

## MASTER PLAN Sohna Sport & Eco Adventure Park





### **PREAMBLE**

Eco is a simple word but a complex idea. It can be presented vividly especially to children in an Eco Park.

Interacting with Plants, Animals & the Elements is Eco Adventure for all ages.

This Master Plan builds upon these thoughts.



### MASTER PLAN

First Year
Second Year
Third Year
Second Phase
Conclusions



### FIRST YEAR 2014 - 2015

- 1. Soil & Water Testing
  - 2. Vegetable Garden
    - 3. Plantation:

Flower, Fruit & Wild Native Trees





#### **VEGETABLE GARDEN**

- Not all Vegetables will do well because of the Water & Soil Quality. Soil Quality however, can be improved.
- 2. If worked upon can become a successful Vegetable Garden in 3 years.
- 3. Hire a Resource Person to achieve this objective.
- 4. Five Activities: Digging the Beds, Sowing, Watering, Weeding and Harvesting. Could be matched by Class & Age group of students



### **VEGETABLES**

S.No.	Vegetable	S.No.	Vegetable
1	Bhindi	14	Hari Mirch
2	Baigan	15	Chakundar
3	Palak	16	Gazar
4	Lehsun	17	Ganth Gobhi
5	Mooli	18	Karela
6	Phool Gobhi	19	Petha
7	Patta Gobhi	20	Gia
8	Onion	21	Tori
9	Broccli	22	Tinda
10	Methi	23	Dhania
11	Shalgum	24	Kharbooza
12	Aloo	25	Tarbooz
13	Tomato	26	Kakadi

We can try to grow them all but working experience will tell what will do well & what won't.



### Vegetable Garden RESOURCE PERSON





राम सेवक RAM SEWAK शस्य विज्ञान TECH. ASSTT. (AGRO.)

Subject Matter Specialist

- 1. Improve Soil
- 2. Increase Range of Vegetables grown.
- 3. Quality of Vegetables
- 4. Vermicomposting
- 5. Organic Pesticides& Fertilizers



#### VEGETABLE GARDEN: BUDGET

(for 70 Children to be working simultaneously)

No.	Description	Quantity	Rate	Amount
1	Phavda / Spade	35	₹ 150	₹ 5,250
2	Khurpi /	35	₹ 80	₹ 2,800
3	Paraat / Tasla	25	₹ 200	₹ 5,000
4	Seeds for One Year			₹5,000
5	Organic Fertilizer for One Year			₹5,000
	Consultant's Weekly Visit for 6 Months	24 Visits	₹ 1,000	
	TOTAL			₹ 47,050

### **PLANTATION**





#### So What's the Plan?

There are 2 Plots: 2 Acres + 4 Acres:

1 Acre Admin1 Acre Vegetable Garden1 Acre Cows, Biogas etc.

3 Acres Plantation



## 3 acres for PLANTATION

Flowering Trees

1 ACRE LOTUS & GRASSES

Flowering Trees

1 ACRE FRUIT TREES and CAMP Flowering Trees

1 ACRE BANYAN and the WILD NATIVE TREES

Flowering Trees

lowering,

Flowering Trees



Vegetable Garden & Vermicomposting

## First Year 2014–2015 PLANTATION

Use Existing Building in Plot 1

If necessary bring in a Porta Loo.

Bio-Fencing with Thor

Flowering Trees

Lotus Pond & Grasses

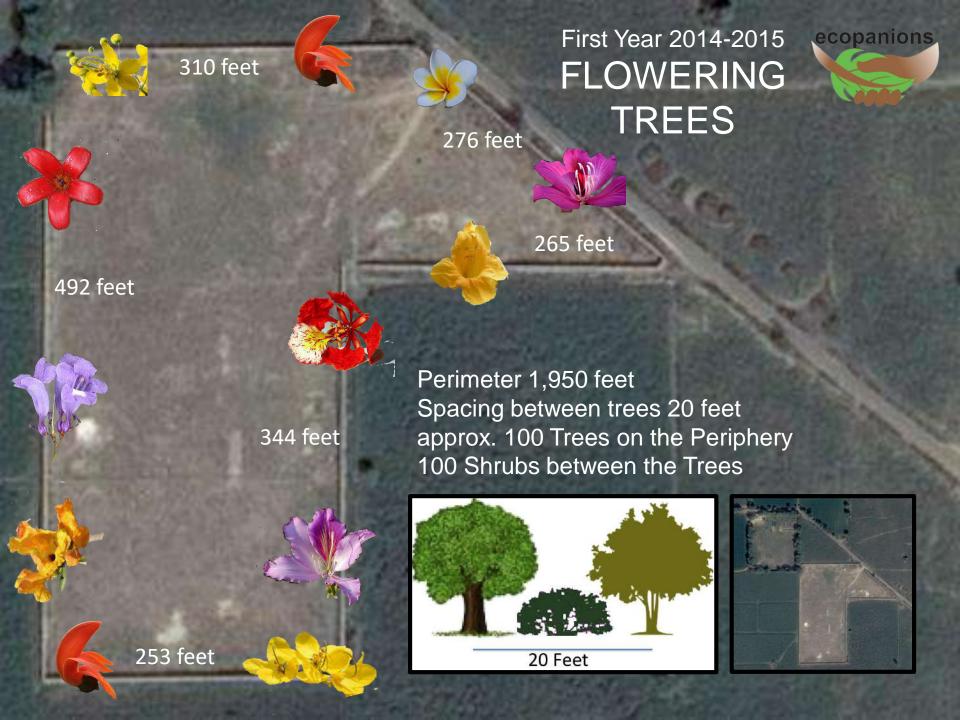
Mango Grove and Other Fruit Trees

Banyan & Other Wild Native Trees

Flowering Trees

Parking Free

Flowering Trees





#### **NATIVE FLOWERING TREES**

S.No.	Local Name	Botanical Name	Flowering
1	Indian Coral	Erythrina indica	January - March
2	Semal	Bombax ceiba	February - March
3	Roheda	Tecomella undulata	February - March
4	Mahua	Madhuca longifolia verlatifolia	February - April
5	Kachnar	Bauhinia variegata	March - April
6	Hadua	Erythrina suberosa	March - April
7	Tota	Erythrina variegata	April
8	Amaltas	Cassia fistula	April - May
9	Palash	Butea monosperma	April - May
10	Kuda	Holarrhena pubescens	April – May



#### FLOWERING TREES OF INDIA

S.No.	Common Name	Botanical Name	Flowering
1	Champa	Plumeria Kubra	Almost all Year
2	Asoka	Saraca indica	February to May
3	Pink Cassias	Cassia Grandis	February - March
4	Drumstick tree	Moringa Pyrtygosperma	February - April + Sept
5	Jacaranda	Jacaranda mimosaefolia	March - May
6	Tulip tree	Spathodea campanulata	March - April
7	Rain tree	Samanea saman	March - May
8	Gulmohur	Delonix regia	April
9	Queen's Flower	Lagerstromia Speciosa	April - July
10	Golden Champa	Michelia champaca	May - October



#### FLOWERING SHRUBS OF INDIA

S.No.	Local Name	Botanical Name	Flowering
1	Bougainvillea	Nactaginaceae	All Year
2	Oleander	Nerium odurum	All Year
3	Yellow Oleander	Thevetia peruviana	All Year
4	Gardenia	Rubiaceae	All Year
5	Peacock Flower	Caesalpinia pulcherrima	All Year
6	Camphire	Lawsonia inerme	All Year
7	Ixora	Rubiaceae	All Year
8	Hibiscus	Malvaceae	All Year
9	Paper Chase Tree	Mussanda clabrata	July - October
10	Golden Dewdrop	Duranta plumieri	January - February



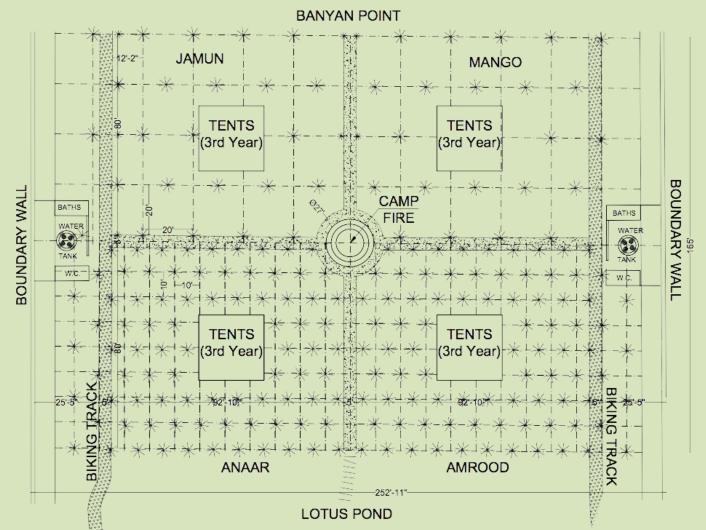
#### **MANGO & THE FRUIT ORCHARD**

S.No.	Local Name	Botanical Name
1	Aam / Mango	several varieties
2	Imli	Tamarindus indica
3	Jamun	Syzigium cumini
4	Amla	Phyllanthus emblica (Narendra 7)
5	Bel	Aegle marmelos
6	Sharifa	Annona squamosa
7	Shehtoot	Morus alba
8	Karonda	Carissa carandas
9	Mosambi / Keenu	
10	Neebu	
11	Amrud	Elahabadi Safeda variety
12	Anar	Ganesh variety
13	Papita / Kela	

#### **CHAR BAGH**: The Fruit Orchard



(The Camp)





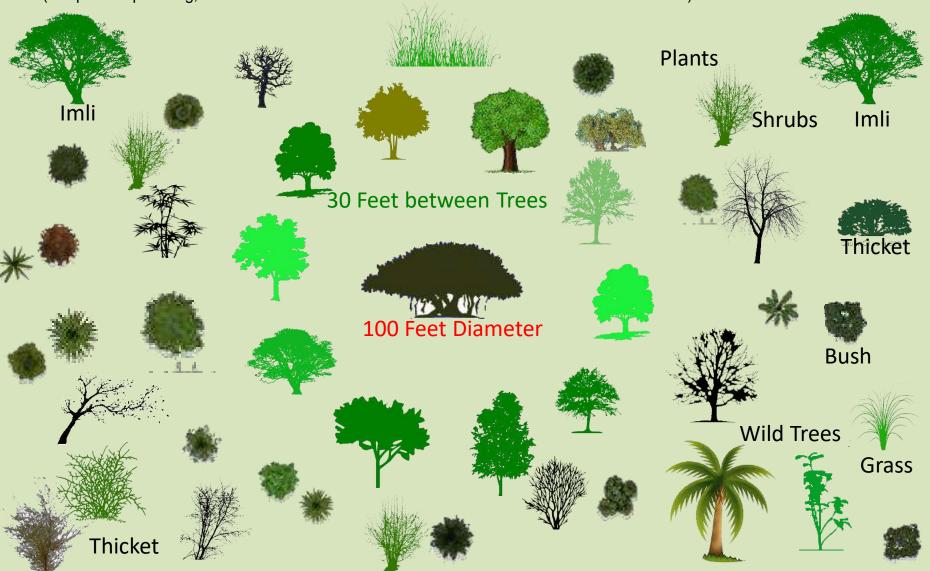
#### RANDOMNESS

### in PLANNED PLANTATION

Grid plotted Plantation Plan
is as good as it looks on paper.
Ground realities of what trees are available and
how well or how poorly they do
is something different.
Despite the Design
there is a certain randomness in Nature.
We should keep some guidelines in mind:
1. Maintain minimum distance between trees
2. Balance big trees with small.
Small trees with shrubs & plants

#### **BANYAN & OTHER WILD NATIVE TREES**

(Despite the planning, there has to be a certain amount of randomness in Wild Native Trees)







#### **BANYAN & THE FICUS FAMILY**

S.No.	Local Name	Botanical Name
1	Bargad	Ficus benghalensis
2	Goolar	Ficus racemosa
3	Peepal	Ficus religiosa
4	Pilkhan	Ficus virens
5	Anjeeri	Ficus palmata
6	Peepli	Ficus arnottiana
7	Katumbar	Ficus hispida
8	Usba	Ficus microcarpa
9	Son pakhad	Ficus mollis
10	Jadi	Ficus amplisima



## First Year 2014 – 2015 WILD NATIVE TREES Page1

S.No.	Local Name	Botanical Name
1	Kikar	Acacia nilotica subsp indica
2	Khejdi	Prosopis cinerarea
3	Khajoori	Phoenix sylvestris
4	Khair	Acacia catechu
5	Kummatth	Acacia senegal
6	Ronjh	Acacia leucophloea
7	Dhau	Anogeissua pendula
8	Kair	Capparis decidua
9	Ber	Ziziphus mauritiana
10	Bamboo	Buddha Belly / Golden
11	Shisham	Dalbergia sissoo
12	Lasuda	Cordia dichotoma
13	Chudel papdi	Holoptelea integrifolia



## First Year 2014 – 2015 WILD NATIVE TREES Page 2

S.No.	Local Name	Botanical Name
14	Kosam	Schleichera oleosa
15	Siras	Albizia lebbeck
16	Baheda	Terminalia bellirica
17	Marodphali	Helicteres isora
18	Karanj	Pongamia pinnata
19	Hingot	Balanites roxburghii
20	Peelu	Salvadora persica
21	Kankera	Gymnosporia senegalesis
22	Goondi	Cordia sinensis
23	Doodhi	Wrightia tinctoria
24	Sonjna	Moringa concanensis
25	Gambhar	Gmelina arborea
26	Kosam	Schleichera oleosa



#### WILD NATIVE TREES Page 3

We have an extensive checklist of wild floral species of the Sohna park region prepared by the Dept. of Forests.

We have based our selection on Pradip Krishen's "100 Most Suitable Trees for Delhi (NCR)"

The challenge is to plant as many as we could in the Sohna Park to represent the Biodiversity of the region.



## WHY DO WE NEED Wild Native Trees?

Wild Native Trees are interconnected with the other living species in the environment like insects, birds and animals. Promoting wild native trees will invite all kinds of birds and animals into the Park, making it ecologically richer.

Wild Native Trees also represents Biodiversity on which our well being depends, a lesson children learn in Schools and which can be demonstrated by the many benefits we derive from the wild native trees. These are our "Natural Resources".

The Wild Native Flora would truly give us an "Eco" Park status



### First Year 2014 – 2015 SOURCING THE TREES

- 1. Private Nurseries
- 2. Forest Dept. Nurseries
- 3. The Aravelli Biodiversity Park
- 4. Locally sourced Grasses, Plants, Bushes etc.

### PRIVATE NURSERIES



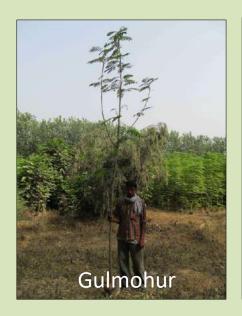
#### Flourishing Business Many Nurseries in and around Delhi NCR

#### SAINI NURSERY Big Trees Best Rates

Contact Person: Maan Singh Saini saininursury2011@gmail.com +91.97198.23329

















## Plantation **BUDGET ESTIMATION**

We are looking for 100 flowering trees & 100 Shrubs to line the Perimeter.

We are looking at another 100 Fruit and 100 Wild Native Trees.

We are looking at 300 - 400 Trees.

At Rs. 500/- Tree including transportation, we have a Plantation Budget:

S.No.	Description	Am	ount
1	Trees including Transportation	Rs.	2,00,000
2	Organic feriliser etc	Rs. 30,000	
3	Resource Person @ Rs. 10,000/month from March - August	Rs.	60,000
	TOTAL	Rs.	2,90,000



## Plantation RESOURCE PERSON

Transplanting trees is a specialized job. We need a Resource Person to take responsibility of planting the trees and looking after them till they take firm root. The Plantation that provides the Trees usually provides a Resource Person also since it is part of their job.



# SECOND YEAR **2015-2016**

- 1. Lotus Pond & Grasses
- 2. Bird Watching & Day Excursions from Park
  - 3. Cows
  - 4. Farm Animals: Dogs & Ducks
  - 5. Infrastructural Requirements







#### Second Year 2015-2016

### KAMAL SAROVER The Lotus Pond

Jitender Singh

Suman Ganga Nursery 47 Mile Stone, Delhi to Hapur Road munish\_21@yahoo.co.in/Sunishsingh@yahoo.com +91-98370.08414

> Kuljeet Arora **Ecogram Development Society** ecograms@gmail.com +91-98183.16122

Undertake turnkey project of making the Lotus Pond. 5 to 7 Lacs for 9,500 sq foot of Kamal Sarover





#### Second Year 2015-2016

### GRASSLAND

Grasslands will attract a horde of seed eating birds like sparrows, finches, parrots, quails and partridges, especially the Black Francolin the State Bird of Haryana





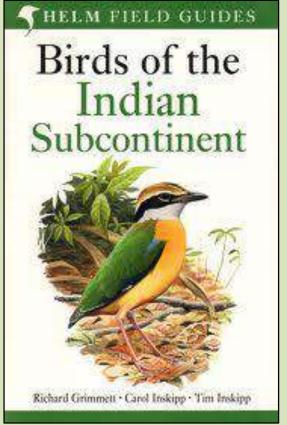


#### **BIRD WATCHING**



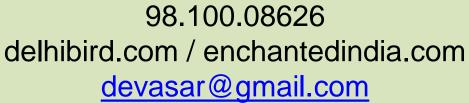






Children could come to Sohna Park in a day long trip which could include several hours of bird watching in the company of a Birder. Nikhil Devasar, of the Delhi Bird Group, who takes school children on birding experiences, has agreed to help with fundamentals of Birding to visiting children at Sohna Park while introducing Bird Photography, How-to-Use Field Guide Books, suggest Binoculars etc. They will also help Identify and list all endemic bird species of the Sohna Park region.

#### **NIKHIL DEVASAR**











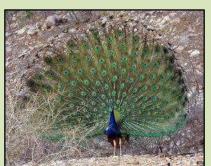
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#### Second Year 2015 - 2016

#### DAY EXCURSIONS FROM PARK









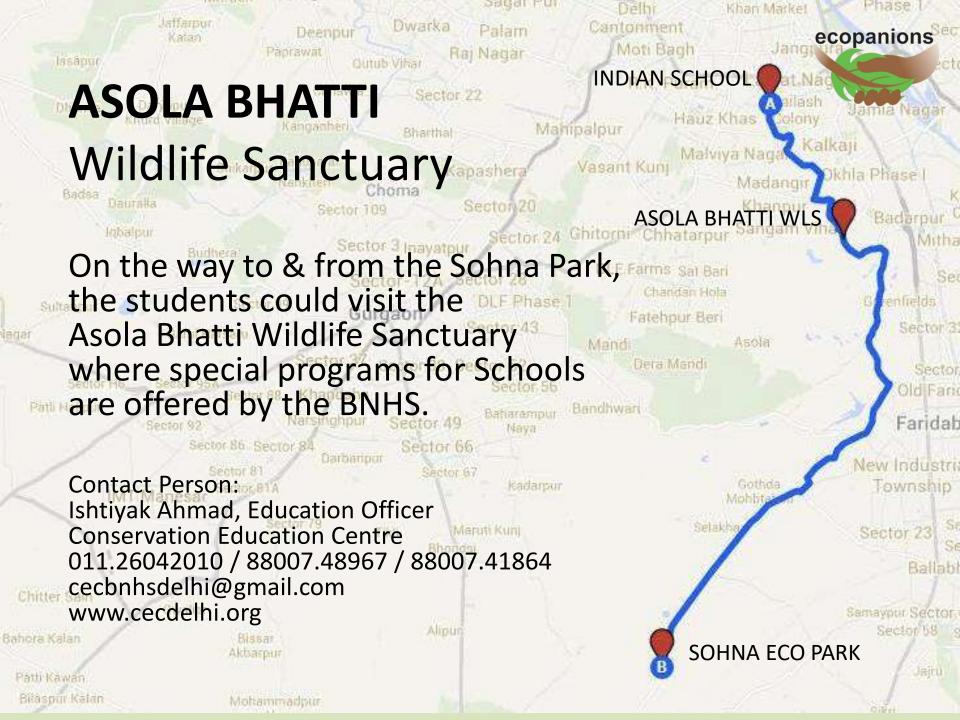


Senior students could walk from the Park to Damdama lake 5 kms away over the Aravelli outcrops (a prearranged bus could bring them back). The Naturalist could tell a story about the the Aravellis while identifying the Trees & the Plants, spotting the Birds, examining pug marks & scats of wild animals along the way.











In the vicinity of the Park are several un-named water bodies created by illegal mining in the area despite a Supreme Court ban since 2002. An interesting environment story with an equally interesting Nature-Tree-Bird Walk through Rural Indian Landscape.











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#### TRAIL GUIDES

We could source Naturalists for Nature-Tree-Bird Walks with a little help from:

Vijay Dhasmana Aravelli Biodiversity Park

Sajeev TK / Kuljeet Arora, Ecogram Society

Nikhil Devasar Delhi Bird Group

World Wildlife Fund

Centre for Science & Environment



#### **GRAM DARSHAN**

Half Day Activity

Gram Panchayat
Government Secondary School
Primary Health Centre
Aaganwadi
Agricultural Fields
Rural Home Visit
Temple

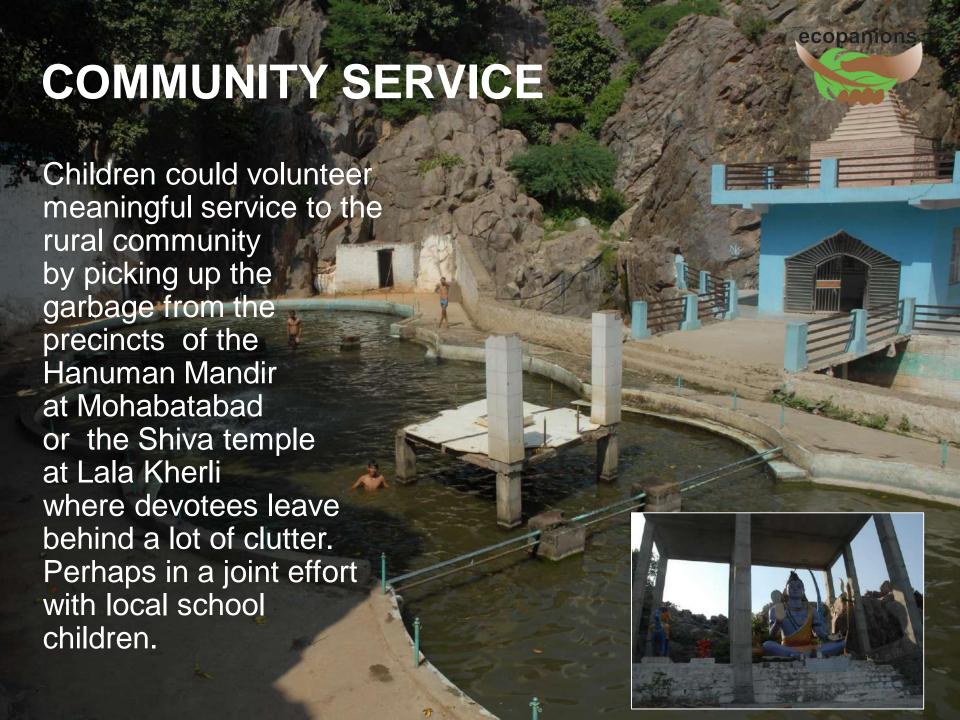




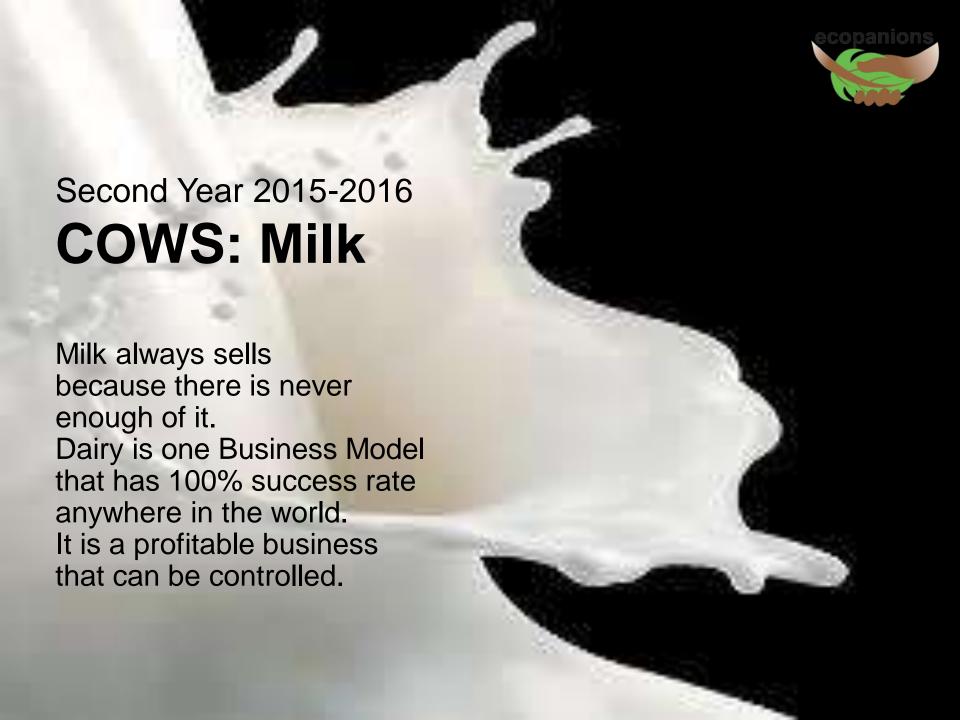


















#### Second Year 2015-2016

#### MANAGING the COWS

Hire a Gwala / Cow Keeper Family. Negotiate a deal Subedar Hari Ram and local employees could help.

Cow Keeper's responsibilities:

- 1. Maintain the Cows.
- 2. Maintain Gobar Gas Unit
- 3. Maintain Vermicomposting Pits

Either the Cowkeeper pays for the Fodder & Keeps the Milk Or, the Park pays for the Fodder & sells the Milk.

Build Cow Shed, Fodder Storage, Gobar Gas Unit, Living Quarter for the Cowkeeper (with piped gas in the kitchen).

Nearby Vets on call: Dr Dharmu @ Gaygaul 96715.62071 Dr. Dharamveer @ Dhauj 98731.84141



#### Second Year 2015-2016

#### RAM SEWAK +9198730.93881

Subject Matter Specialist (Agronomy) Krishi Vigyan Kendra, Shikohpur

We could review whether we still need him for the vegetable garden in the Second Year. We could keep him again to guide us thru the first year of cow keeping and a functioning gobar gas unit.



### **COWS:** Estimated Budget

There are Desi and Hybrid breeds of Cows.

"Haryanvi" breed of Desi Cow most preferred.

Gives 15 - 20 kg milk / day. Costs vary from 35 to 70 thousand rupees/cow depending upon milk yields.

Minimum animals needed to get the Gobar Gas unit going is 4 to 5 animals.

S.No.	Description	Amount
1	4 to 5 Animals @ 70,000/ animal	3,50,000
2	Construction of Cow Shed & Fodder Storage	
3	Construction of Living Quarter for Cow Keeper Family	
4	Gobar Gas Unit	
5	Vermicomposting Pits	
6	Vets & Cow Consultant	
	TOTAL	



Farm Dogs & Ducks can also be explored for Second Year. Ducks keep snakes & scorpions away. A Bird Feeding patch could condition the Peacock to be a permanent resident at the Park. Subedar Hari Ram could help in sourcing the Dogs & the Ducks locally.



Cow Shed, Fodder Storage, Gobar Gas Unit Gwala's Quarters Bio-Fencing

Gardening Shed: Seeds, Tools etc.



Office: Porta Cabin Toilets: Porta Loo

Second Year 2015 - 2016
INFRASTRUCTURAL
REQUIREMENTS



# **THIRD YEAR 2016 - 2017**

- 1. Camp Site
- 2. Pathways
- 3. Sport Facilities
- 4. Construction: Admin & other Buildings





# Third Year 2016 – 2017 The Camp Site In Char Bagh 4 PLATFORMS FOR TENTS





#### Third Year 2016 – 2017

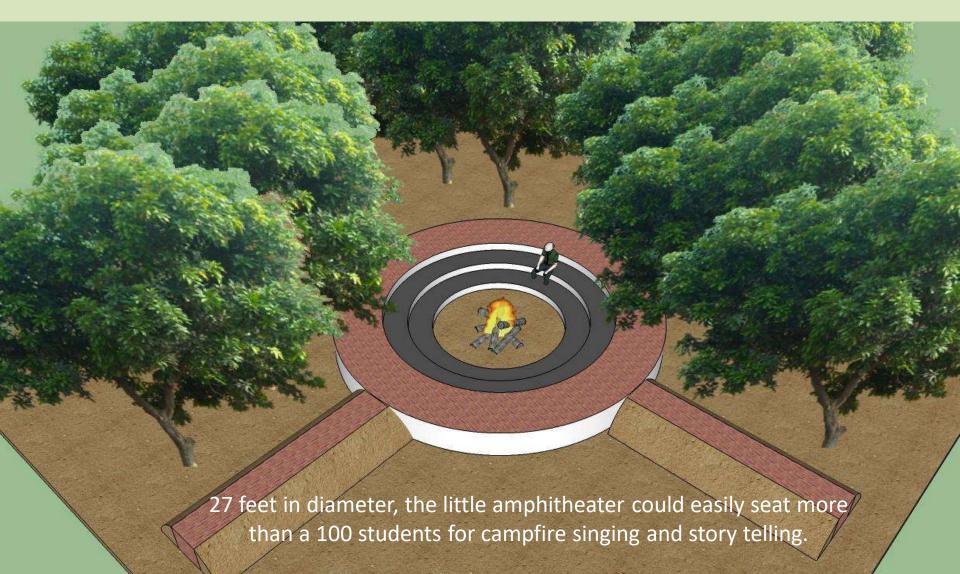
## The Camp Site: EACH PLATFORM WITH FIVE TENTS



## Third Year 2016 – 2017



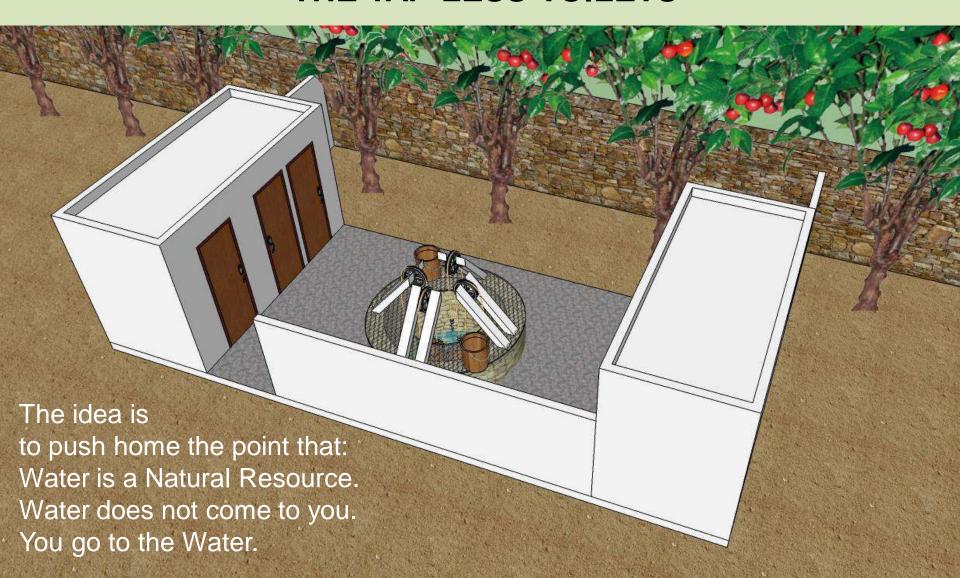
#### THE CAMP FIRE



Third Year 2016 - 2017

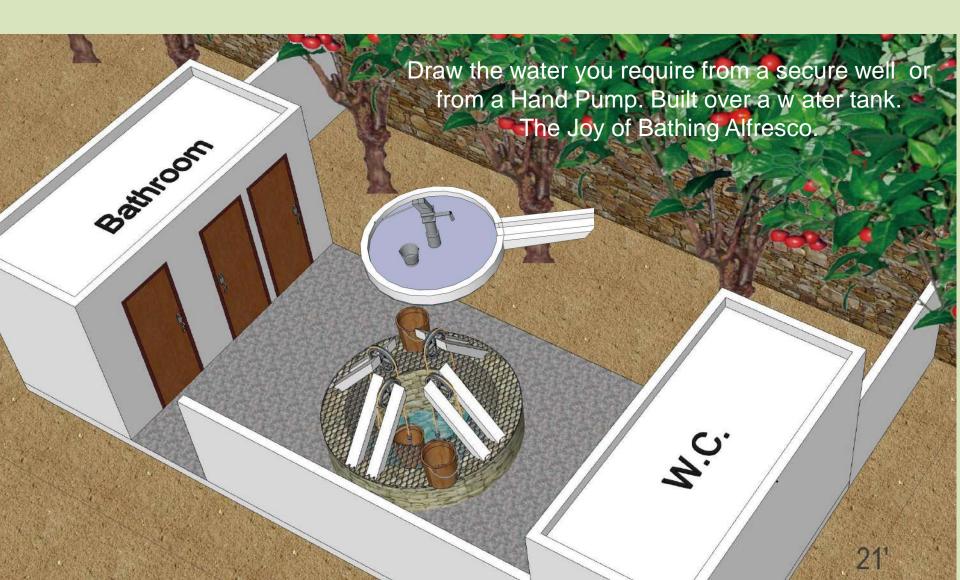
## Camp Site THE TAP-LESS TOILETS





## Third Year 2016 – 2017 CAMP SITE: **The Water Source**





#### Third Year 2016 – 2017

## Camp Site TENTS, SLEEPING BAGS



Source Tents & Sleeping Bag: Benihal Capacity of Tents: 4 children / Tent Tent Size: 9 feet x 7 feet 20 Tents for maximum 80 Children Park to provide Sleeping Bags or children to bring their own?



25 Tents @ Rs. 5,000/Tent	Rs. 150,000
100 Sleeping Bags @ Rs. 1,500/ Sleeping bag	Rs. 125,000
Total	Rs. 275,000

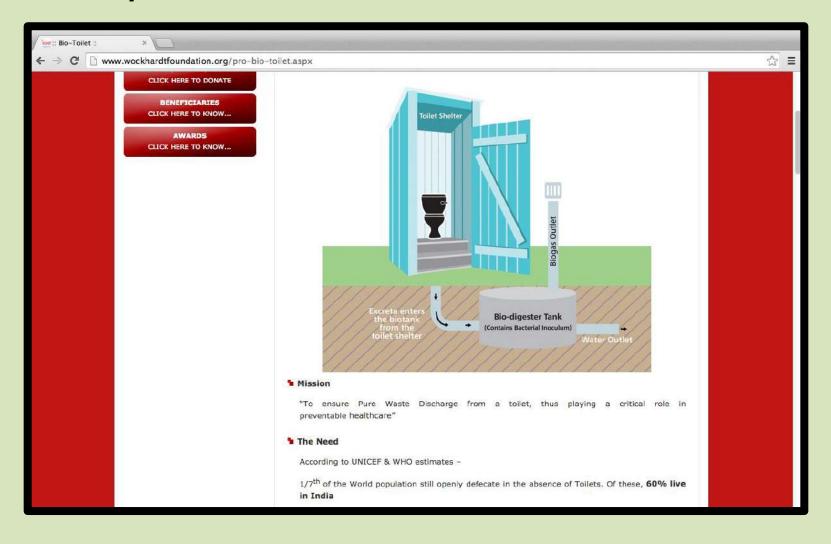


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#### Third Year 2016 – 2017

### Camp Site: BIO-TOILETS









#### **CAMP LIGHTS**

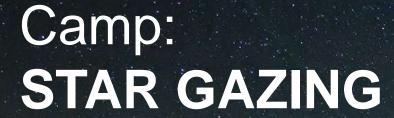
(no switch ON/OFF electric light)



LED Hand Pressing Flashlight (issued to each student)



Solar Street Light in Tented Area





Member Amateur Astronomer Association www.aaadelhi.org

# Camp: STAR GAZING

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Ajay Talwar Astro Photographer Telescope Builder Visiting Faculty at Sagar School Will expose children to Apps that explain the Night Sky like: Google Sky Map Night Sky Sky Guide Star Walk ayaytalwar80@yahoo.com www.twanight.org/talwar www.aperturetelescopes.com

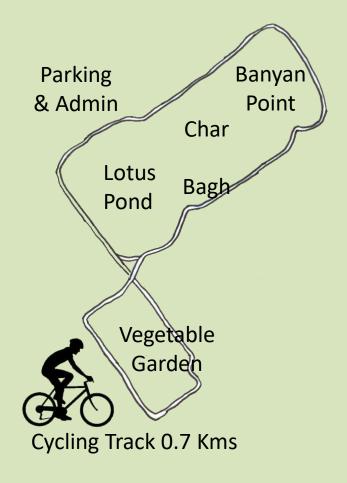
Ajay Talwar's Pics have appeared in the National Geographic

THIRD YEAR 2016 – 2017

### **PATHWAYS**

After 2 Years a natural working pattern for the Pathways would emerge that could be mud packed in the third year to facilitate smooth cycling. Width of the Pathways: 6 Feet









Third Year 2016 – 2017



**SPORTS**: Biking track within the Park



Keep 5 to 6 sports bikes for kids to cycle on the mud tracks and compete for fastest timing. Even if the children take a spill it would be in mud. (There is no stone in the Park. Except in walls) Days when children from the School are not coming, the bikes should be made available for local children to come and ride so that Pathways become bike friendly.



THIRD YEAR 2016 – 2017

## UNDERTAKE CONSTRUCTION: Admin & Other Buildings

Reception, Office, Accounts,
Sick Bay, Visitor's Room, Souvenir Shop,
Storage for Tents etc.
Guard Hut, Utility & Restrooms
Kitchen & Multi-Purpose Hall



# NATURAL MATERIALS: The "Shilpgram" Model

No Cement. No Concrete. No Iron. No Plywood. No Paint.
Only Stone, Brick, Lime & Bajri Wood, Bamboo and Mangalore Tiles or 'Kelu'

3:2 Cost Ratio between Convention RCC and Natural Materials

Approx 10,000 sq feet Conventional RCC @ Rs. 1,000/sq feet = 1 Crore Shilpgram Model would cost 67 lacs



#### **ADMIN:**

## FIRST AID / DOCTOR-ON-CALL CAMP SECURITY

First Aid Kit (with Refrigerated Anti-Snake Venom Serum)

First Aid Certification Courses that includes snake bites:

#### **Delhi Home Guards:**

<a href="http://www.delhi.gov.in/wps/wcm/connect/doit\_homeguard/Ho

#### NGO "Thinkvidya":

http://www.thinkvidya.com/delhi/first-aid-training-centre-delhi/596661

Emergency: Suraj Hospital at Dhauj / Doctor-on-Call

#### PHASE TWO

Future Expansion of The Sohna Eco Park

The Indian

School

The Indian School

Sacred Grove & Herbal Garden

The Indian School



Any addition to the Park's area could be used:

- 1. Regenerate natural habitat of the region with more Wild Native trees & plants.
- 2. Cage Birds & Rabbits Enclosures for primary school children.
- 3. Sacred Grove & Herbal Garden
- 4. Crafts



# **ECO PARKS**A Definition

Eco is short for Ecology. Ecology is a science that studies the relationship between living species & non-living environment earth, water and air. So an "eco park" is an area where special care is given to all the species that is native to that area. Eco Parks not only serve as "Recreation" for human beings but also enable them to conduct scientific studies. An eco park therefore, can generate great interest in the minds of children about endemic flora & fauna. This is the cornerstone of conservation of nature & nature resources.

And this is the driving force behind this Master Plan

#### "ECO PARKS" AROUND SOHNA

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www.botanix.in
www.campwilddhauj.com
www.ecoadventurecamp.co.in
www.damdamalake.com















## Sohna Eco Park: A Product

Eco Park is an idea
whose time has come.
It is also the need of the hour.
If we come up
with a sound concept endorsed
by "eco" institutions
such as WWF & CSE & ABP
etc. then there is
a large market
in other schools etc.
for a fee.
All we need is a
BUSINESS PLAN.



# Manpower & Management

Many eco-related institutions in the country.

There are passionate eco professionals who would like to work at the Sohna Park, if the conditions are suitable.

We can reach the right people through networking with other eco institutions who are ready to help.



## **FUTURE**

#### A New Beginning

This Presentation offers a dream but it also shows how it can be translated into reality. The Sohna Sports & Eco Adventure Project needs a Person with a vision. Someone who recognizes the importance of ecological understanding in children because they are our future.

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an Initiative to Communicate the Importance of Ecology the Story of Resources and the Lessons of Sustainability



### The Original Brief

To draw up a Concept Paper on the **Possibilities of Utilization** of the Schools' Sohna Eco Park for eco related activities so as to bring into focus the belief of sustainability down to the smallest child. The School wants its students to be exposed to Nature and plant the seeds of sustainability in their minds by giving them an opportunity to experience the actual process of growing flowers & vegetables thereby teaching them to "nurture Nature". The School would also like to provide a secure outdoor natural camping station to experience Nature.