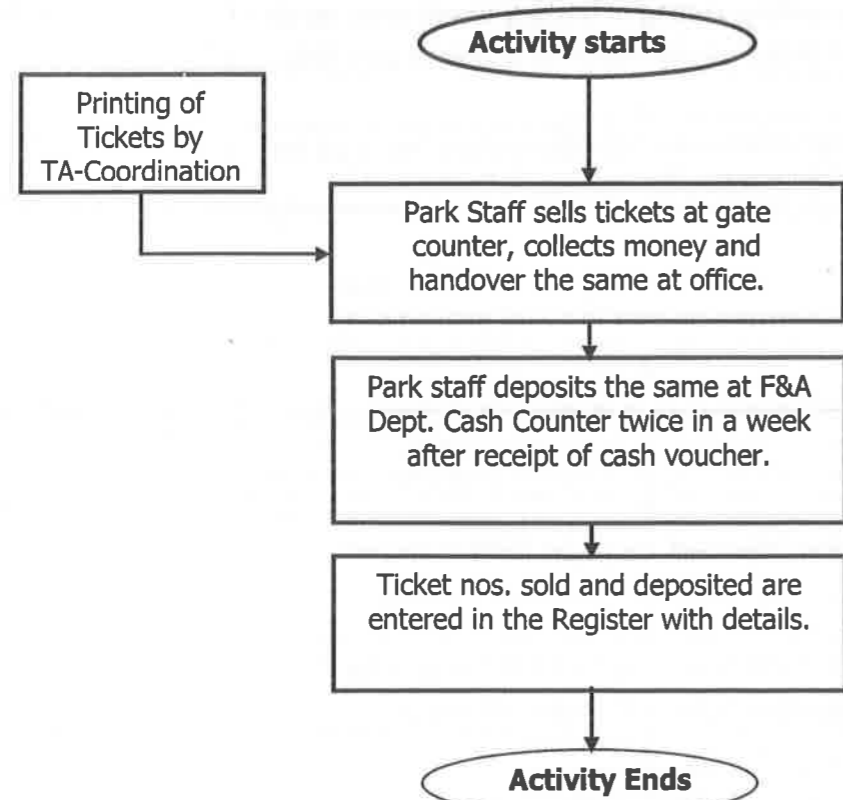
D. FLOW CHART OF SANITATION AND GARBAGE DISPOSAL :



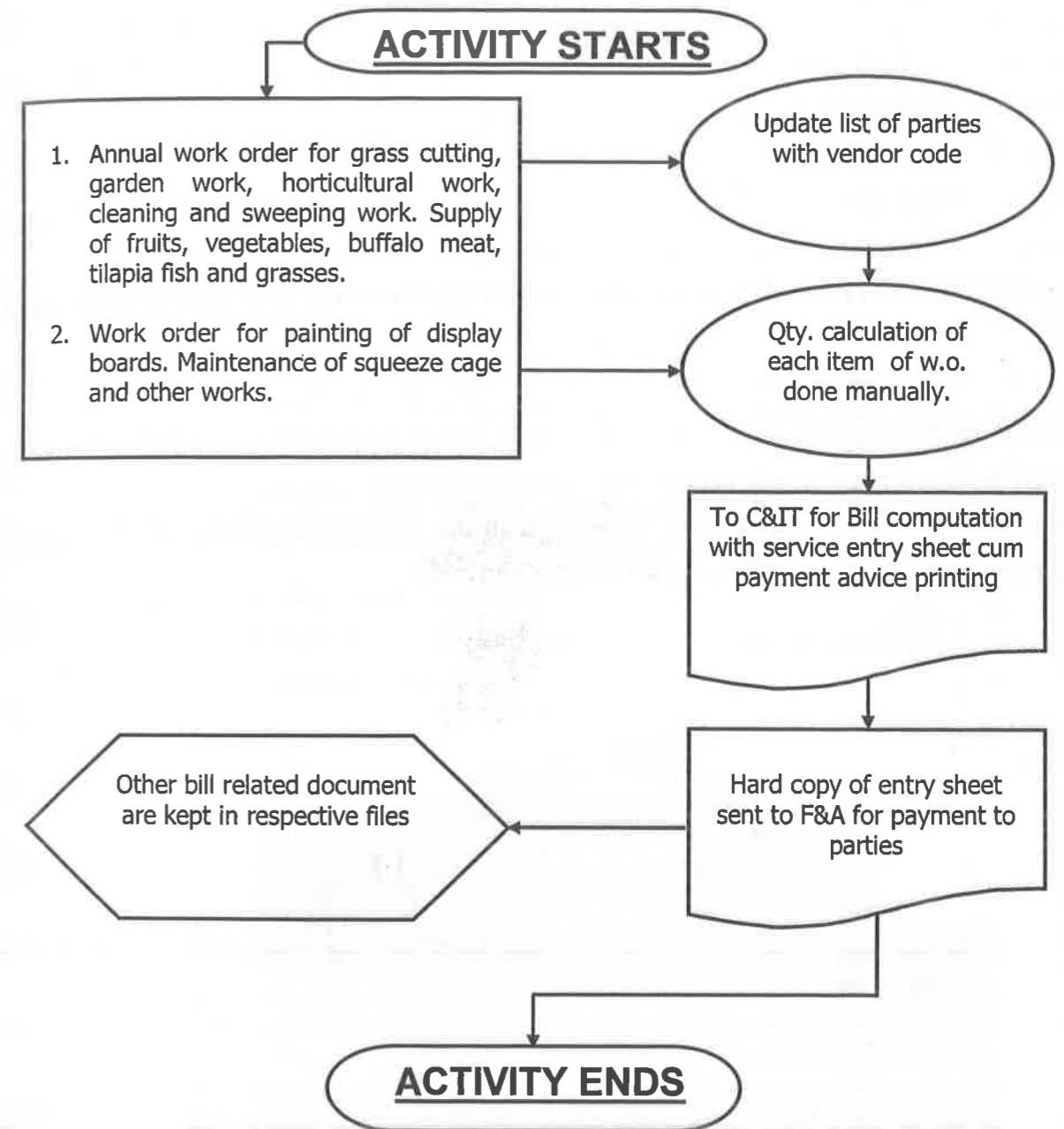
E. FLOW CHART FOR HORTICULTURE WORK:



F. FLOW CHART FOR COLLECTION AND DEPOSITION OF ENTRY TICKET MONEY:



G. FLOW CHART FOR PROCESSING OF BILLS:



Reference document :

1. Respective W.O. file
2. Action Plan of JNB
Park Doc No. QMS/TA/JNB/AP/01

GO GREEN

The zoo has already obtained ISO 9001:2008 Certification. Effort shall be made for entire water conservation and rain water harvesting, use of renewable source of energy like solar energy, use of waste material for energy generation and other modern technologies to generate power, minimization of energy consumption, its conservation through innovative design buildings, use of low consumption devices like LED lamps and other structures besides proper treatment and disposal of solid & liquid wastes.

In this process effort shall be made to obtain appropriate certification for maintaining highest degree of environment safe guards and greenery for the zoo, thereby setting an example in the field for others to emulate.

Though, there will be some critical investment in the long run it will be far more economical and meet the energy requirement of the zoo.



“Trees give us delicious fruits to eat. Preserve Nature, and Nature will preserve you. Plant Trees, and make our planet Green.”

CHAPTER – 09

E-GOVERNANCE

JNB Park will adopt e-governance in a systematic manner. We are always in contact with other zoo nationally and internationally though internet and disseminate our zoo knowledge and information.

It is suggested that this park should adopt the system of e-governance as soon as possible.

Use of information technology in governance of the zoo is at a very inception level. During the plan period all administrative work including accounting and ticketing for different facilities shall be done electronically.

It will be a paperless administration and all correspondence , internal or external shall be through e-mail . Dedicated interactive website shall be launched by the zoo to receive feedback, suggestions and advice.

Closed circuit television sets will be installed in various locations like entrance gate, aquarium, and a few animal enclosures.

CHAPTER – 10

A. BUDGET ANALYSIS FOR IMPLEMENTING THE PLAN :

Budget is the backbone to run any organization. JNB Park is fully owned, financed and managed by SAIL/Bokaro Steel Plant and as such every year Budget is allocated to run its multitude of activity. Every year budget is allocated for day to day maintenance work of park and construction / development work.

With pride we are to say that budget has never been a hindrance to our development and we hope, in future also we will be able to get management assistance to fulfill our future plan and proposal.

B. CONSTRUCTION AND DEVELOPMENT:

It has been taken up well in Chapter-11.

C. DAY TO DAY MAINTENANCE:

It has been taken up well in Chapter-11.

Part - III

Chapter – 11
Chapter – 12
(Additional)

CHAPTER – 11

MANAGEMENT PLAN

Planning of the activities to be taken up as per the Master Plan (Modified) of JNB Park has been formulated with a particular time frame and shown in the tabular form. JNB Park has planned major 21 (twenty one) activities which is divided in four phases, each phase having 5-6 years span of time which is written below.

The management has in principle agreed to work on the management plan as shown above. The proper Budget allocations are to be taken up year wise to fulfill the activities. However, in some cases we can seek help in funding from government and other sources.

PROPOSED YEAR WISE IMPLEMENTATION OF THE PLAN

Table-12

2016-2020 :		
YEAR	WORK SCHEDULE	RS IN LAKHS
2016	Construction of Zoo Hospital.	8.00
	Construction of Meat House.	4.00
2017	Construction of visitors and service circulation pathway.	5.00
2018	Renovation of Children Park.	2.00
2019	Modification of Rain Shelter Shed & Public Toilet.	2.00
2020	Construction of Zoo Restaurant.	4.00
Total :		25.00
2021-2025 :		
YEAR	WORK SCHEDULE	RS IN LAKHS
2021	Strengthening of boundary wall.	22.00
2022	Modification of Souvenir Shop.	2.00
2023	Modification of Rescue Centre I.	2.00
2024	Construction of naturalistic Python enclosure.	5.00
2025	Construction of Naturalistic Hyaena enclosure.	10.00
Total :		41.00

2026-2030 :		
YEAR	WORK SCHEDULE	RS IN LAKHS
2026	Modification of Porcupine enclosure.	2.00
2027	Construction of Small Mammal enclosure.	10.00
2028	Modification of Rescue Centre II.	2.00
2029	Construction of nursery room in Himalayan Bear enclosure.	5.50
2030	Construction of new Mugger and Gharial enclosure.	8.00
Total :		27.50
2031-2036 :		
YEAR	WORK SCHEDULE	RS IN LAKHS
2031	Construction of Butterfly Park.	10.00
2032	Procurement of deep freeze.	0.50
2033	Modification of Rescue Centre III.	2.00
2034	Construction of Sloth Bear enclosure.	15.00
2035	Modification of Water Bird enclosure.	4.00
2036	Review	-
Total :		31.50

ZOO EDUCATION, INTERPRETATION AND SIGNAGES

Education is an essential function of zoos. Therefore each zoo should develop an educational programme commensurate with its financial resources, infrastructure and support facilities. Interpretation is defined as educational activity, which aims to reveal meaning and relationship through the use of original objects by firsthand experience, and by illustrative media, rather than simply communicating factual information. In a zoo, such programme helps visitors to understand the uniqueness of each animal and its relationship to its surroundings.

Interpretation can be done through a variety of means and media :

- Exhibits
- Signages
- Publications
- Booklets & Brochures
- Guided Tours
- Organising Programmes

The park has provided proper signage (interpretive labels or sign boards) at each enclosure, guide maps, brochure / pamphlet / guidebook, information booth or counter and guided tours for school children.

There is well furnished interpretation centre having 160 seat capacity provided with TV, DVD and CD regarding wild life management.

It is shown twice in a week in second half of the day. Signage have been put in different enclosures and other important turnings, places and entrance to the gate.

JNB Park has been conducting different educational programmes for generating public awareness and mobilizing people's compassion towards animals and birds. We have organized different competitions like essay, sit and draw competition, quiz among school children on the occasion of Animal welfare fortnight and wild life week. A lecture and sapling plantation session is also organized on World Environment Day every year.

Due to these small but effective activities in the field of education, it has gained tremendous popularity among school children and Nature lover.

The triumph of our Biological Park is directly related with visitors concern and affection towards the animals and birds.

Every year there is an increasing trend of visitors, though our city is neither a Tourist Centre nor a big commercial centre.

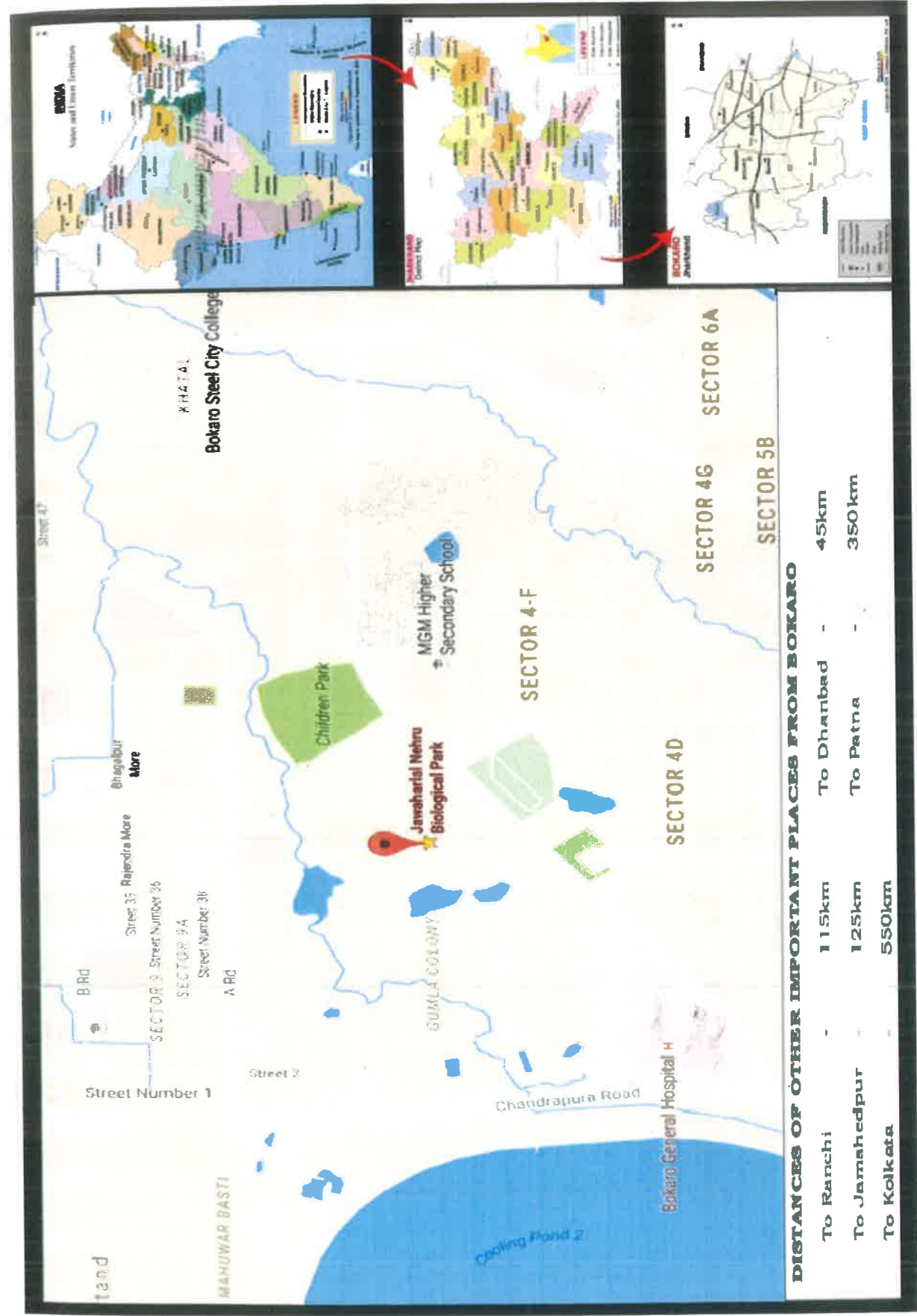
JNB Park is planning to publish booklets & Stickers and to open a small Zoo Information Centre.

This is only the beginning, with a lot yet need to be done in the coming years in the field of Zoo Education.

Part - IV

Plates

AERIAL VIEW OF JNB PARK



FREE RANGE BIRDS in JNB Park

		
Little Cormorant	Pont Heron	Garganey or Blue Wing Teal
		
White breasted or Water hen	Koel	Indian Crow Pheasant
		
Hoopoe	Rose ringed Parakeet	White Breasted Kingfisher



Black Headed Oriole



Black Drongo



Golden Backed Woodpecker



Indian Myna



Common Babbler



Tree Pie



White Cheeked Bulbul



Large Pied Wagtail



Fire Breasted Flowerpecker



Magpie Robin







House Crow



Barn Owl

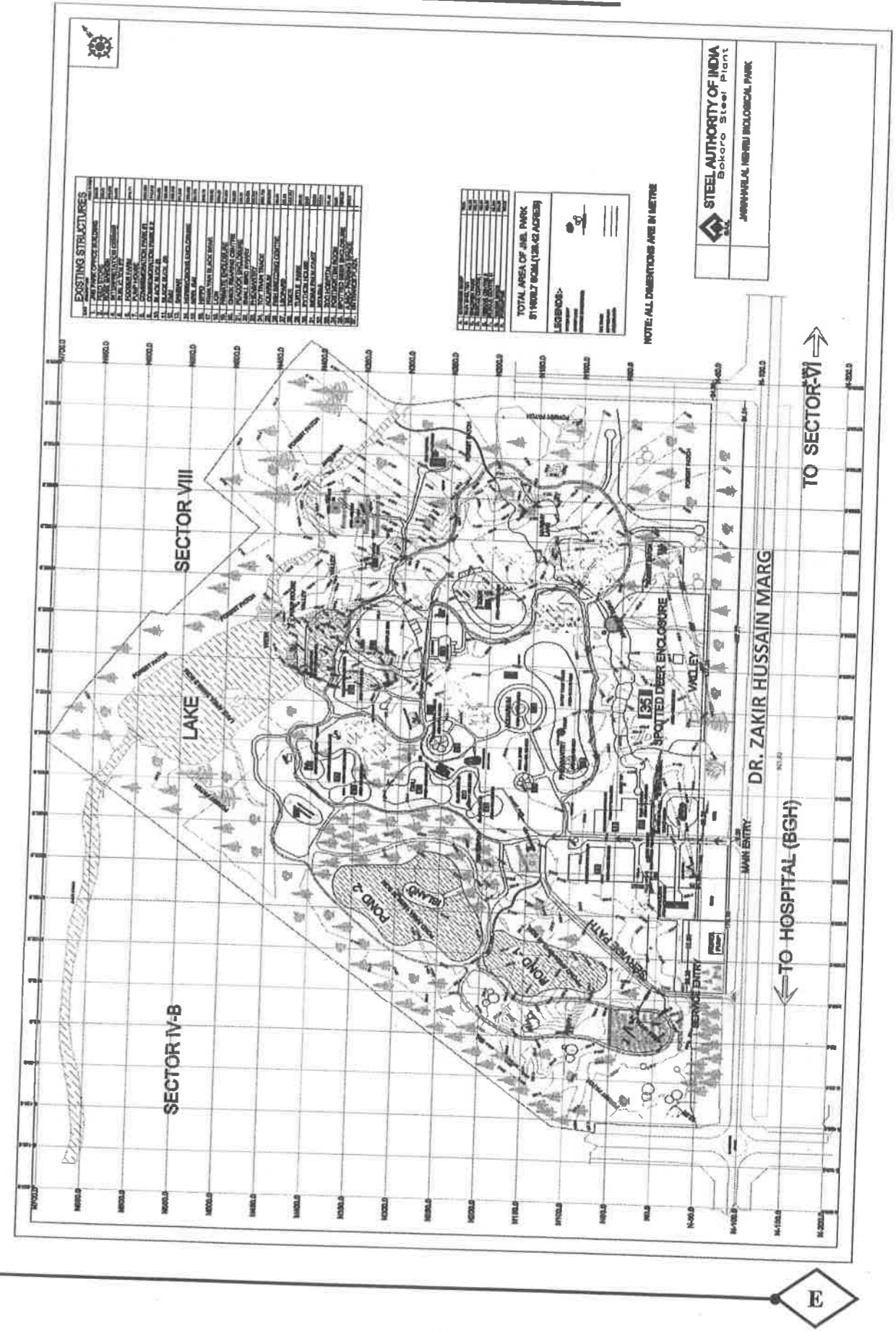
FREE RANGE REPTILES in JNB Park

		
Cobra	Dhamin	Krait
		
Russell's Viper		

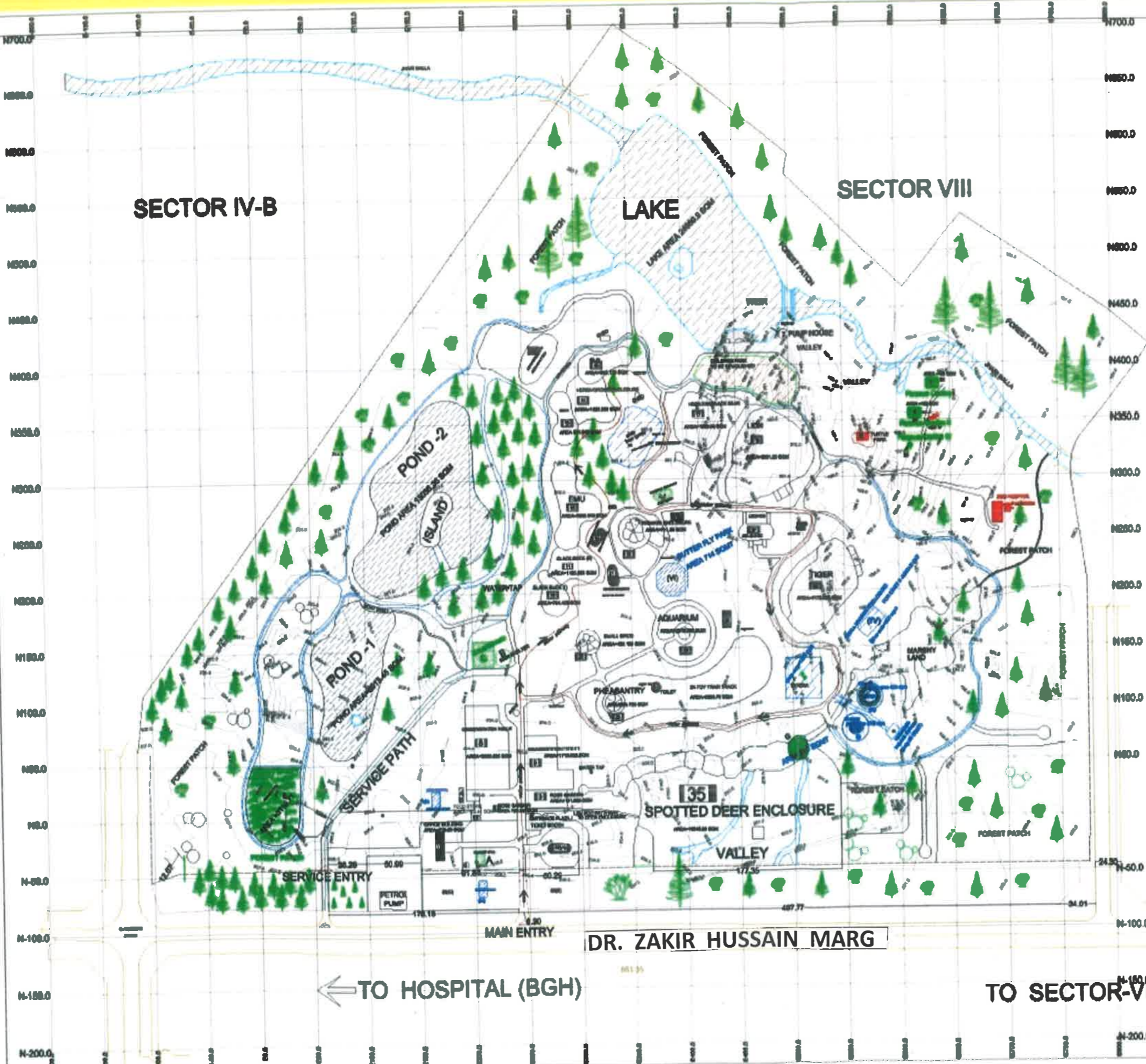
FREE RANGE MAMMELS in JNB Park

		
Jackal	Fox	Mongoose

EXISTING LAYOUT MAP



E



EXISTING STRUCTURES

Sl. No.	Description	Area (sqm)
1.	JNB PARK OFFICE BUILDING	240.00
2.	FEED STORE	180.00
3.	ROSE GARDEN	240.00
4.	INTERPRETATION CENTRE	240.00
5.	PUBLIC TOILET	240.00
6.	FOODER FARM	240.00
7.	PUMP HOUSE	240.00
8.	COMMEMORATION PARK #1	240.00
9.	COMMEMORATION PARK #2	240.00
10.	BLACK BUCK (A)	240.00
11.	BLACK BUCK (B)	240.00
12.	EMU	240.00
13.	BAMBAR	240.00
14.	HERRINGBONE ENCLOSURE	240.00
15.	WELL GAT	240.00
16.	HITTO	240.00
17.	HIMALYAN BLACK BEAR	240.00
18.	LION	240.00
19.	PRIMATE ENCLOSURE	240.00
20.	CHICK REARING CENTRE	240.00
21.	PEACOCK ENCLOSURE	240.00
22.	SMALL BIRD AVIARY	240.00
23.	PHEANTRY	240.00
24.	TOY TRAIN TRACK	240.00
25.	AQUARIUM	240.00
26.	FISH BREEDING CENTRE	240.00
27.	LEOPARD	240.00
28.	TIGER	240.00
29.	TURTLE PARK	240.00
30.	PYTHON HOUSE	240.00
31.	INDIAN PALM CIVET	240.00
32.	MOOSE	240.00
33.	ZOO HOSPITAL	240.00
34.	POSTMORTEM ROOM	240.00
35.	SPOTTED DEER ENCLOSURE	240.00
36.	A SEC. PARKING SPACE	240.00
37.	ENTRANCE PLAZA	240.00

PROPOSED STRUCTURES

Sl. No.	Description	Area (sqm)
I.	WATER TOWER	240.00
II.	CHILDREN'S PLAY	240.00
III.	NATURALIST PYTHON ENCLOSURE	240.00
IV.	SMALL MAMMAL ENCLOSURE	240.00
V.	WYVERN	240.00
VI.	BUTTER FLY PARK	240.00
VII.	BLOTTI BEAR	240.00
VIII.	RED NECKED DIVIT	240.00

STRUCTURES TO BE MODIFIED

Sl. No.	Description	Area (sqm)
A.	ACCOMMODATION SHOP	240.00
B.	TRAIN SHED YEN	240.00
C.	CHILDREN'S PLAY	240.00
D.	RESOLVE CENTRE I	240.00
E.	RESOLVE CENTRE II	240.00
F.	RESOLVE CENTRE III	240.00
G.	TRAIN SHED	240.00
H.	POST OFFICE	240.00

TOTAL AREA OF JNB. PARK
511606.7 SQM. (126.42 ACRES)

LEGENDS:-

EXISTING STRUCTURE	[Symbol]
PROPOSED STRUCTURE	[Symbol]
STRUCTURE TO BE MODIFIED	[Symbol]
WATER TOWER	[Symbol]
WATER TAP	[Symbol]
WATER MAIN	[Symbol]
WATER MAIN BRANCH	[Symbol]
WATER MAIN VALVE	[Symbol]
WATER MAIN STOP VALVE	[Symbol]
WATER MAIN CHECK VALVE	[Symbol]
WATER MAIN AIR VALVE	[Symbol]
WATER MAIN AIR VALVE	[Symbol]
WATER MAIN AIR VALVE	[Symbol]

NOTE: ALL DIMENTIONS ARE IN METRE

Approved
[Signature]
[Stamp]
[Text]

STEEL AUTHORITY OF INDIA
Bokaro Steel Plant

JAWAHARLAL NEHRU BIOLOGICAL PARK

PROJECT
PROPOSED MASTER LAY OUT MAP OF J.N.B. PARK BOKARO STEEL CITY (REVISED)

Prepared by: SILVIA KUMAR

Checked by: [Signature]

Ex. No. (S/N/A) Supd. (SQC & CR) SAIL BSL

ACM TA (S/N/A)

ORG. NO. JNB/AM/01/PL-1 **SCALE: 1:2000** **DATE: 15/06/2010**

DR. ZAKIR HUSSAIN MARG

← TO HOSPITAL (BGH)

TO SECTOR-VI →



We live in a wonderful world with forest, wild animals, birds and human beings, that is full of beauty, charm and adventure. There is no end to the adventures, that we can have if only we see them with our eyes open.

Jawaharlal Nehru ...