



3 - Description of the Environment (cont'd)

3.7 BIOLOGICAL ENVIRONMENT

In order to ascertain the baseline status of the biological environment comprising both terrestrial and aquatic ecological aspects of the study area, field visit was carried out from 20th - 24th December, 2020. During the field survey, relevant data on floral & faunal constituents pertaining to the study area was collected from the published record of Forest Department, Govt. of Odisha along with gathering relevant information through interaction with the local residents of the study area. Following paragraphs provide review of the published data and the results of field sampling as a brief description of ecological status of the study area.

3.7.1 Objective

The ecological survey was carried out with the following objectives in terrestrial and aquatic habitats of the study area:

- i) To assess the nature and distribution of flora and fauna in the important habitats available in the study area.
- ii) To assess the species diversity index of vegetation community and planktonic population in the study area.
- iii) To ascertain the existing specie's economic importance, degree of protection schedule provided by the Indian Wildlife Protection Act 1972 & its subsequent amendments and conservation status in IUCN Red List (Version 2021-1).
- iv) To ascertain the presence of protected areas, migratory routes of fauna, presence of breeding grounds and sensitive habitats in the study area, if any.
- v) To review the information from secondary sources and discuss issues of concern with the relevant authority, if any.



3 - Description of the Environment (cont'd)

- vi) To predict the impact of activities of RSP project based on the data from primary and secondary sources and formulate suitable mitigation measures.
- vii) Formulating a greenbelt development plan to minimize the impact of air and noise pollution, as well as generate new habitats of flora and fauna in and around the project site.

3.7.2 Habitats Description of the Study Area

The study area exhibits multiple physiographic characteristics with isolated green hillocks, barren lands, forest lands, afforested lands, agricultural lands, urban, rural settlements and industrial developments. The significant terrestrial natural habitats of the study area are green hillocks and forest lands. These areas are isolated by agricultural lands, urban, rural settlements and industrial developments. There are also few afforested lands and degraded forest lands where plantations rising over the years by Forest Department, Government of Odisha in the study area. The significant aquatic natural habitats in the study area are the Brahmani river, Kharsua river and Ganda Nadi which serves as source of water for industries, fishing and agricultural activities.

3.7.3 Climatic Factor for Vegetation

The principle factors of climate directly affecting plants are rain fall, soil moisture, humidity, temperature, sunlight and wind. Thus the growth of vegetation is dependent on climate. The climatic condition of the study area favours natural regeneration of Sal (*Shorea robusta*), Bhilwa (*Semecarpus anacardium*), Palash (*Butea monosperma*), Char (*Buchanania lanzan*), Kendu (*Diospyros melanoxylon*) and Cashew nut (*Anacardium occidentale*).

3 - Description of the Environment (cont'd)**3.7.4 Locations for Biological Sampling and Monitoring**

The selection of terrestrial and aquatic ecological sampling and monitoring location was based on land use pattern, topography, eco sensitivity of the habitats, proximity, upwind & downwind direction of the project site. The terrestrial ecological survey was carried out in forested area (Reserve Forest-RF, Protected Forest-PF & Afforested area-AF) and non-forested area (agricultural land, roadside area, urban & semi-urban wasteland etc) and aquatic ecological survey was carried out at river Brahmani, river Kharsua & Ganda Nadi within the study area.

The list of sampling locations for biological environment study is given in Table 3-20 and depicted in Fig. 3-16 and 3-17.

TABLE 3-20 - SAMPLING LOCATIONS FOR ECOLOGICAL STUDY

Location Code	Name of Location	Direction	Latitude	Longitude
Terrestrial Ecology				
TE1	Sunajhari Protected Forest at Sunajhari Parbat	W	20°56'18" N	85°57'05"E
TE2	Kiajhar Parbat open mixed jungle near Gobraghati	W	20°57'42" N	85°59'42"E
TE3	Dangadi Protected Forest	NE	20°59'04" N	86°04'32"E
TE4	Ragarhi Protected Forest near Gohjragarhia Village	NE	21°01'25" N	86°06'45"E
TE5	Barang Reserve Forest near Nandabara Village	N	21°02'31" N	86°02'57"E
TE6	Barhashuli Paharh open mixed jungle near Bitarmanika	SW	20°55'57" N	86°05'01"E
TE7	Nilamanideipur Village (Road side)	S	20°53'54" N	86°01'32"E
TE8	Duburi Village (Road side)	NW	20°58'23" N	85°56'29"E
Aquatic Ecology				
AE1	Ganda nadi at Barakhai Village	N	21°01'30"N	86°02'52"E
AE2	Ganda nadi at Ollala Village	N	21°00'20"N	86°03'55"E
AE3	Ganda nadi at Kusunpur Village	E	20°57'47"N	86°05'52"E
AE4	Ganda nadi at Balungabandi Village	SE	20°56'12"N	86°05'31"E
AE5	60m Downstream of Kharsua River meeting Ganda nadi	SE	20°53'32"N	86°06'30"E
AE6	60m Upstream of Kharsua River meeting Ganda nadi	SE	20°53'38"N	86°06'18"E
AE7	60m Downstream of Brahmani River after Railway Bridge	S	20°53'16"N	86°03'36"E
AE8	60m Downstream of Brahmani River after Road Bridge	S	20°53'27"N	86°00'54"E

JINDAL STAINLESS LIMITED

Expansion of crude steel production from 2.2 MTPA to 4.5 MTPA
and cold rolling mill production from 1.6 MTPA to 2.6 MTPA
within the existing Steel Plant at Kalinga Nagar
Environmental Impact Assessment Report



3 - Description of the Environment (cont'd)

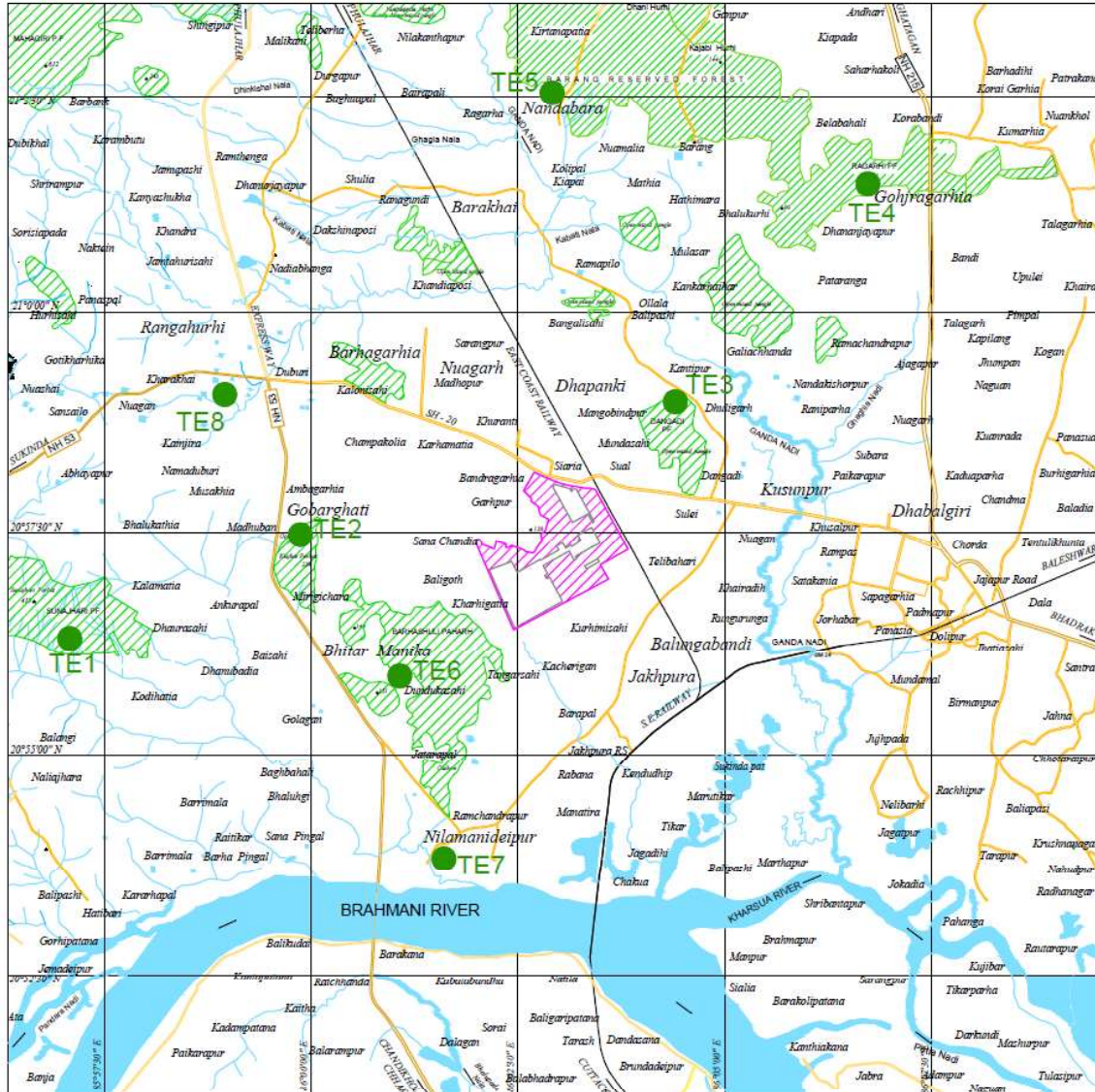


FIG. 3-16 - TERRESTRIAL ECOLOGY MONITORING LOCATIONS

3 - Description of the Environment (cont'd)

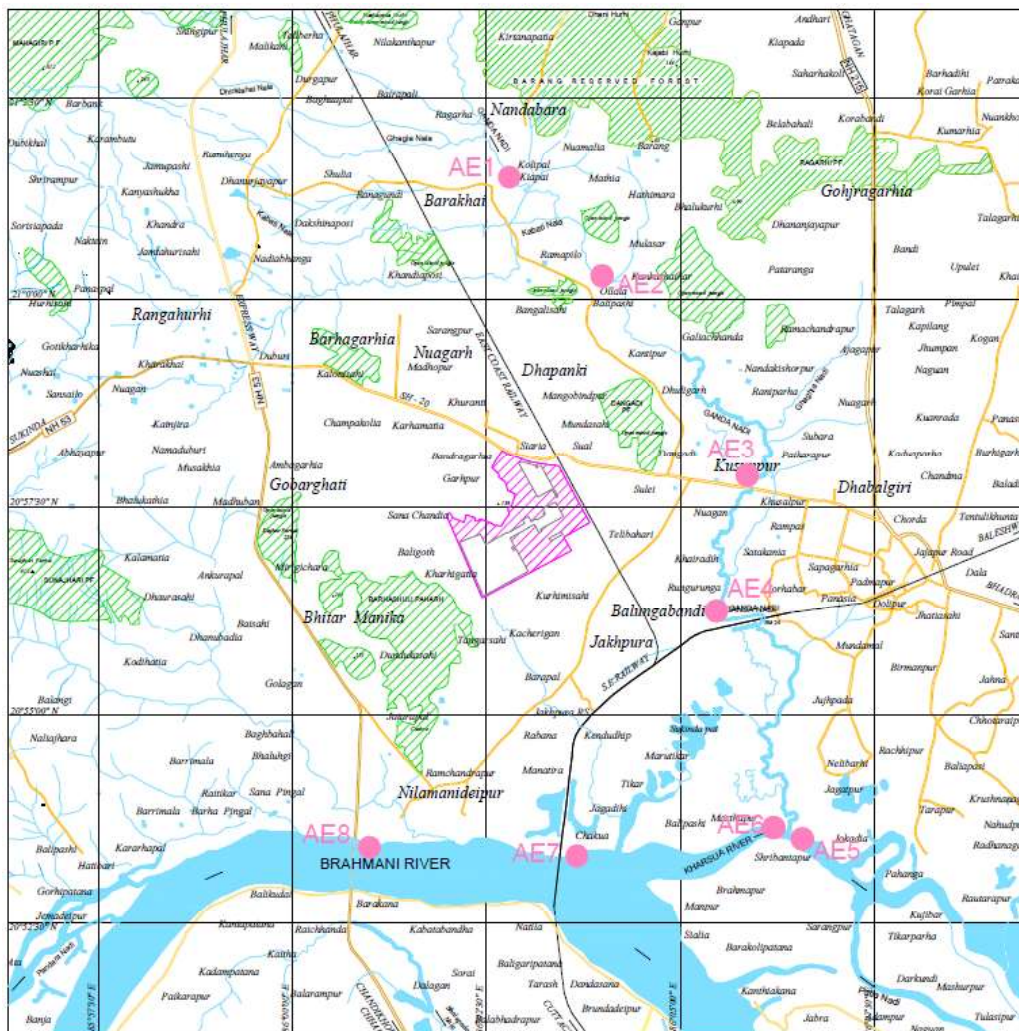


FIG. 3-17 - AQUATIC ECOLOGY MONITORING LOCATIONS

3.8 METHODOLOGY ADOPTED FOR ECOLOGICAL SURVEY

3.8.1 Literature Review

The reports, articles and other literature pertaining to the study area obtained from various sources including the online references available on related government departments & other relevant website were referred to extract information about the general ecology of the study area and prepare a check list of flora and fauna for the field survey.



3 - Description of the Environment (cont'd)

3.8.2 Field Survey for Terrestrial Ecology

The quadrature method which involves laying down species in square sample plots was followed for quantitative analysis of vegetation and listing all observed vegetations randomly for qualitative estimation of floral inventory in the study area. Quadrature size of 1 m x 1 m, 5 m x 5 m, 10 m x 10 m were taken for herbs, shrubs and trees respectively. The parameters density, frequency, abundance, species diversity index, evenness index and richness were derived for quantitative assessments. The dominant tree, shrubs, herbs, climbers were enumerated in the forest area as well as non forest area. The medicinal plants, horticultural crops and agricultural crops grown in the study area were also listed.

The methodology adopted for faunal survey involved faunal habitat assessment, opportunistic observation, diurnal bird observation, identification of call of birds, active search for reptiles and amphibians, observations of feathers, scats, foot prints and excreta etc. During survey line transects and patches were laid at the selected monitoring stations and birds, butterflies, mammals, reptiles and amphibians were identified by adopting standard field practices and listed.

3.8.3 Field Survey for Aquatic Ecology

Field observations were made for listing down macrophytes including free floating, submerged, emergent, marshy and riparian vegetations. The planktonic samples were collected from Brahmani river, Kharsua river and Ganda Nadi for estimation of planktonic population & species diversity index. Observations were also made for listing down semi aquatic birds, fishes, reptiles, amphibians, mollusks and insects. The semi aquatic birds were identified with the help of 10 x 50 Nikon binocular and listed.



3 - Description of the Environment (cont'd)

3.8.4 Collection of secondary data

During the field survey, relevant published data on floral & faunal constituent of the study area was collected from the working plan of Cuttack Forest Division, Govt. of Orissa, for the period 2007-2008 to 2016-2017. Additionally information was also gathered through interaction with the Forest Ranger of Tomka Range as well as local residents of the study area for substantiating the primary data.

3.9 TERRESTRIAL ECOLOGICAL STATUS (TES)

3.9.1 Present Status of Natural Vegetation

In the study area deciduous and semi evergreen types of vegetation has been found to be naturally regenerated by Sal, Bamboo, Palash, Char, Bhilwa and Kendu trees along with varieties of shrubs and herbs as understory. The forests are mainly open mixed jungle which spreads over the open ridges of the undulating valleys and hilly regions of the study area. The forest department has been raising plantation over the years in these degraded forest lands with Teak, Cashew, Gamhar etc. The forest lands in the study area are listed in Table 3-21. In the study area following five principal vegetation types was recognized during the survey.

- i) Medium dense forest associated with mixed vegetation
- ii) Open mixed jungle associated with scrub vegetation
- iii) Green hillocks with Open mixed jungle
- iv) Afforested area with mixed vegetation
- v) Open mixed jungle along with block plantation of cashew

3 - Description of the Environment (cont'd)

TABLE 3-21 - FOREST WITHIN 10 KM RADIUS OF STUDY AREA

Name of Forest Area	Direction form project site	Type of vegetations recognized
Barang R.F	N	Medium dense forest associated with mixed vegetation
Ragarhi P.F	NE	Open mixed jungle associated with scrub vegetation
Sunajhari P.F	W	
Dangadi P.F	NE	
Kiajhar Parbat	W	Green hillocks with Open mixed jungle
Barhashuli Paharh	SW	
Afforested area near Barhagaria	NW	Afforested area with mixed vegetation
Open mixed jungle near Ramachandrapur, Kankarhaihar, Mulasar and Bagalisahi	S	Open mixed jungle along with block plantation of cashew
Open mixed jungle near Pechakundi	NW	
Open mixed jungle near Bhitar Manika	SW	

3.9.2 Vegetations in Forest Area

According to Champion and Seth's classification, the forest types available in the study area are northern tropical semi-evergreen and tropical moist deciduous forest which consists of mixed trees of both semi evergreen and deciduous types close together.

The forests are characterized by the presence of broad leaves deciduous trees like Asan (*Terminalia alata*), Bael (*Aegle marmelos*), Bhilwa (*Semecarpus anacardium*), Char (*Buchanania lanzan*), Dhawra (*Anogeissus latifolia*), Kendu (*Diospyros melanoxylon*), Kusum (*Schleichera oleosa*), Kurchi (*Holarrhena antidysenterica*), Palash (*Butea monosperma*), Piasal (*Pterocarpus marsupium*), Sal (*Shorea robusta*) and Teak (*Tectona grandis*). The understory consists of some evergreen xerophytic species like Babul (*Acacia nilotica*), Ber (*Ziziphus mauritiana*), Chotra (*Lantana camara*), Devil weed (*Chromolaena odorata*), Fire Flame Bush (*Woodfordia fruticosa*), Garari (*Cleistanthus collinus*), Bamboo



3 - Description of the Environment (cont'd)

clumps and climbers like Bush-willow (*Combretum decandrum*), Shora-alu (*Dioscorea oppositifolia*), Kanta-alu (*Dioscorea pentaphylla*), Gulanch (*Tinospora cordifolia*), Satamuli (*Asparagus racemosus*), Telakucha (*Coccinia grandis*) etc. are found in close association with trees and shrubs. Among the above given species Sal (*Shorea robusta*), Bhilwa (*Semecarpus anacardium*), Char (*Buchanania lanzan*) and Kendu (*Diospyros melanoxylon*) are the most dominant tree species in the forest area.

3.9.3 Vegetations in Non-forest Area

Trees in the non-forest area are mixed tropical deciduous and semi evergreen in nature. The main species are Babul (*Acacia nilotica*), Banyan (*Ficus benghalensis*), Cassia (*Cassia siamea*), Cashew (*Anacardium occidentale*), Ganga imli (*Pithecellobium dulce*), Gulmohar (*Delonix regia*), Kachnar (*Bauhinia variegata*), Mango (*Mangifera indica*), Neem (*Azadirachta indica*), Palash (*Butea monosperma*), Pipal (*Ficus religiosa*), Radhachura (*Peltophorum pterocarpum*), Sajna (*Moringa oleifera*), Siris (*Albizia procera*).

The common shrubs distributed within the road sides, barren lands, banks of river etc are Akanda (*Calotropis procera*), Arandi (*Ricinus communis*), Arni (*Clerodendrum phlomidis*), Ber (*Zizyphus jujuba*), Dhutra (*Datura stramonium*), Ipomoea (*Ipomoea carnea*), Lal Bheranda (*Jatropha gossypifolia*), Lantana (*Lantana camara*), Baghnakh (*Martynia annua*) and Vasaka (*Adhatoda vasica*).

The common herbs and grasses are found to be in close association with shrubs are Ban Tulasi (*Croton bonplandianum*), Laajvanti (*Mimosa pudica*), Congress Grass (*Parthenium hysterophorus*), Coat Buttons (*Tridax procumbens*), Katanotey (*Amaranthus spinosus*),



3 - Description of the Environment (cont'd)

Kukshim (*Vernonia cinerea*), Chorkanta (*Chrysopogon fulvus*), Nut grass (*Cyperus rotundus*) and Doob (*Cynodon dactylon*). The Bamboo clumps and Palms species of Tal (*Borassus flabelliform*), Narial (*Cocos nucifera*), Khajur (*Phoenix dactylifera*) are commonly found in study area. The thorny bushes of Phanimansha (*Opuntia dillenii*) and Tesiramonsa (*Euphorbia antiquorum*) also found along the road sides.

The compiled list of flora in forest and non-forest land as observed during the field survey and through information collected by interacting with the concerned forest officials and local people of the study area is provided in Appendix 3-2.

3.9.4 Forest Produce in the Study Area

Economically important timber woods of Sal, Piasal, Asan, Bhilwa, Char, Kusum, Teak etc and non-timber forest products like Fire woods, Kendu leaves, Bamboo, Cashew nut and medicinal plant produce are the major source of revenue receipt from forest of the study area. The collection of forest produce offers large employment opportunities amongst rural peoples of the study area.

3.9.5 Medicinal Plants in the Study Area

Among the available floral species, fifty two of them have important medicinal values which contribute an important role in economy of the state particularly benefiting the rural, SC and ST population living in forest fringed areas. The list of medicinal plants is given in Appendix 3-3.



3 - Description of the Environment (cont'd)

3.9.6 Agricultural Pattern of the Study Area

The single cropped agricultural lands available in the study area are cultivated only under rainfed condition. The main agricultural crop is Rice (*Oryza sativa*) followed by Groundnut (*Arachis hypogaea*), Maize (*Zea mays*), Black gram (*Vigna mungo*), Black mustard seed (*Brassica nigra*) and Sugarcane (*Saccharum officinarum*).

3.9.7 Horticultural Crops of the Study Area

The important fruit plants available in the study area are Banana (*Musa paradisiaca*), Cashew nut (*Anacardium occidentale*), Coconut (*Cocos nucifera*), Mango (*Mangifera indica*), Jackfruit (*Artocarpus heterophyllus*), Papita (*Carica papaya*), Guava (*Psidium guajava*) and Jamun (*Syzygium cumini*).

3.10 QUANTITATIVE SURVEY OF TERRESTRIAL FLORA

It is essential to know the numerical distribution of different species in the community especially in terms of species richness, evenness index and diversity index. For quantitative determination of plant community structure, the method followed was line transect with quadrat laid in the selected sample plots.

3.10.1 Species Richness, Evenness & Diversity Index in the Study Area

Species diversity in the study area from the data collected through quadrat method was evaluated by using Shannon-Weaver Diversity Index. The Shannon-Weaver diversity index (H) is index that is commonly used to characterize species diversity in a community. The species Richness, Evenness & Diversity index values were computed for the selected sites and the results are presented in Table 3-22.

3 - Description of the Environment (cont'd)

TABLE 3-22 - SPECIES RICHNESS, EVENNESS & DIVERSITY INDEX

Location Code	Name of the Study Area	Species Richness (R)	Evenness index (E)	Shannon-Weaver diversity index (H')
TE1	Sunajhari Protected Forest at Sunajhara Parbat	10	0.94	2.17
TE2	Kiajhar Parbat open mixed jungle near Gobraghati	12	0.91	2.28
TE3	Dangadi Protected Forest	12	0.92	2.22
TE4	Ragarhi Protected Forest near Gohjragarhia Village	15	0.78	2.11
TE5	Barang Reserve Forest near Nandabara Village	20	0.79	2.37
TE6	Barhashuli Paharh open mixed jungle near Bitarmanika	13	0.87	2.24
TE7	Nilamanideipur Village Road side	19	0.90	2.64
TE8	Duburi Village Road side	22	0.97	3.01

Shannon-Weaver diversity index of trees in the forest area has been estimated to be in the range of 2.11 - 2.37. From the Table 3-22, it could be clearly inferred that natural trees species diversity was highest at Barang Reserve Forest area and lowest at Ragarhi Protected Forest area. The diversity index of trees on the road side plantation area has been estimated to be in the range of 2.64 - 3.01. The Pielou's Evenness Index of species distribution in the study area has been estimated to be in the range of 0.78 - 0.97. Therefore, the distribution of tree species is heterogeneous in the study area.

3.10.2 Terrestrial Fauna

Mammals: The Wild animals like Indian palm squirrel (*Funambulus palmarum*), Indian grey mongoose (*Herpestes edwardsii*), and Langur (*Presbytis entellus*) were observed during survey in the study area. As informed by forest officials and local peoples, the animals like wild boar (*Sus scrofa cristatus*) and Spotted deer (*Axis axis*) used to damage the agricultural crops during crop harvesting seasons.



3 - Description of the Environment (cont'd)

A total of twenty three (23) wild animals (mammals) as observed and reported during interaction with forest officials and local peoples are listed in Appendix 3-4, which was later confirmed from the working plan of Cuttack Forest Division, Govt. of Odisha.

The domestic animals like Cow (*Bos indicus*), Buffalo (*Bubalus indicus*), Sheep (*Ovis aries*), Goat (*Capra hircus*), Pig (*Sus scrofa domesticus*), Dog (*Canis familiaris*) and Cat (*Felis domesticus*) were also observed during survey in the study area.

Reptiles: A total of eight reptile species as observed and reported during interaction with forest officials and local peoples are listed in Appendix 3-4, which was later confirmed from the working plan of Cuttack Forest Division, Govt. of Odisha. During survey Garden Lizard (*Calotes versicolor*) and Dhaman (*Ptyas mucosus*) were found in the study area.

Avifauna: The avifauna (birds) observed and reported during interaction with forest officials and local peoples in the study area are listed in Appendix 3-4. Among them, Black Drongo (*Dicrurus adsimilis*), Common crow (*Corvus splendens*), Common myna (*Acridotheres tristis*), Common koel (*Eudynamys scolopaceus*), House sparrow (*Passer domesticus*), Red vented bulbul (*Pycnonotus cafer*) and Spotted dove (*Streptopelia chinensis*) were very common birds.

Annelids and Arthropods: Among the invertebrates, two species of annelids and nine arthropods genus were observed during survey are listed in Appendix 3-4.

3.11 AQUATIC ECOLOGICAL STATUS (AES)

The Aquatic Ecological survey was conducted at eight selected locations in Brahmani River, Kharsua River and Ganda nadi.



3 - Description of the Environment (cont'd)

3.11.1 Aquatic Flora

The aquatic macrophytes observed during survey in the study area are listed in Appendix 3-5. Among them *Azolla pinnata*, *Eichhornia crassipes*, *Pistia stratiotes*, *Sagittaria latifolia*, *Spirogyra sp.* are free floating algae. *Alternanthera philoxeroides*, *Hygroryza aristata*, *Justicia americana*, *Marsilea quadrifolia* are the emergent hydrophytes and semi aquatic plant like *Colocasia esculenta*, *Cyperus rotundus*, *Ipomea aquatica*, *Scirpus grossus*, *Typha elephantina* are the marshy amphibian. There are also the completely submerged vegetations like *Ceratophyllum demersum*, *Elodea canadensis*, *Hydrilla verticillata*, *Potamogeton crispus*. Among the macrophytes, *Ipomoea carnea*, *Cyperus rotundus*, *Eichhornia crassipes* and *Colocasia esculenta* are dominant species & widely distributed in the study area.

3.11.2 Planktonic Population

Phytoplankton: A total of ten species have been identified in water sample collected from Kharsua river, Brahmani river and Ganda nadi in the study area. The total phytoplankton count was highest in Brahmani river and lowest in the Ganda nadi indicating higher productivity in the rivers as compared to the Ganda nadi.

Zooplankton: A total of eight species have been identified in water sample collected from Kharsua river, Brahmani river and Ganda nadi. Among them Cladocera and Rotifera were found to be the dominant groups. It has been found that density of zooplankton was higher in the Ganda nadi water indicating presence of higher level of organic nutrients as compared to Kharsua river and Brahmani river. The planktonic spectrum observed during survey in the study area are listed in Appendix 3-6.

3 - Description of the Environment (cont'd)

Primary productivity of aquatic eco-system: In order to assess the productivity of aquatic ecosystem prevailing in the study area Shannon-Weaver Diversity Index (H) of planktonic population was computed for all the seven monitoring locations. The “H” values of respective water bodies are presented in the following Table 3-23.

TABLE 3-23 - PLANKTONIC DIVERSITY INDEX

Location Code	Sampling Location	Shannon - Weaver Diversity Index (H)	
		Phytoplankton	Zooplankton
AE1	Ganda nadi at Barakhai Village	2.22	2.07
AE2	Ganda nadi at Ollala Village	2.26	2.04
AE3	Ganda nadi at Kusunpur Village	2.26	2.06
AE4	Ganda nadi at Balungabandi Village	2.20	2.01
AE5	60m Downstream of Kharsua River meeting Ganda nadi	2.15	1.99
AE6	60m Upstream of Kharsua River meeting Ganda nadi	2.13	1.99
AE7	60m Downstream of Brahmani River after Railway Bridge	2.12	2.05
AE8	60m Downstream of Brahmani River after Road Bridge	2.15	2.02

From the quantitative assessment of phytoplankton and zooplankton it is seen that diversity index varies between 2.12 to 2.26 for phytoplankton and 1.99 to 2.07 for zooplankton. This indicates presence of moderate level of organic nutrients in the surface water bodies.

Aquatic Fauna: The aquatic faunal species which were observed in and around the water bodies includes benthos, amphibians, fishes and semi aquatic avifauna.

Benthos: Among the benthic macro-invertebrates four mollusca species like Apple Snails (*Pila globosa*), Mud Snail (*Bithynia tentaculata*), Jhinuk (*Lamellidens marginalis*), Pond Snail (*Bellamya crassa*) and three arthropods species like Damselfly nymphs (*Zygoptera sp.*), Prawn (*Penaeus indicus*), Water scorpion (*Laccotrephes sp.*) were found in the water bodies during survey.



3 - Description of the Environment (cont'd)

Amphibian: Only four amphibian species like Indian bull frog (*Rana tigrina*), Paddy field frog (*Rana limnocharis*), Skipping frog (*Rana cyanophlyctis*), Toad (*Bufo melanostictus*) were found available during the study period.

Fish fauna: Total sixteen fish species are fairly available in the water bodies as informed during the interaction with the fishermen. The Brahmani river and Kharsua river are the natural aquatic ecosystem supporting fishes in the area. The commercial cultivation of fish was not reported during interaction with local community within the study area. The maximum abundance of fishes was reported during April to July in the rivers. The fishes reported in the rivers and the nearby ponds are given in Appendix 3-7.

Semi Aquatic Birds: The semi aquatic birds observed near Brahmani river, Kharsua river and Ganda nadi during survey of the study area are listed in Appendix 3-7. Among them Indian Pond Heron (*Ardeola grayii*), Cattle Egret (*Bubulcus ibis*), Little Egret (*Egretta garzetta*) and Little Cormorant (*Phalacrocorax carbo*) are commonly found near the water bodies.

3.12 REVIEW OF PUBLISHED SECONDARY DATA AND RELEVANT STANDARDS FOR CROSS REFERENCEING AND INTERPRETATION

The working plan of Cuttack Forest Division, Govt. of Orissa, for the period 2007-2008 to 2016-1017 collected from the Tomka Forest Range and related literature available in websites was reviewed to identify the representative spectrum of economically important & medicinal plant species, endemic, rare, endangered & threatened species in the ecological communities listed by IUCN Red list (Version 2021-1). The conservation status of flora & fauna reviewed in Indian Wild Life Protection act, 1972 and its subsequent amendments.



3 - Description of the Environment (cont'd)

3.12.1 Rare, Endemic and Endangered Plant Species

The International Union for Conservation of Nature & Natural Resources (IUCN) designated the terms "rare" and 'endangered' plant species in the "Red list". Among the recorded flora & fauna, none of them can be assigned in the status of endemic, rare, endangered, threatened or vulnerable category in the IUCN Red List of Threatened Species, Version 2021-1.

3.12.2 Conservation status of Sighted Flora & Fauna

Conservation status of the sighted flora fauna has been checked in the Wildlife Protection Act, 1972 and its consequent amendments. Among the sighted fauna most of the species are listed under Schedule-II, III & IV as per Wildlife Protection Act (1972) and its consequent amendments. None of the faunal species is listed under Schedule-I.

3.12.3 Eco-sensitive area

There is no eco-sensitive area like National Parks, Wild Life Sanctuaries and Migratory routes in the study area. There are two green hillocks, three PF, part of a RF and other open mixed jungles within the study area that provides great advantage to the project site by acting as "pollutants absorber".

However, there are two natural surface water resources, Brahmani River and Kharsua River that supports the ongoing agriculture, fishing practices and industries in the study area.

3.13 SOCIOECONOMIC ENVIRONMENT

In order to ascertain the baseline status of the biological environment comprising both terrestrial and aquatic ecological aspects of the study area, field visit was carried out from 20th - 24th December, 2020. During the field survey, relevant