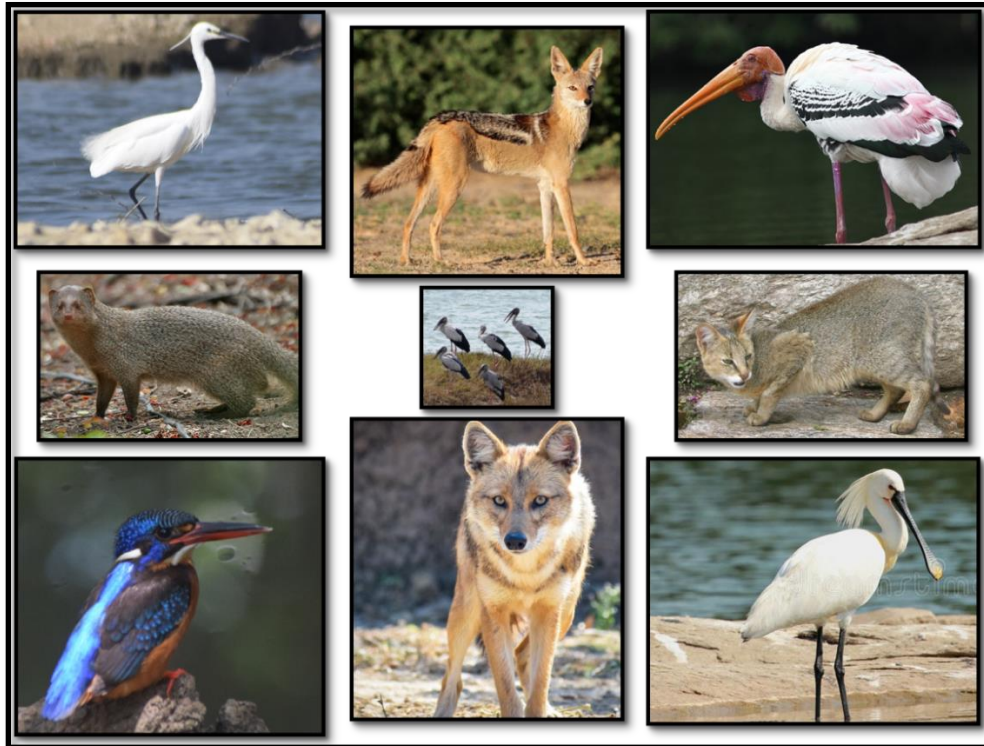




**WILDLIFE CONSERVATION PLAN**  
**FOR**  
**Ghatti Basavanna Drinking Water Project**  
**Construction of Ghatti Basavanna Dam across Markandeya**  
**River in Gokak Taluk, Belagavi District, Karnataka**



**DEPUTY CONSERVATOR OF FORESTS**  
**GHATAPRABHA FOREST DIVISION**  
**BELAGAVI DISTRICT**  
**KARNATAKA**

**TOTAL COST OF MITIGATION MEASURES – 13.47 CRORES**

**MAY, 2023**

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# 1. INTRODUCTION

## 1.1 About the Project

Karnataka Neeravari Nigam Ltd, Water Resource Department, Government of Karnataka has proposed Ghatti Basavanna Drinking Water Project involves construction of dam across Markandeya River. It is proposed to store 6 TMC of water during monsoon season. The project is envisaged to providing drinking water facilities to Gokak town and surrounding villages including Hukkeri Taluk, Bailahongala Taluk & Savadatti Taluk.

The total cost of the project is Rs. 990 Crores. The project construction activities include seating of Dam, Impounding Reservoir, Retaining wall, construction of dam office, guest office, view point, WTP & Colony, approach roads, steps, Utility, Landing, Foot bridge etc. across Markandeya river.

Table 1:The Details of the Dam

Sl. No.	Particulars	Details
1	Water levels (EL m.)	
	Maximum Water level (MWL)	618.00 m
	Full Reservoir level (FRL)	618.00 m
	Minimum Draw Down Level (MDDL)	566.00m
2	Others	566.00 m (River) sluice)
3	Dead Storage Level	566.00m (0.30 TMC)
4	Free Board (m)	3.00 m
5	Wave height (m)	0.94 m
6	Live Storage (M.cum)	5.74 TMC (162.50 MCM) (FRL-618.00 m-
7	Capacity (M.cum)	
	Maximum Water Level	618.00 m
	Full Reservoir Level	618.00 m
	Minimum Draw Down Level	565.50 m
	Dead Storage Level	564.00 m

## 1.2 Location details

Table 1 – Location details of the proposed project

Sl.No	Name of the Division	Name of the Range	Name of the Section	Name of the Beat
1	Ghataprabha	Gokak	Konnur	Konnur, Godachinamalki
			Kadabagatti	Gokak East, Gokak West
			Tavag	Tavag
			Ghataprabha	Ghataprabha
2	Belagavi	Gujanal	Pachapur	Mavanur

The project involves diversion of 575.0749 Ha of Reserve Forest land belonging to Gokak village, Godachinmalki village, Mavanura village, Konnur village in Gokak Taluk of Belagavi District. Details of Forest land requirement for the project are given below;

Table 2 – Details of Division involved

Sl.No.	Name of the Division	Forest Land (Ha.)	Non-Forest Land (Ha.)
1	Belgaum	22.411	0
2	Gokak	552.6639	63.0146
<b>Total</b>		575.0749	63.0146
<b>Grand Total</b>		<b>638.0895</b>	

Table 3 – Village wise breakup

Sl.No.	Village	Forest Land (Ha.)	Non-Forest Land (Ha.)
1	Gokak	388.0412	38.6919
2	Godachinamalki	43.8791	0
3	Mavanuru	22.411	0
4	Konnur	120.7435	0
5	Byadarahatti	0	24.3226
<b>Total</b>		<b>575.0749</b>	<b>63.0146</b>
<b>Grand Total</b>		<b>638.0895</b>	

## 1.3 Status of Forest Diversion Proposal

Karnataka Neeravari Nigam Ltd has applied for diversion of forest proposal in Parivesh portal (FP/KA/WATER/65437/2020) and the proposal is under consideration by the MOEFCC, GOI for recommendation. Component wise requirement of Forest land for the project is given below;



Table 4- Component wise requirement of Forest and Non-Forest Land

Sl No.	Component	Forest Land (Ha.)	Non- Forest Land (Ha.)
1.	Submergence	519.675	55.3492
2.	Dam seating	2.7849	0.5689
3.	Approach Road	18.1053	3.1782
4.	Dam office and Guest House	4.4953	0
5.	Dam View Point	8.4493	0
6.	Water Treatment plant and colony	0	3.0794
7.	Retaining Wall	0.1616	0
8.	Steps	0.8171	0
9.	Downstream Impounding reservoir	18.0978	0.8386
10.	Utility	1.054	0
11.	Landing	0.6558	0
12.	Foot Bridge	0.7783	0
<b>Total</b>		<b>575.0749</b>	<b>63.0146</b>

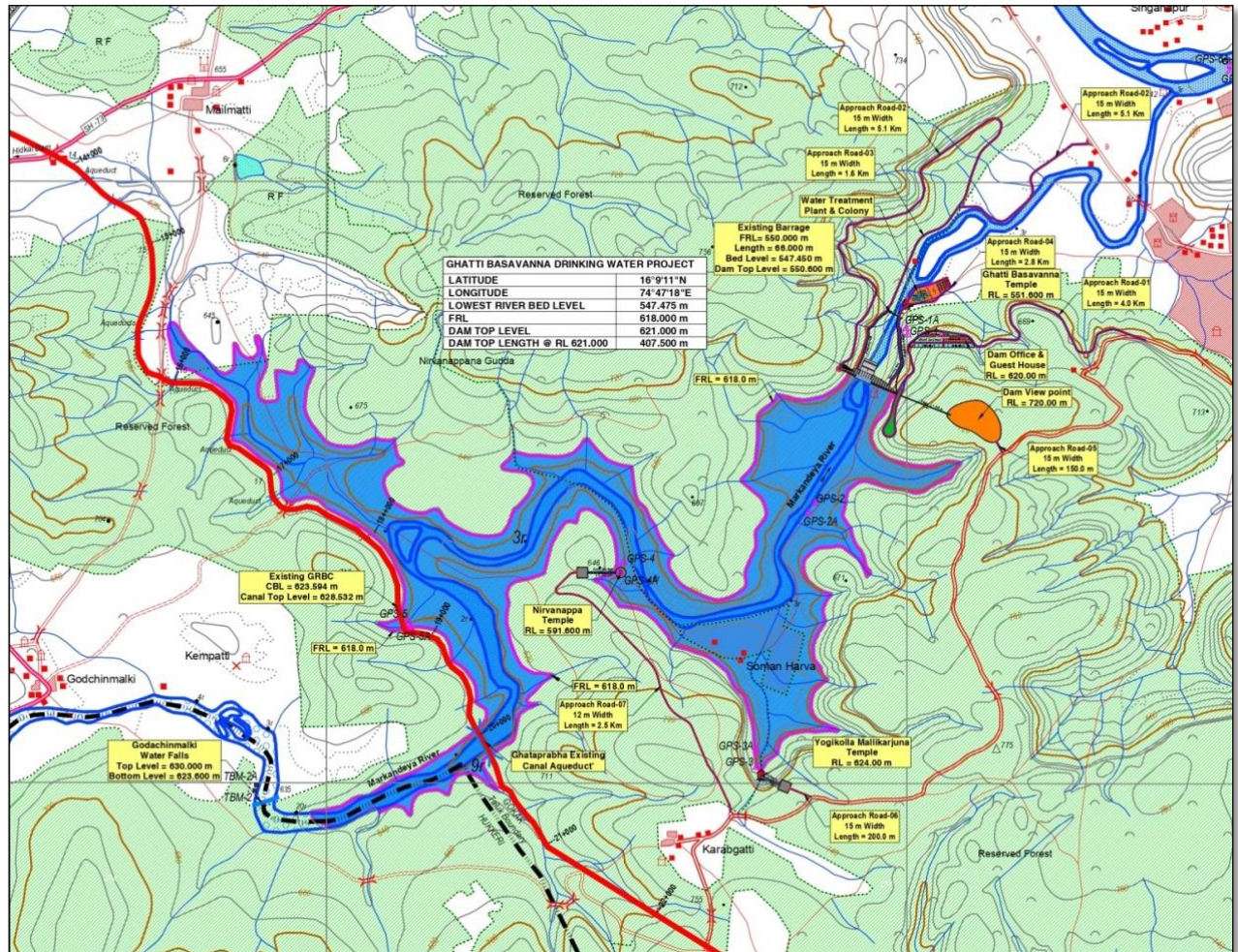


Fig 1- Map Showing Ghatti Basavanna Drinking Water Supply Project



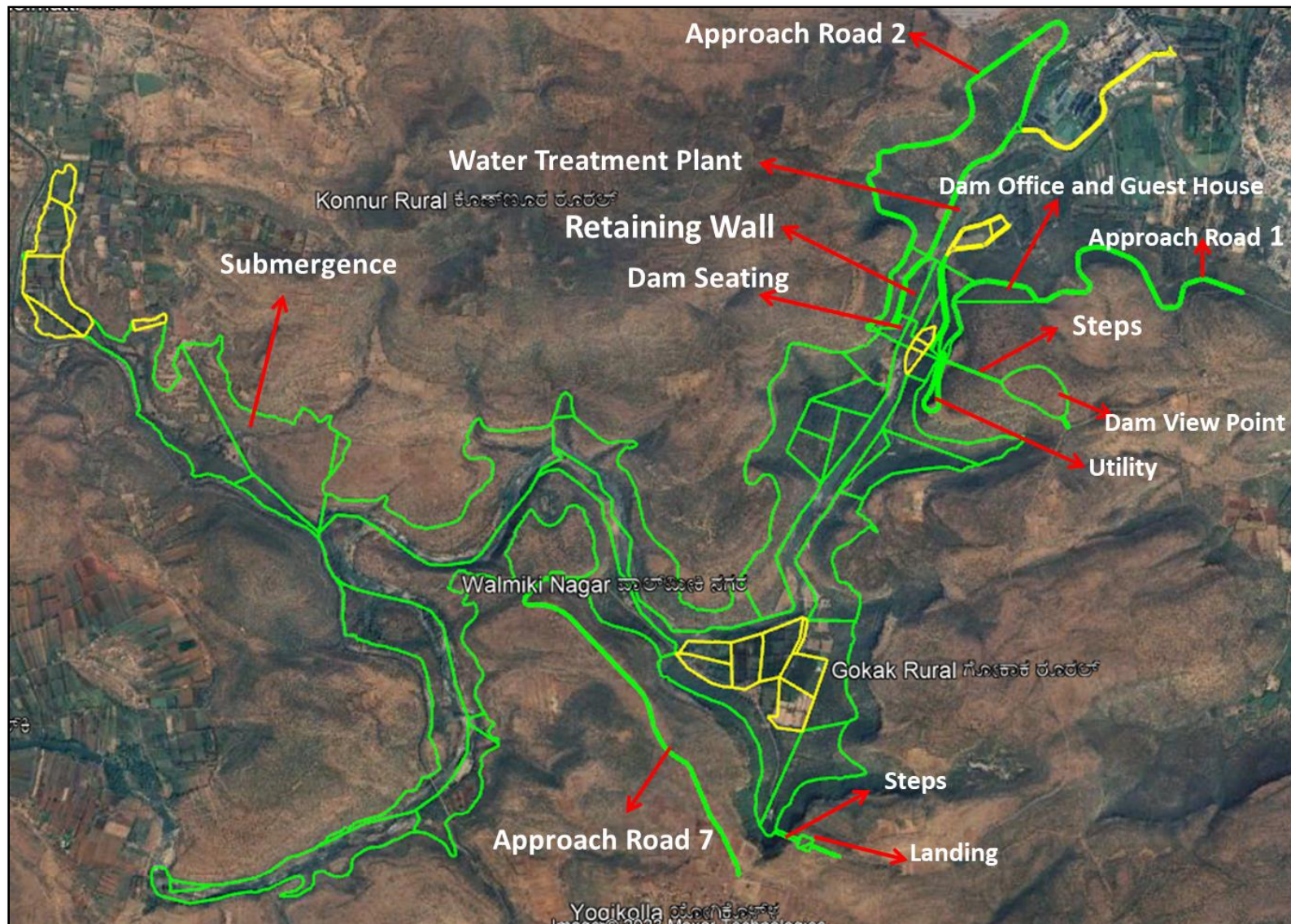


Fig 2: Map showing project components on Google Earth

## 2. PROJECT AND IMPACT AREA

### 2.1 Location and Land use

The forest area proposed for diversion is located in Gokak, Godachinamalki, and Mavanuru and Konnur villages. The Prominent GPS coordinates of location are as follows

Sl No.	Component	Latitude	Longitude
1.	Submergence	16° 8'47.93"N	74°47'17.31"E
2.	Dam seating	16° 9'11.97"N	74°47'18.18"E
3.	Dam office and Guest House	16° 9'20.92"N	74°47'39.60"E
4.	Dam View Point	16° 9'1.55"N	74°47'45.98"E
5.	Water Treatment plant and colony	16° 9'32.52"N	74°47'33.96"E
6.	Utility	16° 8'58.85"N	74°47'25.16"E

The proposed Ghatti Basavanna Dam is located at a distance of 2.94 km from the ESZ of Ghataprabha Bird Sanctuary and 3.10 km from the boundary of Ghataprabha Bird Sanctuary involving Ghataprabha River.

### 2.2 Forests and Flora<sup>1</sup>

As per the Champion and Seth classification of the forest types (1968), the forest vegetation in the tract can be classified into following types

- 5A/C1b. Southern Tropical Dry Deciduous Forests (Dry teak forest) – *Tectona grandis*, *Terminalia crenulata*, *Lagerstroemia lanceolata*, *Lannea coromandelica*, *Pterocarpus marsupium*, *Dalbergia latifolia*, *Dalbergia paniculata*, *Anogeissus latifolia*, *Xylia xylocarpa*, *Diospyros melanoxylon*, *Terminalia paniculata*, *Grewia tiliaefolia*, *Mitragyna parviflora*.
- 5A/C3 Southern Tropical Dry Deciduous Forests (Southern dry mixed deciduous forest): – *Anogeissus latifolia*, *Acacia catechu*, *Chloroxylon swietenia*, *Albizia amara*, *Cassia fistula*, *Santalum album*.
- 6A/C1 Southern Tropical Thorn Forests ( Southern thorn forests):– *Chloroxylon swietenia*, *Albizia amara*, *Acacia chundra*, *A. ferruginaea*, *Azadirachta indica*, *Wrightia*

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<sup>1</sup> Forest Working Plan of Ghataprabha Forest Division, Gokak (2012-13 to 2021-22)

*tinctoria*, *Diospyros melanoxylon*, *Cassia fistula*, *Canthium dicoccum*, *Zizyphus mauritiana*, *Z. xylopyrus* etc.,

- 6A/DS1 Southern Tropical Thorn Forests ( Southern thorn scrub):- *Albizzia amara*, *Azadirachta indica*, *Chloroxylon swietenia*, *Wrightia tinctoria* (few and scattered), *Zizyphus* sps, *Dichrostachys cinerea*, *Capparis* sps, *Randia dumetorum*, *Canthium dicoccum* Etc.,
- 6A/DS2 Southern Tropical Thorn Forests (Southern Euphorbia scrub): *Euphorbia tirucalli*, *Capparis* sps, *Dodonaea viscosa*, *Cassia auriculata*, *Opuntia dillenii*.
- Total tree enumeration covering all the project components was carried out and a total of 76,305 numbers of trees (out of which 52,160 falls under below 30 Cm GBH and 24, 145 falls under Above 30 Cm GBH) were recorded in the forest area. The predominant species recorded in the region are *Wrightia tinctoria*, *Pongamia pinnata*, *Holoptelea integrifolia*, *Azadirachta indica*, *Syzygium cumini*, *Tectona Grandis*, *Diospyros melanoxylon* etc.,

## 2.3 Forest Fauna

As per the Forest Working Plan of Ghataprabha Range major faunal species recorded are as follows;

Table 5 Wild animals reported in Ghataprabha Division<sup>2</sup>

Sl. No.	Common Name	Scientific Name	Schedule of the WLPA, 1972 <sup>3, 4, 5</sup>
1	Wolf	<i>Canis lupus</i>	I (Sl.no.21 )
2	Hyena	<i>Hyaena hyaena</i>	I (Sl.no.89 )
3	Jackal	<i>Canis aureus</i>	I (Sl.no.22 )
4	Jungle cat	<i>Felis chaus</i>	I (Sl.no.42 )
5	Common mongoose	<i>Herpestes</i> sps	-
6	Common Langur	<i>Presbytis entellus</i>	-
7	Bonnet monkey	<i>Macaca radiata</i>	I (Sl.no. 125)
8	Common Indian hare	<i>Lepus nigricollis</i>	II (Sl.No.13)
9	Wild pig	<i>Sus scrofa</i>	II (Sl.no.23)
10	Indian porcupine	<i>Hystrix indica</i>	I (Sl.no.120 )
11	Pangolin	<i>Manis crassicaudata</i>	I (Sl.no.113 )
12	Fresh water crocodile	<i>Crocodilus</i> sps	-

<sup>2</sup> Forest Working Plan of Ghataprabha Forest Division, Gokak (2012-13 to 2021-22)

<sup>3</sup> Wildlife (Protection) Amendment Act, 2022 published by Gazette of India dated on 19.12.2022(Schedule-I Part A Mammals).

<sup>4</sup> Wildlife (Protection) Amendment Act, 2022 published by Gazette of India dated on 19.12.2022(Schedule-II Part A Mammals)

<sup>5</sup> Wildlife (Protection) Amendment Act, 2022 published by Gazette of India dated on 19.12.2022( schedule-I Part C Reptiles)



Sl. No.	Common Name	Scientific Name	Schedule of the WLPA, 1972 <sup>3,4,5</sup>
13	Monitor lizard	<i>Varanus</i> sps	-
14	Indian cobra	<i>Naja</i> sps	I (Sl.no.18 )
15	Rat snake	<i>Ptyas mucosus</i>	I (Sl.no.26 )
16	Indian Rock Python	<i>Python molurus</i>	I (Sl.no.31 )

## 2.4 Ghataprabha Bird Sanctuary

Ghataprabha Bird Sanctuary notified vide Government of Karnataka Notification No. FEE 58 FWL 96 dated 8.7.1999 and situated in Gokak and Hukkeri Taluks of Belgaum District in the State of Karnataka is spread over an area of 29.875 square kilometres. It is a small bird sanctuary comprising a section of Ghataprabha River and over 22 islands in it and a weir and dam constructed during 1883 near Dhupadal have created a reservoir upstream with a large island in its midst and the Gokak waterfalls located in the eastern part of the Sanctuary is the major tourist attraction. The island surrounded by water throughout the year except few days in March, connected with good network of rail and road attracts many tourists, bird watchers, school children and it gives good opportunity to create awareness among public regarding wildlife to be specific in avifauna and it is a good example of riverine ecosystem.

Most of the islands that comprise the sanctuary are barren and dry and one of them at western side of Dhupadal Lake is swampy and another has a good growth of *Acacia arabica*, *Pithecollobium dulce* and *Bambusa arundinacea*, both being introduced species and *Acacia arabica* and *Imperata cylindrica* are considered of special interest, as they are good for nesting. Apart from harboring endemic birds like little cormorant (*Phalacrocorax niger*), Egret (*Egretta garzetta* and *Ardeola alba*), Ibis (*Theskiomis melonacphale*), King fisher (*Theskiomis melonacphale*), Storks (Ciconiidae), Snake birds (*Anhinga anhinga*), Heron (*Ardeidae*) etc., the area is noted for having attracted migratory birds like Demoiselle Crane (*Grus virgo*) and European White Stork (*Ciconia ciconia*) which have been sighted normally from November to March.<sup>6</sup>

The Major flora found in the Ghataprabha Bird sanctuary are as follows, *Acacia Arabica*, *Albizia amara*, *Albizia lebbeck*, *Albizia odartissima*, *Artocarpus integrifolia*, *Azadirachta indica*, *Bambusa Arundinacea*, *Cassia fistula*, *Carissa caranda*, *Hardiwickia binata*, *Holoptelia*

<sup>6</sup> MoEF & CC- Vide Notification no. S. O 2029(E) Dated on 27.06.2017

*integrifolia*, *Pongania pinnata*, *Prosopis juliflora*, *Randia dometorum*, *Shorea talura*, *Terminalia arjuna* etc.

The Major Faunal species found in Ghataprabha Bird sanctuary are as follows, Common mongoose, Cobra, Indian Fox, Indian Porcupine, Indian Hare, Jackal, Python, Rat Snake, Viper.

The Major Avi-faunal species found in the Ghataprabha Bird sanctuary are as follows, Baya weaver, Black capped king fisher, Blue Rock Pigeon, Black Drongo, Cattle Egret, Common Myna, Darter or Snake bird, Demoiselle crane, European white storks, Fish owls, Grey partridge, House crow, House Sparrow, Jerdon's Double banded Courser, Jungle Crow, Koel, Little Egret, Large Egret, Large Indian Parakeet, Little Cormorant, Large pied wagtail, Open billed Stork, Pond Heron, Peacock, Red wattled lapwing, Stork billed king fisher, Spoon bill, White ibis, White wrock.<sup>7</sup>

The sighting of animals near the Project site is rare and the occasionally recorded mammal species are Wolf, Hyena, Jackal, Jungle cat, Common mongoose, Common Langur, Bonnet Macaca, Common Indian hare, Wild pig, Indian porcupine, Pangolin.

There are no designated Wildlife Corridors in the project area.

On account of low and sparse population of wild animals, man-animal conflict situations are few. Most such incidents involve wolf preying upon the sheep and goats which are in plenty in this dry tract.<sup>2</sup> Migratory birds like Demoiselle cranes etc., may regularly invade and destroy the agricultural crops in nearby fields. Very often the whole crop in the field was found to be divested by the birds, resulting in man-animal conflicts.<sup>7</sup>

No other projects planned in this region.

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<sup>7</sup> Management Plan of Ghataprabha Bird Sanctuary.

### 3. PROBABLE IMPACTS ON FLORA & FAUNA

#### 3.1 Project construction phase

- a. ***Disturbance to Fauna and its habitat:*** Movement and working of machinery and project persons during construction of the project is likely to cause disturbance to fauna and usage of habitat around project sites. Excavation by blasting of hard stone may become necessary for construction and this will lead to noise disturbance.
- b. ***Soil & debris movement:*** Excavation of soil is involved in the project site and It is important to store the excavated earth/debris in a designated area to avoid washing of soil into the river.

#### 3.2 Operation phase

- a. ***Habitat fragmentation:*** Implementation of the project may necessitate coping by small ground dwelling and arboreal mammals and other herpeto fauna with respect to habitat and canopy fragmentation.
- b. ***Man-animal conflict:*** During operation phase of the project, the impact on wild animals in the project area due to new infrastructure may not have implications on the habitat dynamics with respect to availability and distribution of water, animal distribution and preferential use of certain habitats.

#### 3.3 Other Disturbance during Project Implementation

- Most of the animals are active during night in search of food. The construction activity disturbs the nocturnal animals and affects the prey-predator activity. This makes them to migrate outside the forest area.
- Construction activities, movement of vehicles and blasting activities cause vibration which affects the avifaunal behavior of the region.
- During construction period large number of machineries and construction workers shall be mobilized, which may create disturbance to wildlife population in the immediate surroundings of the project site. Noise will be generated by operating huge machineries which have adverse impact on fauna of the area.

## **4. MITIGATION MEASURES REQUIRED**

### **4.1 Strengthening the Forest Department's Infrastructure**

There are many buildings of the Forest Department in and around the proposed area in the form of Offices, Quarters and Nurseries. However, these buildings do not have sufficient water supply and necessary infrastructure. In order to oversee and monitor the activities in and around the project site, it is necessary to provide sufficient water and electricity supply to these buildings. It is also proposed to construct new quarters for Range Forest Officer and staff. Further, it is proposed to renovate the existing office of Range Forest Officer which includes strengthening the office infrastructure. User agency shall provide sufficient funds for this purpose.

### **4.2 Protection Works**

As the forest areas in and around the project site may give access to public to the undisturbed forest areas, it is very important that such areas are regularly supervised, monitored, patrolled to prevent untoward incidents like hunting, smuggling, trespassing, fishing etc. To achieve this, the Forest Department officials and staff should have necessary infrastructure including vehicles. Therefore, it is proposed to provide new vehicles for ACF, Range Forest Officer, DRFOs.

In order to prevent forest fire incidents, it is proposed to provide protection equipment. As these infrastructure and activities may require additional labours, it is proposed to hire labours on outsourcing basis. To achieve all these, sufficient funds are required which the Forest Department currently does not have. Hence, the user agency shall provide sufficient funds for this purpose.

### **4.3 Signage's, publicity awareness programs**

User agency shall provide sufficient funds for signages, publicity awareness programs in and around the proposed project area for sensitization of general public towards the forest, wildlife and environmental issues in consultation with jurisdictional forest officials.

### **4.4 Construction activities**

- The movement of men, vehicles and machineries shall be limited to the day time and no labour camps shall be established in the forest area.
- Utilization of modern equipment's during construction phase can produce less sound and vibrations reducing the disturbances to the faunal species including avifauna and wildlife



- Construction activities will be carried out under the supervision of the KFD Officials for the safety of the wildlife in case of any encounter with animals.
- Ecological Restoration Plan and compensatory afforestation activities will be carried out to compensate the loss of habitat due to tree removal and submergence due to implementation of the project components thereby improving the ecological environment.
- The construction shall be limited between sunrise and sunset and blasting works shall be minimized as much as possible and limited only to day time. Controlled Blasting shall be adopted to minimise impacts, if any.
- All the existing roads will be upgraded to avoid creation of haul roads.
- The approach roads should be provided with speed breakers/rumble strips at appropriate places so as to curtail vehicular speed.
- Movement of vehicles shall be avoided during the night hours from 9.00 PM to 6.00 AM to avoid accidental death of animals and minimize disturbance to wildlife habitat.

#### **4.5 Labour camps**

- LPG shall be supplied to the labour camps and care shall be taken to avoid spreading of forest fire.
- The user agency shall ensure that the labourers do not indulge in illegal collection of rare and valuable medicinal plants or floral species from the forest area.

#### **4.6 Waste Management**

- No excavation of sand from streambeds for construction purpose is allowed.
- Excavated earth, if any has to be stored in designated places and shall be covered with tarpaulin sheets. Provision of Sand bags has to be made to avoid run-off into the streams.
- Bio-degradable waste or food waste: A covered pit should be created to dump the biodegradable waste and in no circumstances, it should be thrown in water or on land.
- Non-biodegradable waste like plastics: Stored in designated places and handed over to authorized recyclers.
- Human Waste: Provision for septic tank should be made so that human faeces are not discharged in water bodies.

- Construction materials (including top soil) should be procured from outside the forest area. The debris should be appropriately dumped outside the forest by user agency taking due care of air/dust pollution.

#### **4.7 Noise and Light Pollution**

- There shall be no high mast/beam/search Lights & high sounds within 1 km from the Protected Area Boundary.
- DG sets shall be enclosed with Acoustic enclosures to meet the noise level standards inside the forest areas.
- Every possible effort will be done to minimize the effect of construction on wildlife in that area and noise shall be kept under limits.

#### **4.8 Man-Animal Conflict**

- Proper fencing of camp shall be done to prevent entrance of wildlife inside the camp.
- Equipment like high beam torches, fire torches, fire cracker etc. should be made available to camp to prevent any wildlife attack.

## 5. FINANCIAL IMPLICATIONS AND MONITORING

Table 6- Financial implications

Sl. No	Items of Work	Location	Quantity	Approximate cost (in Lacs)	Monitoring Responsibility
<b>A. Protection Works</b>					
1	Mahindra New four wheeler Jeeps	ACF of Gokak Sub-division, RFO of Gokak Range, Gokak	2 Nos	30.00	DCF, Gokak
2	Hero HF Deluxe Patrolling Bikes	Gokak Range (5)	5 Nos	4.00	
3	Construction of new Watch Towers	Gokak Range (4)	4 Nos	20.00	
4	Purchase of Fire Protection Equipment	Gokak Sub Division	LS	10.00	
5	Addressing Human-Wildlife Conflict in the region	Gokak Range	LS	50.00	
6	Fire Protection Works for Fire Protection Camps, Fire Lines, and Fire Watchers for 5 years.	Gokak Range	LS	200.00	
7	Signages and publicity	Gokak Range	LS	15.00	
<b>B. Strengthening of Infrastructure</b>					
1	Construction of new Quarters for RFO	Gokak	1	50.00	DCF, Gokak
2	Construction of new Quarters for frontline staff (G plus 2 with parking Facility)	Gokak Range	12	240.00	
<b>C. Habitat Improvement Measures</b>					
1	Formation of new waterholes/ponds	Gokak Range	5 Nos	25.00	DCF, Gokak
2	De silting of waterholes	Gokak Range	2 Nos	4.00	
3	Management of Grasslands	Gokak Range (500ha.)	100 Ha.	60.00	
4	Formation of Patrolling Roads	Gokak Range	100 Kms	40.00	
5	Planting of fruit yielding species in the catchment area of Markandeya River	Gokak Range	200 Ha.	374.00	
6	Cultural Operations, Soil Work in to Regeneration, Improvement works for Medicinal Plants	Gokak Range	500	25.00	
7	Island formation and plantation in Ghataprabha bird sanctuary	Ghataprabha Range	LS	200.00	
<b>Total Proposed Amount</b>				<b>1,347.00</b>	

### 5.1 Year wise cash flow statement

Karnataka Neeravari Nigam Ltd shall deposit the aforementioned amount to CAMPA account and within a span of 3 years, the above mitigation measures will be implemented.

Table 7- Year wise cash flow requirement

Sl.No.	Financial Year	Amount to be spent (Rs.)
1.	2023-24	8,50,00,000/-
2.	2024-25	4,97,00,000/-
	<b>Total</b>	<b>13,47,00,000/-</b>