



83 Registered Post



GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FORESTS & CLIMATE CHANGE

Central Zoo Authority



F. No. 19-113/92-CZA(140)(Vol. I)(NS) / 7546

DATE: 06.08.2015

To

The Additional Principal Chief Conservator of Forests (D&P) &
Special Officer,
Thrissur Zoological Park,
Pathur (Kerala)

Sub:- Revised Master (layout) Plan of the Thrissur Zoological Park, Kerala and proposed designs for the construction at the Thrissur Zoological Park, Kerala-Reg.

Ref:- Your office letter no. WL3-7551/95, Dt.23.05.2015.

Sir,

This has with reference to the power point presentation delivered by Mr. John Coe, consultant architect on the Revised Master (layout) Plan of Thrissur Zoological Park, Kerala and designs for the proposed construction at the Thrissur Zoological Park, Kerala before the members of the Expert Group on Zoo Designing of the Central Zoo Authority in its 62nd meeting held on 13.07.2015. After detailed deliberation the following observations were made:-

A. Revised Master Layout Plan:

Members on scrutiny of revised layout plan of Thrissur Zoological Park-Wildlife Conservation & Research Centre, Puthur, Kerala, recommended the same for approval.

B. Designs of enclosures:

Members on scrutiny of designs on proposed construction of following enclosures at Thrissur Zoological Park-Wildlife Conservation & Research Centre, Puthur, Kerala, approved the designs given below subject to incorporation of following suggestions:

1. Design of proposed construction of Biodiversity Centre:

- Advised to explore providing more space.
- Suggested to create a tunnel for Porcupine.
- Term 'office' may be replaced with 'Research Centre'.

Contd..

B-1 Wing, 6th Floor, Paryavaran Bhawan, CGO Complex, Lodhi Road, New Delhi-110003.

2. Design of proposed construction of enclosure for Mugger Crocodile and Gharial exhibit:

- a) Exhibit provided may be used to house not more than one male and two females.

3. Design of proposed construction of Great Aviary:

4. Design of proposed construction of enclosure for Nilgiri langur:

5. Design of proposed construction of enclosure for Lion tailed macaque:

6. Design of proposed construction of enclosure for Leopard:

- a) Care should be taken to avoid animal getting out of enclosure by care in joining moat and barrier.
b) Kraal corner should be rounded off.
c) Covered exercise yards may be provided elsewhere.
d) From feeding cells, access should be direct to paddock.
e) Suggested to provide one covered and one open kraal.

7. Design of proposed construction of enclosure for Tiger:

- a) Covered excessive yard may be removed.
b) Sharp edges to be removed.

8. Design of proposed construction of enclosure for Asiatic lion:

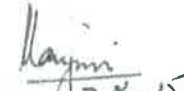
- a) Covered exercise yard may be removed.
b) Sharp edges to be removed.

9. Design of proposed construction of enclosure for Gaur:

(Revised Lay out plan)

The dully signed copies of Great Aviary, Nilgiri langur, Lion tailed macaque and others are enclosed with this letter with a request to submit the amended copies of Biodiversity Centre, enclosure for Mugger Crocodile , Gharial, Leopard, Tiger and Asiatic Lion for its final approval.

Yours faithfully


(Vinod Ranjan)
7.8.13
Member Secretary

Write
Encl: as above

Copy to The Chief Wildlife Warden, Govt. of Kerala for favour of information.

B-1 Wing, 6th Floor, Paryavaran Bhawan, CGO Complex, Lodhi Road, New Delhi-110003.



THRISSUR ZOOLOGICAL PARK

Wildlife Conservation & Research Centre, Puthur

DPR - STAGE 3

EXHIBIT DESIGNS

DRAWINGS FOR STATUTORY APPROVAL

27th March, 2015

CROCODILE & GHARIAL EXHIBITS



02_MUGGER CROCODILE and GHARIAL EXHIBIT**MUGGER CROCODILE (*Crocodylus palustris*)**

PROPOSED COLLECTION PLAN	MALE	FEMALE	TOTAL
	2	2	4
AREA STATEMENT			
EXHIBIT AREA STANDARDS (as per CZA rules)	400 sqm	150 sqm WATER BODY, DEPTH 2M	REQUIRED TOTAL 400 sqm
PROPOSED AREAS			
EXHIBIT AREA	418 sqm (inc. of water body)		
WATER BODY AREA	274 sqm		
BARRIER DETAILS PROPOSED			
FRONT, SIDE AND REAR BARRIER	CONCRETE WALL OF 1 M HEIGHT WITH ROTTERDAM FENCE RUNNING ALONG IT. MIN 1.5 M PLANTING BUFFER BETWEEN EXHIBIT AND VISITOR PATH		ALL BARRIERS PROPOSED ARE AS PER CZA STANDARDS
STAND OFF BARRIER	STAND OFF BARRIER 1M HEIGHT WITH SECURITY FENCE, 1M MIN HEIGHT		
ENRICHMENT DETAILS			
EXHIBIT AREA	SAND BANKS AND HAUL OUT AREAS FACING EAST FOR SUN BASKING		

GHARIAL EXHIBIT (*Gavialis gangeticus*)

PROPOSED COLLECTION PLAN	MALE	FEMALE	TOTAL
	1	3	4
AREA STATEMENT			
EXHIBIT AREA STANDARDS (as per CZA rules)	400 sqm	150 sqm WATER BODY, DEPTH 2M	REQUIRED TOTAL 400 sqm
PROPOSED AREAS			
EXHIBIT AREA	505 sqm (incl. of water body)		
WATER BODY AREA	273 sqm		
NURSERY AREA	128.6 sqm		
BARRIER DETAILS PROPOSED			
FRONT, SIDE AND REAR BARRIER	CONCRETE WALL OF 1 M HEIGHT WITH ROTTERDAM FENCE RUNNING ALONG IT. MIN 1.5 M PLANTING BUFFER BETWEEN EXHIBIT AND VISITOR PATH		ALL BARRIERS PROPOSED ARE AS PER CZA STANDARDS
STAND OFF BARRIER	STAND OFF BARRIER 1M HEIGHT WITH SECURITY FENCE, 1M MIN HEIGHT		
ENRICHMENT DETAILS			
EXHIBIT AREA	SAND BANKS AND HAUL OUT AREAS FACING EAST FOR SUN BASKING		

INTRODUCTION:

The Crocodile / Gharial Exhibit is located in the northern most part of the site and it is the first open exhibit that the visitor experiences. The visitor path from the Orientation Centre leads to an avenue of Spathodea trees. The exhibit is located on the in a low lying valley formation. The visitor path leads into a large Viewing shelter (glass viewing) that looks into both the Gharial and Mugger Crocodile exhibit. Several animal viewing pockets are created along the visitor path which is generally separated from the water body by thick tall planting: typically Pandanus. There is an additional smaller viewing shelter (glass viewing) along the curved pathway offering views into the Mugger Crocodile exhibit.

BARRIER DETAILS:

- **FRONT BARRIER:** The water/ land level in both the exhibits are placed 1m below visitor path and viewing shelters. The exhibit boundary is a concrete wall with clay bank facade treatment. Additionally, a Rotterdam fence (OVER HANG FENCE WITH HOT WIRE BELOW THE SLANTING PORTION) is anchored into the concrete wall running along the exhibit.
- **REAR BARRIER:** A keeper access is provided at the rear of both exhibits. A minimum of 1.5 m planting is provided between the keeper walkway and the exhibit boundary. A 2m high security fence is provided in between the planting.
- The **STAND OFF BARRIER** along the visitor path is 100cm height along the edge of the Animal Viewing pockets controls public access to the planting patch. A minimum width 1.5m of hedge planting separates the exhibit from the Standoff barrier. The STAND OFF BARRIER at the viewing pocket on the tram road is 100cm height. It controls public access to the planting hedge. A minimum width 1.5m of hedge planting separates the exhibit from the Standoff barrier. A security fence, 1m height is also added in the planting.

MUGGER CROCODILE/ GHARIAL EXHIBIT AREA:

- The Exhibit consists of Sand banks, Concrete Haul out areas and a large Water body. Approximate size of exhibit: Mugger Crocodile 40m x 13m, Gharial 40m x 17m, Maximum depth of water body is 2m.
- The concrete walls (shotcrete) of the exhibit are treated as eroded clay banks. The concrete pools are smooth to avoid abrasion of animal's skin.
- The Sand banks and Concrete Haul out areas are positioned in a way to receive maximum sunlight for crocodile basking. Each crocodile is given a cove (niche within sandbanks). The haul out area is made of concrete sloped at 1:5 average.
- The sand haul out areas is concrete troughs, 50 cm deep and has drains to infiltration pits below.
- A Service path that connects the nursery area to the large viewing shelter provides keeper access along the edges of both the exhibits.

- Each pond has separate water circulation system so that they can be managed independently without closing both exhibits. A combination of high pressure sand filters and UV sterilisation is suggested. Possibility of using reed beds for filtration shall also be explored.
- Pumps and Filtration units shall be ideally located in concrete vaults to control noise. Submersible pumps shall also be considered.

GHARIAL NURSERY AREA:

- The Gharial is a critically endangered species and is endemic to India. Several conservation programmes are being organised to save this species.
- Two breeding/ holding pens for the baby Gharials are provided here. Eggs may be collected and hatched in the Bio Diversity Centre and the young can be placed in the nursery provided here. As the young grow they can be moved to the second pen and a younger group can be placed in the first pen. When the young grow large enough, they can be introduced into the gharial exhibit.
- The holding pools are smooth concrete with 1:5 pitch and about equal areas of water and dry haul out area. The pens have steel rectangular frame structure with chain link mesh sides. The lower 1m of the nursery would have solid panels for animal protection. About 50 % area has roof for sun and rain protection. The remaining roof is mesh covered.
- Each pen has separate water circulation system and uses shared filtration machinery.

EXHIBIT ENRICHMENT ASPECTS:

- By providing a variety of substrates, levels and complexities in the exhibit, the animals get to move around, exercise and enjoy in the zoo. East facing Haul out areas with concrete and sand finish provides satisfactory basking in the morning sun.

SERVICE ASPECTS:

- Both the Exhibit area and the Gharial Nursery area are provided with adequate Service access from the Service/ Tram road. They have Service Gates with a 3m wide service road connection that allows entry of Service vehicles.
- The entry/ exit gates for animals to / from the exhibit have provision for Keeper control and operation from Service areas.



THRISSUR ZOOLOGICAL PARK
Wildlife Conservation & Research Centre, Puthur

DPR - STAGE 3:

DRAWINGS FOR STATUTORY APPROVAL

EXHIBIT NAME:

MUGGER CROCODILE AND GHARIAL EXHIBIT

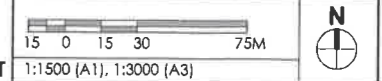
DRAWING TITLE:

LOCATION PLAN

DRAWING NO: DATE: REVISION:

DPR/S3/CRO/01 27.03.2015

SCALE:



LEGEND:

- VISITOR PATH
- TRAM / SERVICE ROAD
- ORIENTATION CENTRE
- EXHIBITS
- 1. BIODIVERSITY CENTRE
- 2. MUGGER CROCODILE AND GHARIAL
- 3. GREAT AVIARY
- 4. DEER 1
- 5. DEER 2
- 6. DEER 3
- 7. NILGIRI LANGUR
- 8. LION TAILED MACAQUE
- 9. LEOPARD
- 10. TIGER
- 11. ASIATIC LION
- 12. INDIAN GAUR

CONSULTANTS:

Jon Coe Design - Idea Design Consortium

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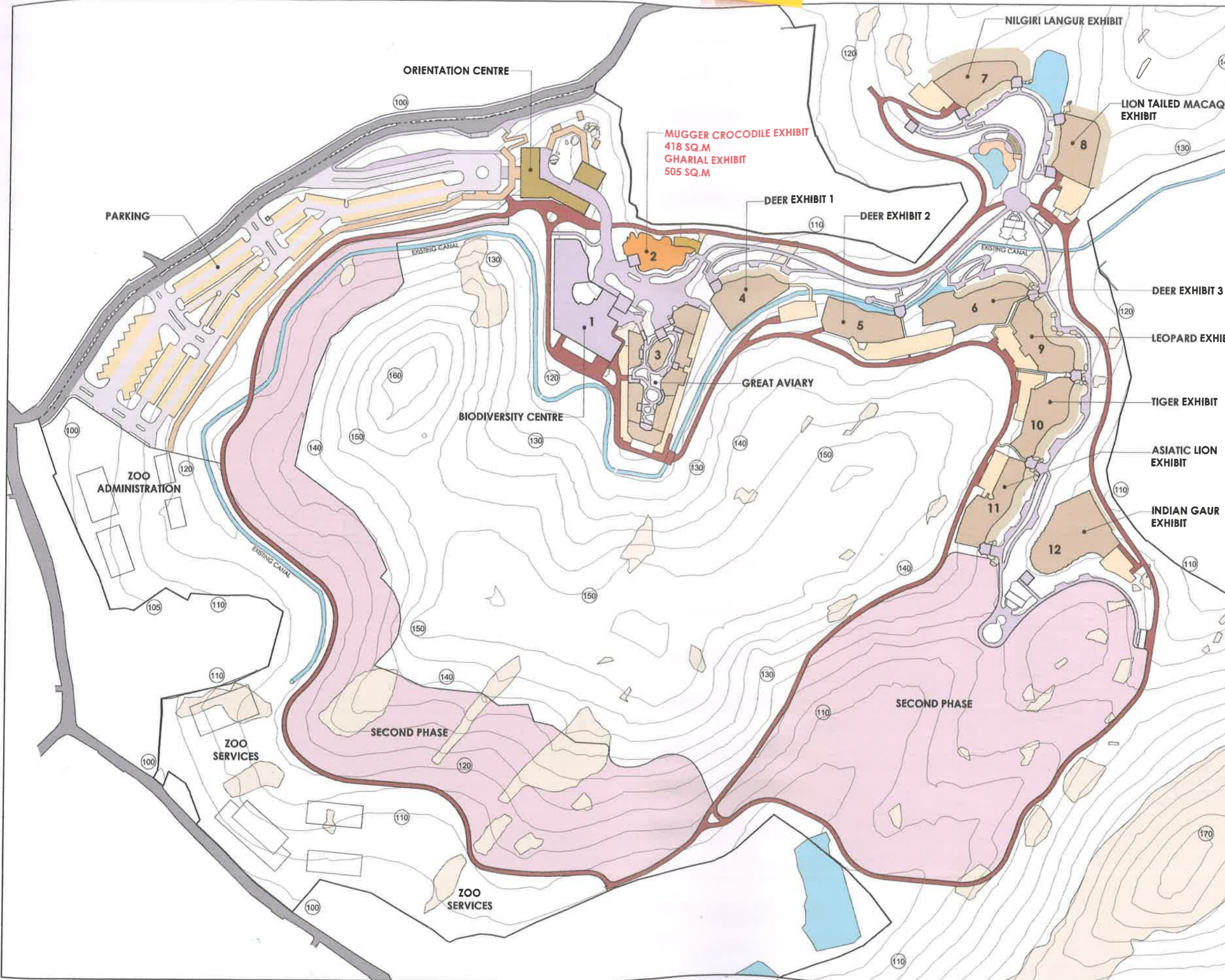
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Michael Little, M.L.A
Idea Design, Bangalore

Felix Varkeykunju, M Tech
Spoton Engineering Software Services, Emakulam

PROJECT BY:

KERALA FOREST DEPARTMENT
GOVERNMENT OF KERALA
FOREST HEADQUARTERS, VAZHUTHACAUD,
THIRUVANANTHAPURAM - 695014
KERALA, INDIA



C.S. Yalaku

May be approved.



THRISSUR ZOOLOGICAL PARK
Wildlife Conservation & Research Centre, Puthur

DPR - STAGE 3:
DRAWINGS FOR STATUTORY APPROVAL

EXHIBIT NAME:
MUGGER CROCODILE/ GHARIAL EXHIBIT

DRAWING TITLE:
EXHIBIT PLAN

DRAWING NO: DPR/S3/CRO/02 DATE: 27.03.2015 REVISION:

SCALE:
1:200 [A1], 1:400 [A3]

LEGEND:

- (105) EXISTING CONTOUR LEVEL
- +109 PROPOSED LEVEL
- (CET) SECTION NAME
- PROPOSED LOW PLANTING
- PROPOSED PLANTING
- PANDANUS PLANTING



MUGGER CROCODILE COLLECTION PLAN:

MALE	FEMALE	TOTAL
2	2	4

GHARIAL COLLECTION PLAN:

MALE	FEMALE	TOTAL
1	3	4

AREA STATEMENT:

MUGGER CROCODILE EXHIBIT	418 Sq.m.
MUGGER CROCODILE WATER BODY	274 Sq.m.
GHARIAL EXHIBIT	505 Sq.m.
GHARIAL WATER BODY	273 Sq.m.
GHARIAL NURSERY	128.6 Sq.m.
FILTRATION ROOM	25 Sq.m.

CONSULTANTS:

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KERALA FOREST DEPARTMENT
GOVERNMENT OF KERALA
FOREST HEADQUARTERS, VAZHUTHACAUD,
THIRUVANANTHAPURAM - 695014
KERALA, INDIA



- SCREEN PLANTING: PANDANUS
- CLAY BANK: CONCRETE WALL WITH ERODED CLAY BANK FACADE TREATMENT
- SAND BANKS: 50 CM DEEP SAND BED IN CONCRETE LINED TROUGH WITH PROVISION FOR DRAINAGE
- ANIMAL VIEWING: VIEWING POCKET WITH LOW WET LAND PLANTS STORM WATER SWALE
- VIEWING SHELTER (8M X 8M) LIGHT WEIGHT ROOF WITH GLASS CLOSE UP VIEWING

lanjans
7.8.15

Member Secretary
Central Zoo Authority
(Ministry of Environment & Forests
Govt. of India, New Delhi)

C.S. Yabaki
Apof (Dsp)
Special Officer



THRISSUR ZOOLOGICAL PARK
Wildlife Conservation & Research Centre, Pulthur

DPR - STAGE 3:

DRAWINGS FOR STATUTORY APPROVAL

EXHIBIT NAME:

MUGGER CROCODILE/ GHARIAL EXHIBIT

DRAWING TITLE:

EXHIBIT VIEW

DRAWING NO:	DATE:	REVISION:
DPR/S3/CRO/03	27.03.2015	



Handwritten signature and text:
C.S. Varkey

CONSULTANTS:

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KERALA, INDIA



THRISSUR ZOOLOGICAL PARK
Wildlife Conservation & Research Centre, Puthur

DPR - STAGE 3:

DRAWINGS FOR STATUTORY APPROVAL

EXHIBIT NAME:

CROCODILE/ GHARIAL EXHIBIT

DRAWING TITLE:

SECTION CE1 & CE2

DRAWING NO: DATE: REVISION:

DPR/S3/CRO/04 27.03.2015

SCALE:

1 0 1 2 5M
1:100 (A1), 1:200 (A3)

CONSULTANTS:

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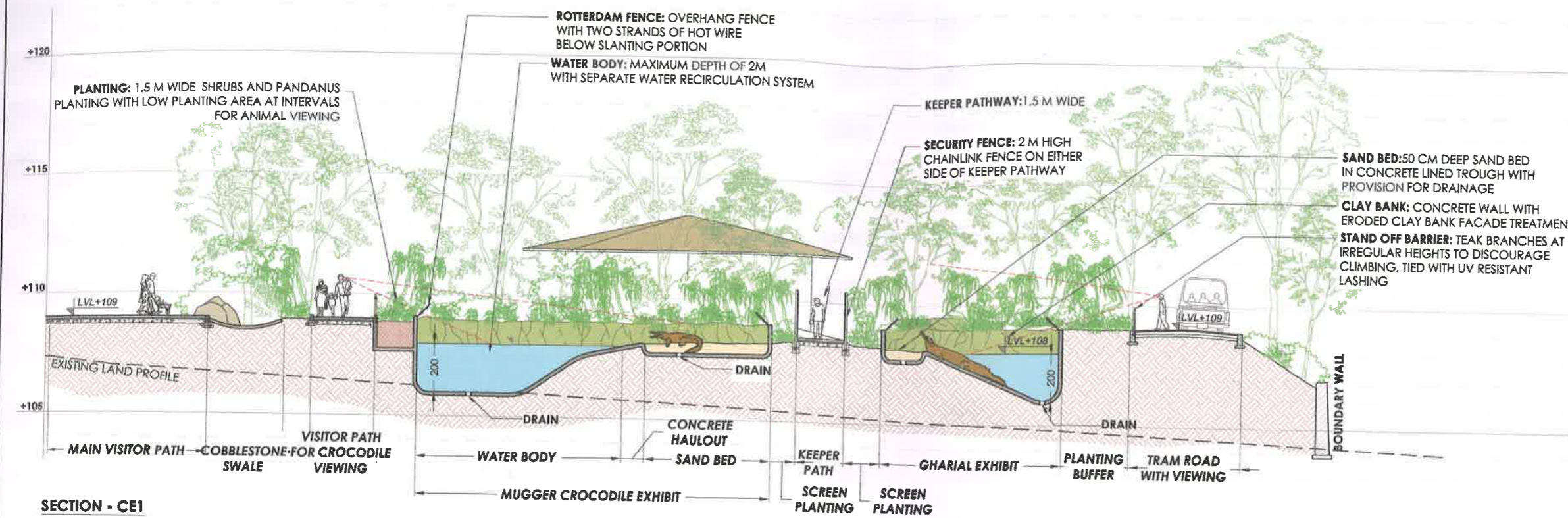
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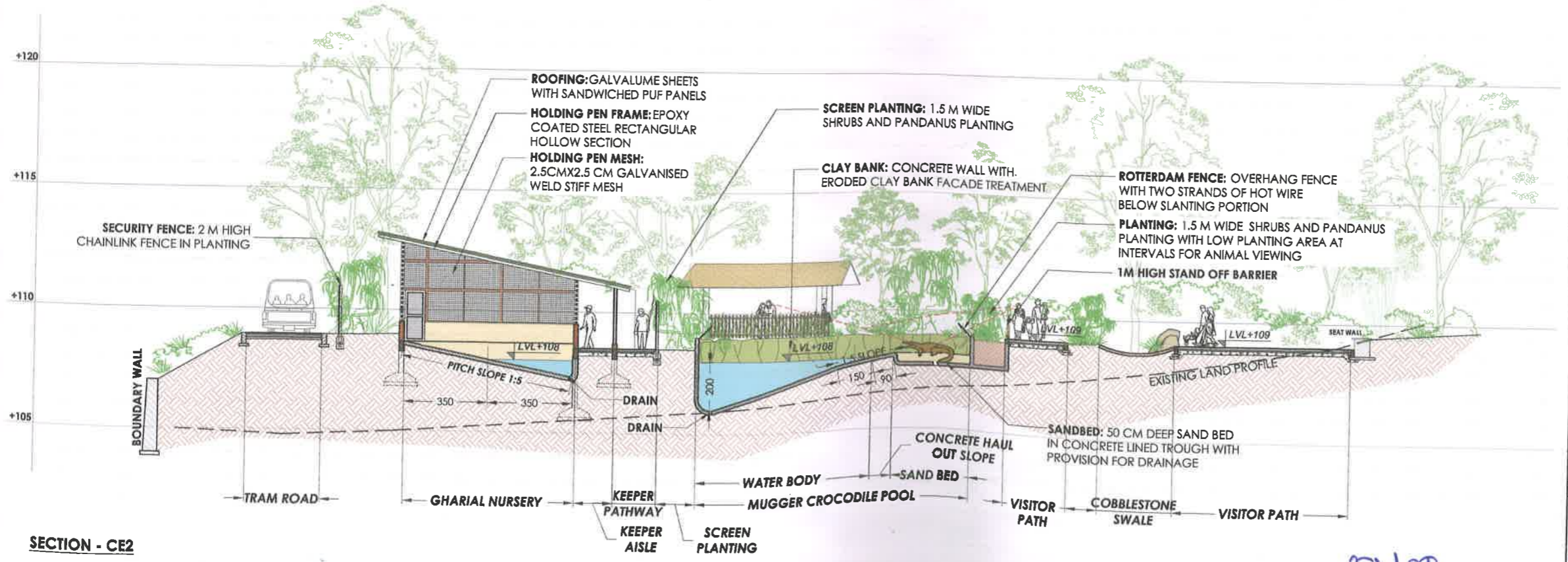
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KERALA, INDIA



SECTION - CE1



SECTION - CE2

C.S. Yalakan



THRISSUR ZOOLOGICAL PARK
Wildlife Conservation & Research Centre, Puthur

DPR - STAGE 3:

DRAWINGS FOR STATUTORY APPROVAL

EXHIBIT NAME:

CROCODILE/ GHARIAL EXHIBIT

DRAWING TITLE:

GHARIAL NURSERY/ BARRIER DETAILS

DRAWING NO:

DPR/S3/CRO/05

DATE:

27.03.2015

REVISION:

SCALE:

1:100 (A1), 1:200 (A3)

LEGEND:

+127 PROPOSED LEVEL

GN SECTION NAME

PROPOSED LOW PLANTING

PROPOSED PLANTING

HOLDING PEN STIFF MESH

SCHEDULE OF OPENINGS

Symbol	Type	Size		Sill Level	Nos.
		Width	Height (from FL)		
MD1	Main door	150	210	±0	2
MD2	Mesh door	75	210	±0	5
MG	Mesh Gate	150	150	±0	1
MG1	Mesh Gate	75	150	±0	2
GD	Gullotine door	150	150	-50	1

AREA STATEMENT:

HOLDING PEN 1	42 Sq.m
HOLDING PEN 2	44.5 Sq.m
FILTRATION ROOM	25 Sq.m

CONSULTANTS:

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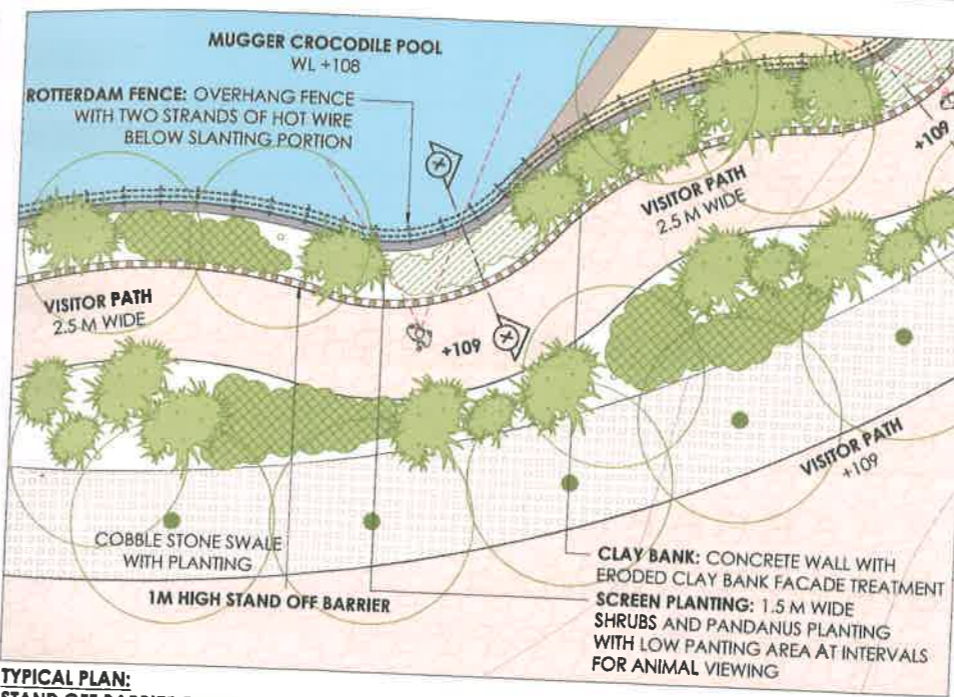
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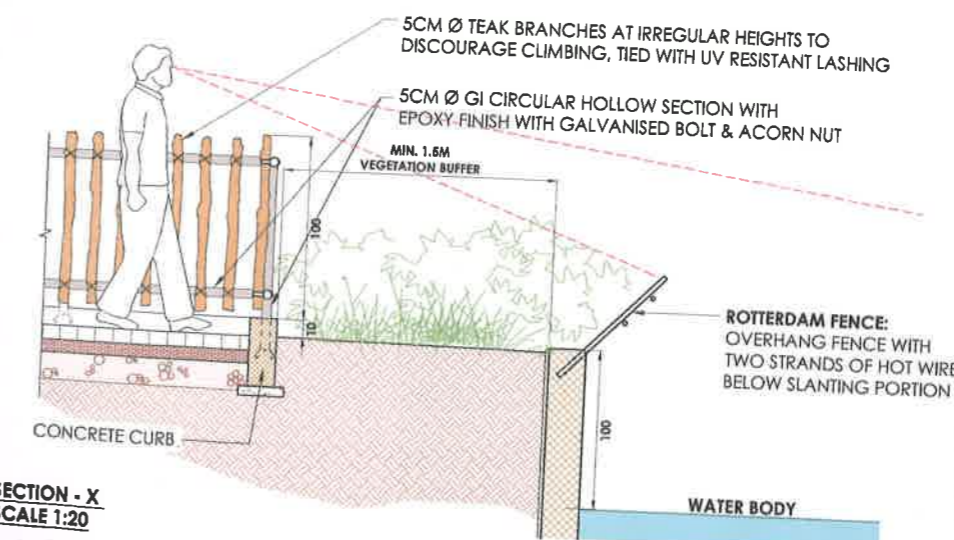
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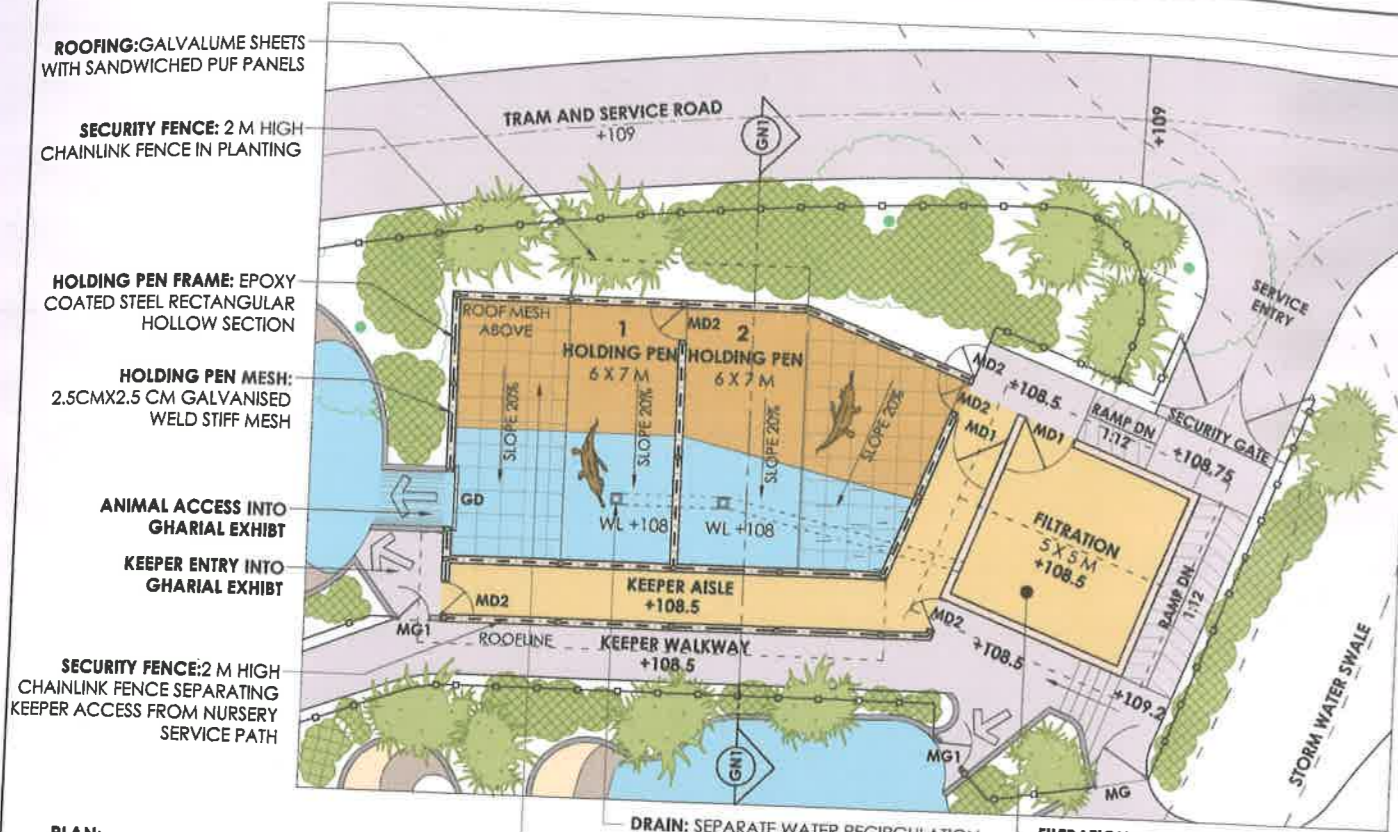


TYPICAL PLAN:
STAND OFF BARRIER DETAIL



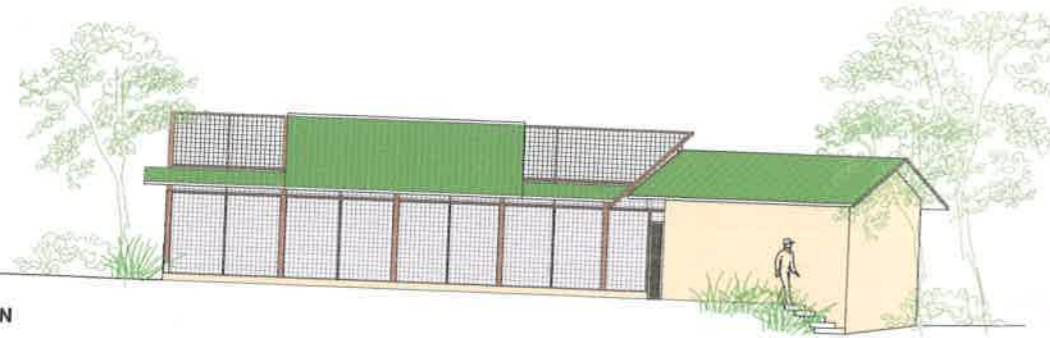
SECTION - X
SCALE 1:20

MUGGER CROCODILE / GHARIAL EXHIBIT AREA	
EXHIBIT AREA	418 SQ.M. (INCLUDING 274 SQ.M WATER BODY) FOR MUGGER CROCODILE 505 SQ.M. (INCLUDING 273 SQ.M WATER BODY) FOR GHARIAL
FRONT, REAR AND SIDE BARRIER	CONCRETE WALL OF 1 M HEIGHT WITH ROTTERDAM FENCE RUNNING ALONG IT. MIN 1.5 M PLANTING BUFFER BETWEEN EXHIBIT AND VISITOR PATH
ANIMAL VIEWING	ANIMAL VIEWING IS FACILITATED AT 3 POCKETS ALONG THE VISITOR PATH THROUGH THE PANDANUS PLANTING. ANIMAL VIEWING IS ALSO POSSIBLE ALONG THE TRAM ROAD.
ENRICHMENT FEATURES	EAST FACING INDIVIDUAL COVES (HAUL OUT SPACES) WITH CONCRETE SLOPES (SMOOTH PLASTERED) AND SAND FILLED TROUGHS FOR MORNING SUN BASKING
SERVICE ACCESS	ACCESS FOR KEEPER AND SERVICE VEHICLES INTO THE EXHIBIT THROUGH A SERVICE GATE FROM TRAM / SERVICE ROAD AS WELL AS FROM GHARIAL NURSERY
GHARIAL NURSERY AND FILTRATION ROOM	
TOTAL AREA	128.6 SQ.M. NURSERY. 25 SQ.M FILTRATION ROOM
HOLDING PENS	42 SQ.M., 44.5 SQ.M. AREA EACH FOR THE TWO HOLDING PENS
HOLDING PEN ROOF	50% ROOF SHALL HAVE ROOF. 50% SHALL HAVE MESH ON TOP
WATER RECIRCULATION AND FILTRATION	EACH WATER TANK (EXHIBIT AREA AS WELL AS NURSERY AREA) SHALL HAVE A SEPARATE RECIRCULATION SYSTEM. THE MACHINERY FOR THE SAME SHALL BE PLACED IN THE FILTRATION ROOM LOCATED ALONG WITH THE GHARIAL NURSERY.



PLAN:
HOLDING/ BREEDING PEN

ELEVATION:
HOLDING/ BREEDING PEN



SECTION GN1:
HOLDING/ BREEDING PEN

(Handwritten signature and notes)